LABOUR MARKET AND INTERNATIONAL MIGRATION FLOWS: 
THE CASE OF SPAIN (1960-1988)*

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ABSTRACT

In this paper we analyze the Spanish international migration flows to Germany and France. We focus on the emigration flows as well as on the return migration flows. Our econometric study supports the view that it is better to use variables translated to Spanish currency and deflated by Spanish prices for return migration. However, for emigration the specification in national currency, deflated by national prices, is preferable. Migration flows are driven by the unemployment rate differentials variable, the wage and disposable income differentials variable, and the costs of housing variable. Yet, the long run equilibrium of return migration is determined by unemployment rate differentials and personal disposable income differentials, as well as emigration and the stock of migrants.

RESUMEN

Se analizan aquí los flujos internacionales de migración de los españoles a Alemania y Francia. Nos centramos tanto en los flujos de emigración como en los de inmigración de retorno. En este estudio econométrico se sostiene que es preferible, para la inmigración de retorno, usar variables en moneda española deflactadas por precios españoles. Sin embargo, para la emigración es mejor la especificación en moneda nacional deflactada por precios nacionales. Los flujos de migración son impulsados por las diferencias de las variables de la tasa de desempleo, salarios y renta disponible y la variable del coste de la vivienda. Con todo, el equilibrio de la inmigración de retorno a largo plazo está determinado por las diferencias en la tasa de desempleo y las diferencias en renta disponible personal, así como por la emigración y el número de inmigrantes.
I. Introduction.

The purpose of this paper is to analyse international migration flows. In particular, we intend to model Spanish international migration flows. To model this flows, and in particular Spanish migration flows across EC countries, could shed light on the determinants of these flows and help us to pursue in the liberalization of labour mobility. Our goal is to help to understand the reasons behind these flows.

In section two we introduce the study of Spanish international migration flows. We focus on Spanish migration flows to and from Germany and France. The emigration to France and Germany represents almost 80 per cent of total Spanish emigration to Europe. We are concerned primarily with two issues. First, we examine the factors that explains the variation of Spanish migration over time. Second, we analyze what motivates the return migration (Spaniards who migrated and latter decide to come back). Spain, as well as Italy, was a net exporter of labour in the 1960s up to the first oil crisis. Afterwards, the net outflow turned to a net inflow of migrants.

The size and magnitude of Spanish flows to and from Germany and France are quite important. During the 1960s on average, 0.17 per cent of Spanish population was migrating to Germany, per year. In the same period, 0.18 per cent was migrating to France. During the 1970s these figures dropped to a 0.07 per cent to Germany, and a 0.03 per cent to France (0.01 and 0.002 per cent in the 1980s, respectively). The average figures of return migration from Germany are 0.11 per cent in the 1960s, 0.09 per cent in the 1970s and 0.02 per cent in the 1980s. The Spanish population was approximately 30 millions in the 1960s, this means that around 105,000 spaniards were migrating to Germany and France each year during the 1960s.
We introduce our framework of analysis in the third section. The model is derived from individual/household behaviour when the individual faces the migration's decision problem, that is, whether to migrate or not. It is a two-sided choice problem, and the choice is based on utility comparisons. The underlying hypothesis is that migration would occur if the utility achievable with migration is higher than the utility of non-migration. In other words, if the expected return of moving is higher than the expected return of staying.

The probability of migration or the number of migrants over total population is a function of wage differentials (as traditional labour-flow theories pointed out), unemployment rate differentials (as a way of measuring the employment probabilities and the differences in labour market performances), the differences in the standard of living (because people take the migration decision if their income level is below a certain threshold; we proxy it by the personal disposable income), and the cost of migration.

We consider the cost of housing as a relevant variable in the migration decision, partly because housing costs may represent for migrants a bigger share of their budget than for average long time residents, and because it may signal housing shortages not perfectly captured in the price of living.

We use aggregate data on Spanish migration flows. Individuals decide whether to migrate or not. To obtain the migration rate, that is, the total number of migrants over the total population, we aggregate over many individuals. Thus, the econometric study will be carried using standard regression analysis. In part three of section four we present the econometric analysis. Three principles are important for econometric modelling (Davidson et al. (1978)). First, we require a theoretical model to guide our research and the interpretation of the results. Second, the econometric model should be obtained by theory
and data based reductions on the statistical model. And finally, a good model should encompass the existing models, ie. explain their results. We adjust our econometric study to the first two. We have no notice about any study on spanish international migration flows, thus we do not consider encompassing analysis. We report the results at the end of section four.

Interestingly, the analysis supports the view that, for return migration, it is better to use variables translated into Spanish currency and deflated by Spanish prices. That is because when emigrants are deciding whether to come back or not they have to compare with what they will earn and lose in Spain. However, for emigration the specification in French and German currency, deflated by French and German prices, is preferable.

We find that the relevant effects explaining migration flows are the following. First, levels in unemployment rate differentials are the relevant effects. In the flow emigration specification, the rate of change in unemployment rates in the destination country is also relevant. This latter effect may capture the notion that to get a job is harder if unemployment has recently risen, because the competition for jobs will be more intense. Secondly, levels, as well as changes in income differentials (where income differentials include wages and disposable income differentials) are also important effects driving migration flows. The cost of housing variable, measured by the rent price index, is very important as well. Its level is the relevant effect for emigration and its rate of change for return migration.

We consider the unemployment rate differentials variable as the most important variable explaining migration flows. The size of wage and disposable income differentials effects on migration flows are quite large. The cost of housing variable has a very large effect on return migration, while its effect on emigration is not as large. That could be the
case if people emigrate because they do not have access to jobs in their origin country, and when they consider to return, they choose between the different conditions in the country where they are in and their home country.

Section five concludes this study with the main conclusions.
II. Migration flows.

The mobility of labour may help to stabilize the differences among regions and/or countries between labour demand and labour supply. Labour will move to different areas, regions or countries looking for better opportunities. Labour mobility responds, therefore, to an imbalance situation in the labour market and may work, as unemployment does, as a form of macroeconomic stabilizer. Migration may occur either between regions within a single country, or between countries. The former is called internal or regional migration and the latter international migration. The main distinction between them is in the type of the barriers to migration. In the case of regional migration there will be few, if any, political barriers to migration, while in international migration these barriers are sometimes very important. We are going to focus on international migration, but many of its features are common to internal migration as well.

The potential migrant can be viewed as a supplier of labour (labour-flow theories), investor in human capital, consumer of regional amenities (such as public goods) or producer of home produced commodities. All these approaches assume that people move when the migration's expectations implies he will be better off.

The labour flow approach states that in equilibrium factors of production would receive the same return, as long as factors are free to move and mobile. Thus migration is viewed as a device by which labour moves to eliminate wage inequalities. When there is, therefore, regional differences in the rate of return, factors (eg. labour) move to higher rate of return areas. In the simplest version of the model migration is a function of wage differentials, and it will cease when wages are equalized across regions. The persistence of wage differentials led to an extension of the basic model of wage differentials to account for factors such as cost of moving, differences of cost of living, occupational structures,
location-specific factors, regional amenities and unemployment rates to explain the regional income differences. The more important extensions to explain this persistence of wage differentials have been the cost of migration and the differences in employment opportunities. The former establishes that below a certain wage differential threshold, the cost of moving will not be compensated by the gains of migration, deterring further migration. The latter implies that if in one region wages are very high relative to other regions but the employment growth rate cannot absorb all the migrant labour, then many migrants would be unemployed without having access to this higher wage.

But the costs and gains of a move occur at different times. If we consider the variable time, the analysis shifts to consider that the potential migrant will move if the net present value of a move is positive. The human capital approach states that people move to maximize their expected life time utility. This approach takes into account all features of people's life in a given place, both economic and non-economic.

The utility function can be written as a function of consumption bundle of different goods, within which we can consider as a component consumption of regional amenities. These amenities can be educational opportunities, health care systems and general living conditions, climate, entertainment (theatre and cultural life) and living space or housing market conditions\(^1\). The availability of these regional amenities may be reflected in taxes and land/house rents.

In this paper we analyse the evolution of international migration flows in Spain since 1960. Particularly, the migration flows of Spaniards to and from Germany and France. The size and magnitude of these flows are quite important. During the 1960s on

\(^1\)Bover et al. (1989) point out the importance of housing market (houseprice/earning ratio) as a major determinant of wage pressure and of labour market disequilibrium.
average, 0.17 per cent of Spanish population was migrating to Germany each year. It reached its peak in 1965 with 83,500 migrants (0.26 per cent). In the same period, 0.18 per cent was migrating to France, reaching its peak in 1964 with 93,149 Spaniards moving to France (0.29 per cent). During the 1970s these figures dropped to a 0.07 per cent to Germany, and a 0.03 per cent to France (0.01 and 0.002 per cent in the 1980s, respectively). During the period from 1974 to 1979, migration to Germany and France were around 0.02 and 0.008 per cent on average, respectively. The average figures of return migration from Germany are 0.11 per cent in the 1960s, 0.09 per cent in the 1970s (0.11 per cent from 1974 to 1977) and 0.02 per cent in the 1980s. The Spanish population was around 30 millions in the 1960s, this mean that around 105,000 Spaniards were migrating to Germany and France each year during the 1960s.

We can see in the figures in the appendix the pattern of Spanish migration flows. They present a strong flow migration to Germany as well as to France up to the 1973–74 oil crisis. The pattern of return migration from Germany (there are not available data on return migration from France) follows the flow migration pattern with approximately a two year lag.

We have primarily two question to answer: What explains the variation of Spanish migration over time?, and what motivates the return migration?. We understand for return migration those people (spaniards) who after they migrated abroad they decide to come back to their country of origin. We want, therefore, to explain the reasons why people migrate, and why they return eventually.

It can be argued with respect to the first question that Spanish emigration has been declining during the period of study because of the rapid pace of industrial growth experienced by Spain. But what about the important drop of migration in 1967–68 and
later rise, and why does migration present a sharp drop in 1973–75? (the oil crisis perhaps, but not the normal process of industrialization). And, finally, why have Spaniards migrated massively during the period of most rapid growth in Spain?. Return migration is very important in Spain. Of course, contracts were for one or two years and afterwards they had to come back. But why did they return instead of staying for new contracts?.

Spain was a net exporter of workers during the 1960s and the beginning of the 1970s, especially to EEC countries. After a period of substantial migration, since the middle 1970s migration of Spaniards has declined substantially. There has finally turned out to be an inflow of migrants in the 1980s. So Spain has become a country with a net demand for foreign workers. Focusing on our particular study, the massive emigration of Spaniards to Germany and France occurred in the 1960s and the beginning of the 1970s. But in the middle 1970s, emigration became trivial and in the 1980s it turns out that German and French migrants to Spain exceed Spaniards migrating to those countries. This migration of German and French consists mainly of retired people, presumably moving for climatic or fiscal reasons.

Emigration and particularly migrants' remittances to Spain contributed to the rapid growth of national product in Spain during the 1960s until the first oil crisis. Unemployment was too low\(^2\) because those who could not find a job in Spain could migrate, and the Spanish traditional trade deficit substantially reduced by the favorable service balance due to emigrants' remittances. But with the 1973–74 crisis this disappeared. The Spanish economy then experienced a political transition to democracy, a extraordinary wage boom, a fall in migrants' remittances and an increasing trade deficit (oil bill), and a huge number of migrants returning to Spain looking for jobs.

\(^{2}\)The unemployment rate in the 1960s was between 1 and 2 per cent, and approximately 100,000 Spaniards were migrating abroad each year.
III. *The Underlying Theory of Migration Flows.*

We see migration as a response to market disequilibria in which people migrate when the expected gains of moving are positive. We consider that though people migrate chiefly because of positive wage differentials, this is not the only important aspect to explain migration. The crude wage differential can be substantial between two areas (countries or regions), but it needs to be qualified by the cost of migration, which could act to partially offset some of the wage differential. The cost of migration may account for a fixed cost of moving and relocation (transportation, foregone earnings, psychic costs, etc.), and for the cost of living differences (one of its more relevant components is housing). Furthermore, people will get the higher wage differential if they get a job in the destination country. Hence the probabilities of getting a job in the destination country, and at home, are important variables.

Even more, the proportion of a country's labour force that migrates in any period is small. Everybody will seek to migrate if the utility of migration is higher than the utility of no-migration for all of them. But the experience tells us that not everybody migrates, and some agents may not even consider emigration as an option. Therefore we have to assume, either that it is only unemployed people who think about whether to migrate or not; or that people have earnings different from wage earnings and different standard of living. If we consider that the standard of living account for this part of the income differential not covered by the wage differential. We can think of a minimum standard of living, under which people, even in the case they work in the origin country, will take the migration decision. It could be related with the reservation wage or price.

Therefore, we consider that when a potential migrant is making his mind up about whether to migrate or not, he will have to examine various factors. First, the real wage
differential between both places. Second, the cost of living differences\(^3\). We will consider the cost of housing to measure differences in the cost of living. Third, the probabilities of getting a job in the destination country and the origin country. This may be proxied by the differences of unemployment rates. Some people not only migrate because they will earn more, but because they cannot find a job in their own areas or countries, so they need to migrate to seek for jobs. They will have a greater probability of getting a job in the other area if the unemployment rate is lower, but it also depends upon the "health" of the labour market of the destination country with respect to the origin country. Finally, the standard of living in both countries, which may proxy, for example, the availability of regional amenities.

We would expect the above factors to have the following effects on migration. If the real wage increases in the destination country relative to the origin country, migration will be boosted. An increase in the relative cost of living in the destination country will discourage migration. When the unemployment rate is higher in the destination country, the possibility of getting a job will be lower, and thus the incentives to migrate. The better the differences in labour market performances in the destination country, the higher will be migration. A higher relative standard of life abroad should increase the tendency to migrate.

Our framework of analysis is based on Pissarides and Wadsworth (1989), following a time series approach in the lines of Muellbauer and Murphy (1989), and Bentolila and Dolado (1990). The idea is that an individual decide whether to migrate or not using utility comparisons. The individual is assumed to maximize his expected lifetime utility, which is

\(^3\)The cost of living differences is part of the real wage, but house and rent prices (as measures of the cost of living) can gather imperfections in the housing market and may not be an important component of prices. Thus it is interesting to consider them separately.
mostly defined on returns at the end of the relevant period. We specify the functional form of the expected utility function in the form of the individual's indirect utility function. Therefore, an individual will migrate if the expected return of migration exceeds the costs of migrating.

Suppose we have two countries, $j=1,2$, and we want to model the outflow of migrants from country 1 to country 2. Denote $M_{12}$ as the outflow from country 1 to country 2. Then, the probability of migrating is given by:

$$\Pr\{M_{12} > 0\} = \Pr\{EU_2 > EU_1\} = \Pr\{DEU_2 > 0\} \quad [1]$$

where $EU_j$ is the expected utility achievable at country $j$. The expected utility is formed by labour income and non-labour income. Labour income is the real wage weighted by the probability of being employed, and non-labour income is unemployment benefits (defined as a proportion of real wages), return to assets or investments (non-human wealth), and imputed real return from any unpaid leisure activities (e.g. recreation, culture). Thus, the individual's expected utility is given by:

if he stays in country 1: $EU_1 = \delta_1 w_1 + (1-\delta_1)bw_1 + k(1-c_1) \quad [2]$

if he migrates to country 2: $EU_2 = \delta_2 w_2 + k(1-c_2) \quad [3]$

where $\delta_j$ is the probability of getting a job in $j$, $w_j$ is the real wage in $j$. Hence, $\delta_j w_j$ is labour income. Non-labour income is the unemployment benefit, defined as a proportion $b$ of real wages, weighted by the probability of being unemployed; and the non/human wealth (and valuation of leisure) of the individual, denoted by $k$, which is reduced by the cost of housing, defined as a proportion $c_j$ of the respective non-human wealth. In the case that the individual migrates, $c_2$ is the cost of housing and the cost of moving as a proportion of
k. However, when the individual migrates, his non-labour income will be reduced by the foregone unemployment benefits in the case he would have been unemployed.

Whether the expected return of migration is higher than the expected return of staying at home depends on several factors. We know that not everybody takes the migration decision, and from the group that takes the migration decision some decide to migrate. How can we explain this fact? We consider that individuals have wages and non-labour income as different sources of income, where non-labour income could be return to assets or investments (i.e. wealth level). The level of wealth of an individual determines his standard of living. The people with a higher non-labour income (wealth level) will need a higher expected return differential to take the migration decision. The variable $k$ intends to capture this fact.

Hence, the expected utility differential is given by:

$$\text{DEU}_2 = \text{EU}_2 - \text{EU}_1 = [\delta_2 w_2 + k(1-c_2)] - [\delta_1 w_1 + k(1-c_1) + (1-\delta_1)bw_1] =$$

$$= (\delta_2 w_2 - \delta_1 w_1) - k(c_2-c_1) - (1-\delta_1)bw_1$$  \[4\]

The first term is is the wage differential ponderated by the differential between the probabilities of getting a job. The term $(c_2-c_1)$ represents the cost of housing differential or cost of moving. The last term represents the unemployment subsidy differential. The latter establish the main distinction between regional and international migration, in the regional migration case you do not lose the unemployment benefits when you move.

Let us now examine the effects of the differentials and of the overall levels on $\text{DEU}_2$, that is, on the migration outflow. We now represent the equation [4] in terms of differentials:
$\text{DEU}_2 = wd\delta + d\delta w + d\delta dw - kdc - (1-\delta)bw$ \hspace{1cm} [5]

where $dw_2$, $d\delta_2$ and $dc_2$ represent the wage, the probability of getting a job, and the cost of living differential; and $w$, $\delta$, and $c$ capture their overall effects. That is, we define $dx=x_2-x_1$ and $x_1=x$, where $x=w, \delta, c$ [6].

The effects of the differentials on $\text{DEU}_2$ are:

\[
\begin{align*}
\frac{\partial \text{DEU}_2}{\partial w} &= \delta + d\delta > 0 \\
\frac{\partial \text{DEU}_2}{\partial \delta} &= w + dw > 0 \\
\frac{\partial \text{DEU}_2}{\partial c} &= -k < 0
\end{align*}
\hspace{1cm} [7]
\]

We measure the probability of getting a job as $1-u$, where $u$ is the unemployment rate. Then, the migration outflow from country 1 to country 2, $M_{12}$, depends positively on the wage differential and on the probability of getting a job differential; and negatively on the unemployment rate and moving costs differentials. As long as, the wage and unemployment differentials of the country of destination with respect to the country of origin is positive, or is not higher in absolute value than the respective overall level. We can also derive the effects of overall levels on $\text{DEU}_2$:

\[
\begin{align*}
\frac{\partial \text{DEU}_2}{\partial w} &= d\delta - (1-\delta)b \\
\frac{\partial \text{DEU}_2}{\partial u} &= -dw - bw < 0 \\
\frac{\partial \text{DEU}_2}{\partial b} &= -(1-\delta)w < 0 \\
\frac{\partial \text{DEU}_2}{\partial k} &= -dc < 0 \hspace{1cm} [8]
\end{align*}
\]

The sign of the first effect is ambiguous. An overall increase in wages would have a positive effect on the outflow as higher is the overall probability of getting a job, but for high
overall unemployment rates a rise in the overall wage could even reduce migration outflows. The other effects are clearly negative, so an increase in overall unemployment rate as well as an increase in the welfare level at the home country and an increase in unemployment benefits would reduce migration outflows.

Summing up, we can represent the probability of outflow from country i to country j by:

$$\Pr\{M_{ij} > 0\} = f(w_j, d\delta_j, d\epsilon_j, w, \delta, k_i, b, Z_m)$$  \[9\]

We reserve $Z_m$ for other characteristics, as climate, public services (ie. education and health care), and amenities. We can also include interregional migration flows as well as the stock of migrants abroad.

In our empirical specification of the probability of migration, equation [9], we are going to consider the following variables. First, the wage differential between the home and destination countries. Second, the unemployment differential, as well as overall levels. Third, the cost of moving, which measures differences in the cost of living (housing). It is a relevant variable to explain migration partly because housing costs may represent for migrants a bigger share of the budget than for average long time residents, and because it may signal housing shortages not perfectly captured in the price of living. When people have to move from one area to another, they incur changes in the cost of housing. We do not have data on housing prices, thus we use the real rent price index differential.

Fourth, the level of wealth. The individual behaviour depends on his wealth, which consist in labour income, and financial and physical wealth (ie. non–labour income). The labour income is measured by wages. We tried to proxy the level of wealth (physical and financial) by using two related variables. First, the real personal disposable income, this
variable incorporates tax effects too. Second, the wealth hold by consumers. To measure the latter, we try to calculate two related indices. The first one is $W = (M1/CPI) + K_{rp}$, where $K_{rp}$ is the private capital stock (residential and productive). We could not construct this index because we did not have data on $K_{rp}$ for France and Germany. However, we calculated $W$ for Spain; its time path share much in common with that of Spanish real wages and real disposable income series. Therefore, we might conclude that real wages and real disposable income differentials gatherquit well wealth effects. The second index just measures the financial wealth. We only have this index from 1972 for Spain, 1970 for France and 1964 for Germany. Thus, we cannot use this index in our model.

Fifth, the replacement ratio in the origin country. It is important to note that in the 1960s did not exist a wide unemployment benefit coverage in Spain, while in the 1980s the unemployment benefit system has become quite generous, yet it does not last forever.

Sixth, the employment creation rate differences and participation rates differences to measure the "health" of the labour market in the destination country and at home. This could be reflecting expectations of future unemployment rates and thus be proxied by unemployment rates, and we will then find that employment growth rate is not a significant variable in our final specification.

Seventh, we use the internal mobility in Spain. We expect a negative relationship between international and regional migration flows, however, it exists the possibility of a reduction of both (Bentolila and Dolado, 1990, report a reduction in regional mobility in Spain while international outflows have fallen as well). Eighth, a dummy variable to capture the wage boom of the 1970s (see Dolado et al., 1986). Nineth the stock of migrants. A positive effect could be interpreted as proxying for a reduction in informational and settling down costs for new migrants. Finally, we introduce lagged values to capture long
run relationships and hysteresis effects. The lagged value of the dependent variable intend to capture inertia effects. It could also be added other variable to control for education and health care differentials, that could be proxied by the differential in national expenses in these areas.

Before turning to the data analysis it is important to talk about an important issue. Migrants can be divided in two groups, permanent versus temporary. The first type of migrants are those who migrate and tend to stay in the destination country for a long period of time (long term migrants). We can consider them as migrants who migrate looking for higher standard of living, higher earnings, etc. The second type are those who send their money back to the origin country to their relatives or build up a target stock of savings (short term migrants). This second type correspond to the case when migration is temporary, they may migrate because the impossibility of getting a job or a suitable remunerated job in the origin country.

Potential migrants, when they are taking the decision whether to migrate or not, have also to account for the type of migrant they are in order to establish properly the kind of evaluation they have to do.

The determinants of the migration decision are the same for both types of migrants, but the time dimensionality differs. While the first type of migrant is only concerned with the differences in real personal disposable income in destination country prices and origin country prices, the unemployment differences, the difference in real wage rates between destination country in national prices and origin country in national prices, and the difference in real rent price index. The second type of migrant is concerned with the value of his earnings in the currency of his origin country (Spanish currency), because if migration is temporary (to build up savings), the expected earnings need to be deflected by
expected prices in the origin country (Spanish prices) and not by the prices in the
destination country (German prices). Destination country cost of living will continue to
matter in this case (affecting savings), but exerting smaller influence. Furthermore, the
second type of migrant will be much more concerned with the unemployment benefit
system in his home country, while the first type of migrant will probably do not care much.

For the second type of migrant, the foreign nominal wage rate will be translated
into national currency and deflated by national prices and compared with national real
wage rate. And the foreign nominal per head disposable income is translated to national
currency and deflated by national prices. We use the exchange rates between both
countries to translate to national currency. The choice is given by the fact that when they
send money back, their families will receive this money in national currency unit which is
exchanged into national currency by the official exchange rate.

The simple model despict above, summarize in equation [9], provides us the basic
analitical structure of the paper. We want to analyse five basic issues. First, we study how
international migration flows respond to real wages and unemployment levels and
differentials, and to moving costs. Second, is the overall unemployment level relevant?, and
if so, can deter migration even when there are positive unemployment and wage
differentials?. Third, we examine whether the wealth level is a relevant variable in
explaining migration flows. Fourth, we analyse the relevance of the housing market in
migration. Fifth, we want to know the trade-off between regional and international
migration flows. To deal with this issues we use observed data and theory to achieve our
empirical specification in the econometric analysis.
IV. The Data.

In this section we shall review our observations on certain variables selected by theory. For an explanation of how all these variables have been obtained and their sources, see data appendix. All series in this study are annual, and, unless specified to the contrary, expressed in logs.

Let $s_{\text{pmigr}}_t$ denote Spaniards migrating to Germany, and $s_{\text{pbkgr}}_t$ Spaniards coming back from Germany, in both cases expressed as a proportion of Spanish population (see data appendix).

Figure 1. shows the time series of $s_{\text{pmigr}}_t$ and $s_{\text{pbkgr}}_t$ for the period 1960–88. The salient features of the data are the strong migration up to the 1973–4 oil crisis, and the pattern of return migration, which follows the flow migration pattern with approximately a two year lag. It also shows a marked reduction since the mid–1970s, paralleling the reduction in rates of labour turnover and internal mobility within Spain, as we can see in the interregional migration rate figure.

The sharp drop which occurred in 1967 is note worthy. It is not a particular feature of Spanish migration. It is common to all countries exporting labour to Germany at the time. The cause of this sharp fall was that the German economy suffered a recession in 1967–8. The number of foreign workers decreased from 1.3 millions in September 1966 to 904.000 in January 1968 and, thereafter, reached its pre–recession level in June 1969. This drop was reflected in both a reduction of the stock of foreign workers (increase of return migration) and a lower immigration flow.

As we specified above (equation [9]), the likely driving variables for migration flows
are real wage differentials (lrwd & lrwd2), real rent price index differentials (lrpid), unemployment rates differentials (lud), real personal disposable income differentials (lrpdid & lrpdi3), employment growth rate differentials (legrd), and the replacement ratio.

The real wage differential series, Fig. 2, is characterised by a steady decline over the period of analysis, except for a sharp drop between 1973 and 1977, due to the Spanish wage boom (related to an increase of union pressure and the political transition to democracy Dolado et al. (1986)).

Fig. 3 presents the time series of unemployment rates of Germany, Spain and their difference. Again it is important to stress the 1967–8 recession suffered by the German economy: during 1960–73 the average rate of unemployment in Germany amounted to 0.88 per cent, excluding 1967 and 1968 with a rate of 2.1 and 1.5 per cent, respectively. This is reflected in both lugr & lud. We should note that Spanish unemployment was very low and stable during the 1960s up to 1973, and it has risen sharply since then. The average rate of unemployment in Spain during the 1960s was about 2 per cent. In 1985 reached its peak at 21.5 per cent. However, the bulk of Spanish emigration occurs in the 1960s, thus reflecting the fact that the Spanish economy could not absorb all the available working age force, and people had to move to seek jobs. The unemployment rate differential is driven first by the German unemployment rate up to the oil crisis, and then by the Spanish unemployment rate.

Fig. 4 shows the real rent price index for Germany and Spain. It takes 1980 as its base point. The Spanish index displays a steadily decline trend relative to Germany. The real cost of housing in Spain was higher in the 1960s and at the beginning of the 1970s than it is recently (at 1980 prices). Emigration will have been weakened as a result of this phenomenon.
We can explain this phenomenon by the argument that policies in which the Government finances housing costs increase income differentials in favour of the destination area. This would incentivize immigration and might therefore worsen the housing problem, because more migrants will be demanding housing. This argument allows us to justify the higher real cost of housing in Spain in the 1960s relative to the 1970s and 1980s. Spain in the 1960s went through a process of urbanization, with big flows from rural areas to urban areas. And the Spanish government was financing housing in the cities when there was this large flow from rural areas to urban areas.

We should have caution with these indices. They express average rental prices to the extent that Spain’s fall in real rental prices is due to rent controls, emigration may have been increased by increasing difficulties in securing rented property. That is, average prices may not be marginal prices, when rents are controlled. Thus, real average rental prices could be falling, but the rent price that young people and return migrants face to secure rented property could be increasing.

Figures 5 and 6 show real personal disposable income differentials (in national prices and in Spanish prices), and the employment growth differentials, respectively.

Looking at the aggregate figures (ie. the emigration flow), they present the same features, discussed above. It is important to note the time path of the replacement ration variable, it decreases since 1964 up to the first oil crisis. Since then it presents a steady increase. This reflects the fact that with rising unemployment, unemployment benefits payments rises as well. The replacement ratio is adjusted to avoid the problem that the amount of the benefit paid decreases with duration.
V. An Econometric Study.

We now present the results of estimating the model of migration flows specified by equation [9]. We do not know the actual data generating process, DGP, of migration, but we will try to get as close as we can to it, using theory and the main properties of the observed data.

In order to get an empirical econometric model about migration we begin with a general specification of [9] and by reparameterization/restriction, using theory and what data tell us, we get our empirical model. Once we have the model we test for restrictions and modelling assumptions.

Our aim is to describe Spanish migration flows. The study follows two complementary paths. We analyze the Spanish emigration variable, spmiₜ, and the return migration variable, spbkgrₜ. There is no available data for return migration from France. There are three main reasons for this choice. First, we study emigration and not net migration flows between Spain and Germany/France because the latter take into account German/French migration to Spain, which is due to different reasons, and consists mainly of retired people, presumably moving for climatic reasons, and is mainly a phenomenon of the 1980s. We are only concerned with the reasons that can account for the pattern of Spanish migration. Second, we only use emigration figures to Germany and France because these represent almost 80 per cent of Spanish emigration, and because of data availability. Finally, the Spanish migration case presents a very interesting feature (as do Italian and Greek cases, see Gordon & Thirlwall (1989)), which is the large numbers of Spanish migrants coming back, that is, return migration.

To present our results we start with a general model for both variables, in which we
include lags in the driving variables. We use a twofold approach. First, we consider a first order general distributed lag in the driving variables. But, in a second stage, we consider that the lag structure could be longer to take into account long run dynamic relationships, thus we include two lags in the driving variables. We use "general to specific" methodology (see Gilbert (1986)), which starts with a deliberately overparameterized specification before undertaking data based simplification using theory where appropriate to guide the choice of restrictions. However, there is a risk of getting nonsense results if overparameterization is pushed too far. This is the reason for considering a reference specification in which the maximum lag is one year.

We specify the relationship driving both variables (ie. emigration and return migration) to account for both types of migrants (ie, short run and long run migrants). Wages and personal income variables are deflated by national prices in one case \((lrwd_t, lrpdi_t, \text{ and } rwd_t)\), and in the other case wages and personal income are in Spanish currency and deflated by Spanish prices \((lrwd2_t, lrpdi3_t, \text{ and } rwd3_t)\).

From the first regression we can detect that for return migration, the model in Spanish prices is more appropriate statistically. This confirms the view that when people take the decision whether to return or not, they are comparing earnings and standards of living abroad with those in Spain in Spanish prices. However, for emigration this is not necessarily the case, and at the beginning it is difficult to decide which specification works better. When we introduce restrictions seeking a more parsimonious specification it turns out that the one in national prices is more appropriate.

We therefore model, throughout, return migration with wages and personal disposable income in Spanish currency and deflated by Spanish prices. Emigration is modelled with wages and disposable income in national currency. This could be the case if
when the individual is deciding whether to emigrate or not, he would be evaluating how is to live in the destination country and to live in his origin country, without comparing one in terms of the other. However, when deciding whether to return or not, he compares how is to live in the destination country in terms of his origin country.

Before setting our empirical specification, we should point out that in our specification a dummy variable is added. This variable is 1 from 1973 (death of Franco’s Prime Minister) to 1977 (Pactos de la Moncloa), and zero otherwise. It was first used by Dolado et al. (1986). It controls for the Spanish wage boom, the higher level of union pressure and the political transition (Dolado et al. include it in the wage equation as a variable explaining wages).

The employment growth differentials variable (legr, and egr, between Germany and Spain, and between Germany and France average and Spain, respectively) is introduced to try to account for differences in labour market performance. As we shall see in the empirical econometric specifications, this variable does not appear in the more parsimonious specifications. Thus, the unemployment rate variable account for probabilities of unemployment and different labour market performances.

The German unemployment rate, lgr, for return—migration and the average unemployment rate in Germany and France, ugr, for emigration, are introduced in the regressions because we tested for symmetry of unemployment effects, and the data showed that the unemployment effects are better measured by unemployment rate differentials and by the unemployment rate of the destination country. In our prior discussion about German unemployment figures, we discussed the potential importance of German or German/French unemployment rates. It appears as an important driving variable for the emigration specification (see table.2.).
The interregional migration rates \( \text{reg}_t \) is included in the emigration analysis, and not in the return migration case. The regional migration flow variable might have two different effects. It might have a negative effect on international migration flows via a substitution effect, or a positive effect. The latter reflecting the view that an increase in regional migration reflects a higher mobility rate in the labour force.

*Return Migration.*

Results are reported in Table 1. We begin with a general deliberately overparameterized specification. The first general specification (column 1) contains one lag in all the driving variables, except spmigr and stock. We introduce a second lag in the emigration to Germany variable to account for duration (when we saw the time evolution path of migration in Figure 1 above, return migration had a very similar path than emigration, except for approximately two lags of difference). We start with a simple short-run dynamic structure because we only have 26 observations and the structure is very complex.

We introduce emigration and the stock of Spanish migrants in Germany for two reasons. First, return migration is obviously going to be determined by emigration (their correlation is very high). As more people emigrate today there are more future potential return migrants. Secondly, the stock of Spanish migrants can account for sociological/psychological factors. The more Spaniards there are in the destination country the lower the possible psychological cost of moving and adaptation could be easier. Thus a positive effect would gather a reduction in informational and settling down costs for new migrants.

From the general model reported in column 1, we get a more restrictive/parsimonious model by undertaking data and theory based simplifications (column 4). The
The empirical econometric model is:

\[ \text{spbkg}_{t} = c + \beta_2 \text{spmigr}_{-1} + \beta_3 \text{spmigr}_{-2} + \beta_4 \text{stock}_{-3} + \beta_5 \Delta \text{lrpid}_{t} + \beta_6 \Delta \text{lrwd2}_{t} + \beta_7 \text{lud}_{t} + \beta_8 \text{lud}_{-1} + \beta_9 \text{lrpd3}_{-1} + \beta_{10} \text{dv}_{t} \]

[10]

The return migration is driven by the first and second lag of emigration, the third lag in the stock of migrants, the rate of change in rent prices and wage variables, as well as the current and lagged unemployment, and yesterday's disposable income. The dummy variable is significant.

We thought that the lag structure may be longer in order to account for long-run dynamics. Therefore, we start with an overparameterized two lag general form (column 2). We repeat the data and theory based simplification exercise, in order to reach a more parsimonious specification. We get the empirical econometric specification reported in column 3:

\[ \text{spbkg}_{t} = c + \beta_2 \text{spmigr}_{-1} + \beta_3 \text{spmigr}_{-2} + \beta_4 \text{stock}_{-3} + \beta_5 \Delta_2 \text{lrpid}_{t} + \beta_6 \Delta \text{lrwd2}_{t} + \beta_7 \text{lud}_{t} + \beta_8 \text{lud}_{-1} + \beta_9 \text{lrpd3}_{-1} + \beta_{10} \text{dv}_{t} \]

[11]

The main distinction between specifications [10] and [11] is that in the latter the rent price variable enters as a two period rate of change instead of a one period rate of change.

Therefore, we have the specifications [10] and [11] for return migration. The next step is to test the underlying assumptions that the econometric modelling procedure carries.
First, both models pass the Chow test of no-structural change/parameter constancy. We consider the structural break in 1975. For specification [10] the F-statistic is 0.7647 and for specification [11] is 2.2779, where the F value for 10 and 6 degrees of freedom is 4.06 at 5 per cent of confidence. The forecast chi-square statistic to test for parameter constancy, for two forecasts, is 0.29 and 0.55 for specifications [10] and [11], respectively, while the value for 2 degrees of freedom at 5 per cent is 5.991. Therefore, we could assume that both specifications fulfil the parameter constancy requirement.

Second, looking at the correlation matrix, there are no collinearity problems.

Third, there is no substantial difference between the heteroscedastic consistent standard errors and the normal standard errors. We present the heteroscedastic consistent estimators. The unconditional heteroscedasticity test cannot be carried out for absence of enough degrees of freedom. The ARCH test (AutoRegressive Conditional Heteroscedasticity) for both specifications gives us a chi-square statistic of 0.863 against 3.841 at 5 per cent of confidence, and a F-statistic of 0.5 against 4.6 at 5 per cent of confidence for specification [11]. While for specification [10], these statistics are 0.004 and 0. We consider that there do not exist heteroscedasticity problems.

Fourth, the t-statistics and the F-statistic for significance of the coefficients support them.

Fifth, the DW statistic corroborates the non-existence of first order autocorrelation in specification [10], but presents problem in specification [11], where it may be too high. We may have autocorrelation problems in the latter. We have to note that the DW statistic is a valid statistic only if lagged endogenous variables are excluded, which is not the case in [10] and [11] because the spmigr variable is included as regressor. Then, we need a LM test for autocorrelation. The LM test for autocorrelated residuals reports the following statistics. In specification [11], for first order serial correlation we have an F(1,15) of 1.74 against 4.54 at 5 per cent; for second order an F(2,14) of 2.44 against 3.74 at 5 per cent; and for third order serial correlation an F(3,13) of 4.83 against 3.41 at 5 per cent and
5.74 at 1 per cent. For specification [10] we have 0.1, 0.22 and 0.18 for first, second and third order serial correlation.

The residual correlogram does not present any kind of identifiable structure for either specifications.

Sixth, residuals pass the normality test with a $Chi^2(2)$ of 0.818 for specification [11] and of 0.892 for specification [10], against 5.991 for 2 degrees of freedom at 5 per cent.

Generally speaking, specification [10] performs better on these tests than specification [11], specially for serial correlation.

Emigration.

Results are reported in Table 2. We follow the same twofold approach as for return migration. From the general overparameterized specification, which includes one lag in the driving variables (column 1), we reach by data and theory based simplifications the following empirical econometric specification (reported in column 4):

$$spmi_t = c + \beta_1 spmi_{-1} + \beta_2 rpid_t + \beta_3 \Delta rwd_t + \beta_4 ud_t + \beta_5 did_t$$
$$+ \beta_6 \Delta ugt_t + \beta_7 reg_t$$

This model corresponds to an Error Correction Mechanism (ECM), introduced by Davidson et al. (1978). We have the general specification (column 1), where the parameter set is $\theta = (\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9, \alpha_{10}, \alpha_{11}, \alpha_{12}, \alpha_{13})$. Define $y_t = spmi_t$, the vector of regressors $x_t = [rpid, rwd, ud, did, ugt, reg]$, and the parameters vectors $\Lambda_1 = [\alpha_2, \alpha_4, \alpha_6, \alpha_8, \alpha_{10}, \alpha_{12}]$ and $\Lambda_2 = [\alpha_3, \alpha_5, \alpha_7, \alpha_9, \alpha_{11}, \alpha_{13}]$. Then, the general specification in column 1 can be rewritten as:

$$y_t = \alpha_1 y_{t-1} + \Lambda_1 x_t + \Lambda_2 x_{t-1}$$
The equation [13] can be reparameterized as follows,

\[
\Delta y_t = (\alpha_1 - 1)y_{t-1} + \Lambda_1\Delta x_t + (\Lambda_1 + \Lambda_2)x_{t-1} = \\
= \Lambda_1\Delta x_t + (\alpha_1 - 1)[y_{t-1} - (\Lambda_1 + \Lambda_2)/(1-\alpha_1)]x_{t-1}
\]  

[14]

where K = (\Lambda_1 + \Lambda_2)/(1-\alpha_1) is the long run response of y to x. The new parameters (\Lambda_1, (1-\alpha_1), K) correspond to the impact effect, the feedback effect and the long run response. The term (y-Kx)_{t-1} was called ECM in Davidson et al. (1978), because it reflects the deviation from the long run outcome, with agents removing (1-\alpha_1) of the resulting disequilibrium in each period.

The restrictions imposed by the specification [12] are the following,

\[
\Lambda_1 = [\beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7]
\]

\[
\Lambda_2 = [0, -\beta_3, 0, 0, -\beta_6, 0]
\]

K = (1/1-\beta_1)[\beta_2, 0, \beta_4, \beta_5, 0, \beta_7]

If we substitute these restrictions in [14] we get [12]. Then, the long run response of emigration to the explaining variables is K = (1/1-0.366)[-1.814, -0.249, 1.698, 0.092], that is -2.732 to the rent price differential variable, -0.375 to the unemployment rate differential variable, 2.557 to the personal disposable income differential variable, and 0.138 to the regional flows variable.

We also investigated a longer lag structure with a more general overparameterized specification, reported in column 2. Sequential reduction yields the following empirical econometric specification:

\[
spmi_t = c + \beta_1 spmi_{t-1} + \beta_2 rpid_{t-1} + \beta_3 \Delta rwd_t + \beta_4 rwd_{t-2} + \beta_5 ud_t \\
+ \beta_6 \Delta^2 did_t + \beta_7 \Delta ug_t + \beta_8 dv_t + \beta_9 \Delta reg_{t-1}
\]  

[15]
Thus the two alternative econometric specifications for emigration are represented by equations [12] and [15], the results of which are reported in table 2, columns 4 and 3, respectively. Now we subject these to various specification tests.

First, both models are problematic with respect to the Chow test of no-structural change/parameter constancy. We consider the structural break in 1975. This is a very demanding test: note the dramatic difference in behaviour before and after 1975 displayed in Figure 1. For specification [15] (column 3) the F-statistic is 6.83 and for specification [12] (column 4) is 5.31, where the F value for 10 and 5 degrees of freedom, for specification [15], is 4.74 at 5 per cent and 10.2 at 1 per cent. The F-value for 8 and 9 degrees of freedom, for specification [12], is 3.23 at 5 per cent and 5.47 at 1 per cent. Thus, the Chow test suggests that the problem of parameter constancy may be found in both specifications, particularly in specification [12].

We calculated the forecast chi-square statistic to test for parameter constancy. For specification [15] we have for a two period forecasts, a Chi^2(2) of 2.36 and an F(2,13) of 1.43, and for a four period forecasts Chi^2(4) of 3.72 and F(4,11) of 1.10. For specification [12] we have for a two period forecasts a Chi^2(2) of 3.87 and an F(2,15) of 1.75, for a four period forecasts Chi^2(4) of 8.45 and F(4,13) of 1.91, and for a six period forecasts Chi^2(6) of 6.40 and F(6,11) of 1.25. The Chi-values at 5 per cent are 5.991, 7.815, and 9.488, respectively. The F-value for 2 and 13 degrees of freedom is 3.81, for 4 and 11 degrees of freedom is 3.36 (specification [15]), for 2 and 15 degrees of freedom is 3.68, for 4 and 13 is 3.18, and for 6 and 11 is 3.09 (for specification [12]), all at 5 per cent. In conclusion, we can assume that both specifications fulfil the forecast parameter constancy requirement, but there is a possible structural breakdown.

Second, looking at the correlation matrix, we note that there is high negative correlation between spmi_{-1} and rpid_{-1} of −0.88, a high positive correlation between spmi_{-1} and rwd_{-2} of 0.91. There is also a high negative correlation between rpid_{-1} and
rwd\_2 of \(-0.98\). That is for specification [15]. While, for specification [12] these correlations are of \(-0.88\) (spmi\_1 and rpid), 0.89 (spmi\_1 and reg\_t) and of \(-0.82\) between rpid and reg\_t.

Third, there is no substantial difference between the heteroscedastic consistent standard errors and the normal standard errors. We present the heteroscedastic consistent estimators. The unconditional heteroscedasticity test cannot be carried out for absence of enough degrees of freedom. The ARCH test (AutoRegressive Conditional Heteroscedasticity) for both specifications gives us F–statistic of 1.08 against 4.67 for 1 and 13 degrees of freedom at 5 per cent, for specification [15]. While for specification [12], the F–statistic is 0.83 against an F value of 4.54 for 1 and 15 degrees of freedom at 5 per cent. We consider that there do not exist heteroscedasticity problems.

Fourth, the t–statistics and the F–statistic for significance of the coefficients support their inclusion.

Fifth, the DW statistic corroborates the non–existence of first order autocorrelation in both specifications. But, the DW test is not applicable because a lagged dependent variable is present. Durbin (1970) proposed a test for AR(1) in the context of dynamic linear regression models. The t–statistic for AR(1) is 0.179 and 0.781 for specifications [15] and [12], respectively, against a t(16,0.025) of 2.12 and t(18,0.025) of 2.101, respectively.

The LM test for autocorrelated residuals reports the following statistics. In specification [15], for first order serial correlation there is an F(1,14) of 0.03 against 4.60 at 5 per cent; for second order an F(2,13) of 0.04 against 3.81 at 5 per cent, and for third order serial correlation an F(3,12) of 1.05 against 3.49 at 5 per cent. That is for specification [15]. For specification [12] we have 0.25 for AR(1), 0.13 for AR(2), and 0.22 for AR(3), against an F(1,16) of 4.49, F(2,15) of 3.68, and F(3,14) of 3.34, at 5 per cent.

The residual correlogram does not present any kind of identifiable structure for both specifications.

Sixth, residuals pass the normality test with a Chi\(^2\)(2) of 0.78 for specification [12] and of 0.26 for specification [15], against 5.991 for 2 degrees of freedom at 5 per cent.
VI. Discussion of the Results.

For return migration we have the specifications [10] and [11] presented above. Their only difference is in the two period rate of change in the rent price variable. However, they provide the same features about their explanation of migration.

To begin with, rent price differentials are an important variable in explaining migration, as well as wage differentials, unemployment rate differentials, and disposable income differentials. Secondly, changes in rent prices differentials and wages differentials are more important in explaining return migration than levels. However, levels in unemployment rates differentials and disposable income differentials are more important than changes. For disposable income differential yesterday’s level is the relevant one, while for unemployment rate differentials both today’s and yesterday’s levels are relevant. The lag structure of unemployment rate differentials could be reflecting hysteresis effects on migration. Thirdly, the effects of the dummy variable are well defined. The employment growth differential is not relevant, for the reasons we suggested above. Moreover, as the above analysis of data suggested, return migration is influenced by emigration, particularly with the two lag effects. The stock of Spanish migrants represents another factor to account for.

In conclusion, levels in unemployment rates and disposable income differentials, as well as changes in rent prices and wages differentials are the important effects driving return migration. Emigration and the stock of migrants, representing flow and stock variables, are also significant explanatory variables.

We have for emigration the empirical econometric specifications reported in equations [12] and [15]. They differ in various respects. Firstly, they differ because levels in
disposable income differentials are important in specification [12], while the rate of acceleration in disposable income differentials is more important than levels in specification [15]. Secondly, changes in wage differentials are important in specification [12], and both levels and changes are important in specification [15]. Third, the dummy variable is only relevant in specification [15]. Finally, changes in regional migration flows are relevant in specification [15], while levels in specification [12]. This could be due to the fact that [12] is not gathering all long-run relevant information. We were unable to find any relevant effect of the replacement ratio variable. This suggest that unemployment benefit system has not played an important role in migration flows.

It is important to point out that there is a high negative correlation between the rent price differential variable lagged one period and the wage differential variable lagged two periods (i.e. \( rpid_{t-1} \) and \( rwd_{t-2} \)). A logical way of explaining this correlation could be the following. If there is an increase in emigration, that it can be due to several reasons. This increase in emigration will reduce the work force in Spain, exerting an upward pressure on wages, and at the same it will increase the work force in the destination country, where there will be a downward pressure on wages. Thus, by both effects, wage differentials will decrease. However, there will be more people looking for housing in the destination country and less at home, which entails an increase in rent price differentials. It will take one period for this link to occur.

We previously established that there was a negative correlation between \( spmi_{-1} \) and \( rpid_{-1} \), and between \( rpid_{-1} \) and \( rwd_{-2} \), as well as a positive correlation between \( spmi_{-1} \) and \( rwd_{-2} \). If there is an increase in emigration we saw above that wage differentials will decrease and rent price differentials will increase, and it will take one period for this link to occur. The reduction in wage differentials entails a decrease in emigration. This decrease in emigration may discourage tomorrow's emigration. Thus rent price differentials will
increase at the same time that emigration decreases.

We now relate emigration specification to return migration specifications. We should remember that both specifications come from the underlying theory specified above in the relationship [9].

First, all the variables introduced in the relationship [9] explain migration flows. The labour market performance differences, as well as employment probabilities, are accounted for in the unemployment rates. Thus, unemployment rate differentials are a key variable in explaining migration flows (addressed by Todaro(1969)). In return migration, as well as in emigration, levels in unemployment rate differentials and not changes are the important effects in explaining migration. However, for emigration, changes in unemployment rates in the destination country are also relevant.

Second, levels in disposable income differentials are more important than changes in explaining both emigration and return migration, except in specification [15] (for emigration), where the rate of acceleration is the relevant variable.

Third, changes in wage differentials are more important in explaining migration flows than levels. However, we can consider both wages and disposable income as components of a wider variable called income. Changes as well as levels in income differentials are both important in explaining migration flows.

Fourth, we can conclude that the Spanish emigration pattern suffered a structural breakdown around 1974–75, as the Chow tests show. The return migration specifications do not present this structural breakdown. They pass the Chow test perhaps because we have flow emigration as an explanatory variable of return migration, and the structural
breakdown is already accounted for in the flow emigration variable.

Fifth, if one expects the rent price variable to be an important component of prices, then the lag structure of the wage (or income) variable and rent price variable should be the same. If this is not the case, then the coefficient of rent price variable may reflect imperfections (shortages) in the housing market. The different pattern in rent prices between Spain and Germany/France in the 1960s (reported in the data section above), could imply such imperfections.

Let $p^*$ be the general price index and $W$ be the nominal wage. The log of real wages is $\log(W) - \log(p^*)$. If we assume that the general price index is the weighted sum of the rent price index, $r$, and the other price index, $p$; that is, $\log(p^*) = \theta \log(r) - (1-\theta)\log(p)$ where $\theta$ is the weight. Then the log of real wages could be expressed as:

$$\log(W/p^*) = \log(W) - \log(p^*) = \log(W) - \theta \log(r) - (1-\theta) \log(p) = \log(W/p) - \theta \log(r/p)$$

[16]

Thus, the lag structure of the wage variable and the rent price variable should be the same in the case that rent prices is purely a component of prices. But if the rent price variable accounts for imperfections in the housing market, then it could appear in the regressions as:

$$\log(r/p^*) = \log(r) - \log(p^*) = \log(r) - \theta \log(r) - (1-\theta) \log(p) = (1-\theta) \log(r/p)$$

[17]

Then, the lag structure of both variables could be different.

The results support this latter view, that is the rent prices may be partly reflecting
imperfections in the housing market. In the return migration specifications, the lag structure of wages and rent prices is not quite the same for specification [11] (even if we include the disposable income as a part of a wider variable called income, instead of just wages); while for specification [10] the lag structure is the same. Hence, the levels specification is not reflecting imperfections in the housing market.

For the emigration specifications, both present different lag structure for the wage variable and the rent price variable (the different lag structure also holds if we include disposable income).

We now discuss the steady state solutions and implications of our estimated equations. We define the steady state variables as $x_{t-j} = x^*, \forall j=0,N$.

For return migration both specification, [10] and [11], yield the same steady state equation:

$$
spbkgr^* = c + (\beta_2 + \beta_3) spmigr^* + \beta_4 stock^* + (\beta_7 + \beta_8) lud^* +
+ \beta_9 lrpdi3^* + \beta_{10} dv^*
$$

Thus, unemployment rate differentials and personal disposable income differentials, as well as emigration and the stock of migrants, are the relevant variables in determining the long run equilibrium of return migration. Given our estimates, the effects of these variables on the long run equilibrium are, for specifications [10] and [11], respectively:

$$
spbkgr^* = 0.016 + 0.658 spmigr^* + 0.036 stock^* + 0.074 lud^*
- 1.419 lrpdi3^* + 0.084 dv^*
$$

$$
spbkgr^* = 0.084 + 0.649 spmigr^* + 0.021 stock^* + 0.145 lud^*
- 1.378 lrpdi3^* + 0.144 dv^*
$$
The steady state solutions of our estimated equations for emigration are two. From specification [12],

\[ \text{spmi}^* = \frac{1}{1-\beta_1} \left[ \beta_2 \text{rpid}^* + \beta_4 \text{ud}^* + \beta_5 \text{did}^* + \beta_7 \text{reg}^* \right] \]  \hspace{1cm} \text{[21]}

and from specification [15],

\[ \text{spmi}^* = \frac{1}{1-\beta_1} \left[ \beta_2 \text{rpid}^* + \beta_4 \text{rwd}^* + \beta_5 \text{ud}^* + \beta_9 \text{dv}^* \right] \]  \hspace{1cm} \text{[22]}

Thus, unemployment rate differentials and personal disposable income differentials, as well as rent price differentials and wage differentials, are the relevant variables in determining the long run equilibrium of emigration. The particular effects of these variables on the long run equilibrium of emigration are, for specification [12] and [15], respectively:

\[ \text{spmi}^* = -2.861 \text{ rpdi}^* - 0.393 \text{ ud}^* + 2.687 \text{ did}^* + 0.145 \text{ reg}^* \]
\[ \text{spmi}^* = -1.638 \text{ rpdi}^* + 2.244 \text{ rwd}^* - 0.598 \text{ ud}^* - 0.376 \text{ dv}^* \]

The steady state equation for return migration, equation [10], and the steady state equation [15] for emigration entail both two steady state solutions. This is due to the role of the dummy variable. This variable entails a jump in the steady state when it takes the value one (1973 to 1978). When this variable takes the value one the economy jumps from one steady state solution to another long run equilibrium path, and given the agents' expectations the economy will move to the new steady state solution along this new path (if we assume perfect foresight, the economy will directly jump from one equilibrium to the other). Once the effect that the dummy variable capture (in our case the Spanish wage boom and higher union pressure) is over, the economy returns to its previous long run equilibrium path.

The steady state solutions for return migration are,
(spbkg, spmigr, stock, lud, lrpdil) when dv = 0

(spkg, sper, stock, lud, lrpdil, dv) when dv = 1

We also have the same feature for emigration. We have three steady state solution for emigration. The steady state equation [12] gives us one solution, and the equation [15] gives us two steady state solutions, one when the dummy variable takes the value one and other when it takes the value zero.

Finally, we have the result that the long run equilibrium of return migration only responds to the unemployment rate differential variable and to the personal disposable income differential variable, while the long run equilibrium of emigration responds to the rent price differential variable and the wage differential variable as well. This may be explained by the fact that when people are deciding whether to migrate or not they are considering all the relevant variable and their effects (which are available, given informational restrictions). They seek higher wages, taking into account the possibility of higher cost of housing, to get a job, and to improve the standard of living. However, deciding whether to return or not, if they want to return for example, for social and psychological reasons (ie. family, home, friends, cultural similarities), but they cannot get a job (that is the reason for the unemployment rate variable) or they standard of living is going to shrink to much (that is the reason for the personal disposable income variable) they will give up to go back. Given that they can get a job and their standard of living will not change, their social, cultural and psychological reasons are strong enough to decide to go back home.

We investigated the extent to which only differentials matter. There is the idea that all voluntary flows are higher in good times than in bad. In other words, there must be some effect of the overall level of economic activity, not just a differential. For this reason,
it was included the unemployment rate in the market of origin and the unemployment rate in the destination market. The unemployment rate in Germany is an important variable in emigration flows, reflecting that the level of economic activity (in the destination country) matters. However, in the long run only differentials matter.

VII. Conclusions.

We have analyzed the determinants of migration decisions. We have constructed an empirical model identifying and explaining the main determinants of Spanish migration flows to and from Gemany and France. We started with a review of the main features of Spanish migration flows. Afterwards we introduced our framework of analysis. This helped to highlight the relevant variables to explain migration flows.

We find that levels in unemployment rate differentials are more important than changes, yet for flow emigration the rate of change in unemployment rates in Germany and France is also relevant. Levels, as well as changes in income differentials (ie. wages and disposable income differentials) are also important effects to explain migration flows. The cost of housing, measure by the rent price index differentials is important as well. The level is its relevant effect on emigration, and the rate of change is the important effect on return migration. The steady state solutions of our estimated equations suggest that the long run equilibrium of return migration is determined by unemployment rate differentials and personal disposable income differentials, as well as emigration and the stock of migrants. The long run equilibrium for emigration, in contrast with return migration, is influenced by wage differentials, rent price differentials, unemployment rate differentials and disposable income differentials.
What implications have our results for future Spanish migrations flows? Our analysis suggests that if the gap between real wages abroad and in Spain falls, and the gap between housing costs, personal disposable income and unemployment rates do not change, emigration will fall. Given that emigration is already low and the real wage differences are disappearing, as well as the differences in housing costs, and the gap in per capita disposable income is stable or with a low tendency to fall, we do not expect much more emigration than the present one. There is an important fact that can alter this conclusion, but not in large scale, that is the unemployment rate differences. It is likely that the unemployment rate will continue to fall in Spain (it has fallen from 19.5 per cent in 1988 to 16.3 per cent in 1990), which may reduce emigration a bit more.

Therefore, we do not expect high changes in the pattern of Spanish migration in the near future. It will be low at the present levels, around 0.003 per cent of Spanish population. Related to return migration, we expect that it will continue as long as emigration will go on, and given the likely reduction of unemployment rate differentials. It is important to point out that figures of migration flows as high as in the 1960s are very unlikely to occur again.

These results could also be useful to draw some implications for 1992 and beyond in European migration flows. The tendency within EC borders is towards homegenization and to the reduction in regional differences through the EC regional and compensation policies. Given these tendencies, it may then be unlikely to see large movements of labour beyond 1992, and we do not expect changes from the current levels.
## Appendix A.

### TABLE 1.

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<th>Return Migration Equations by OLS for 1963—88</th>
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Nb. In both tables we report t–ratios in parenthesis. In columns (1) and (2) t–ratios are from normal standard errors, and in columns (3) and (4) t–ratios are from heteroscedastic consistent standard errors.
Fig. 1. Spaniards migrating to Germany (spmlgr) and Spaniards coming back from Germany (spbkgr).

Fig. 1'. Spaniards migrating to France (spmifr).
Fig. 2. Differential between the log of German and Spanish real wages in national prices (lwrd) and in Spanish prices (lwrdz).
Fig. 3. Log of the unemployment rate in Germany (lugr), in Spain (lusp) and the differential (lud).

Fig. 4. Log of real rent price of Germany (lripgr) and Spain (lripsp).
Fig. 5. Differential between the log of per capita disposable income of Germany and Spain in national prices (lrpdid) and in Spanish prices (lrpdid 3).

Fig. 6. Differential between the growth rate of employment in Spain and Germany (legrd).
Average of Spaniards migrating to Germany and France (SPMI).

Differential between the average of the log of real rent price of Germany and France, and the Spanish one.
Differential between the average of the German and French real wages, and Spanish real wages in national prices (rud) and in Spanish prices (ruds).

Unemployment rate differential between the average of German and French rate and the Spanish rate (ud). The average is ugf.
Differential between the average log of personal disposable income of Germany & France, & the Spanish one in national prices (did) & Spanish prices (dids)

Employment growth differential between the average of Germany and France, and the Spanish unemployment growth.
Data Appendix.

Sources.

(1) German, Spanish, and French Statistics Yearbooks
(2) OECD: Historical Series
(3) OECD: Statistics of Labour Force
(4) IMF: Supplement of Price Statistics, No.12
(6) IMF: International Financial Statistics

Variables Definitions.

spmigr: Spaniards migrating to Germany (outflow) divided by Spanish population and multiplied by 1000. From 1960 to 1988.

spmifr: Spaniards migrating to France (outflow) divided by Spanish population and multiplied by 1000. From 1960 to 1988.

spbkgr: Return Spanish migration from Germany (inflow) divided by Spanish population and multiplied by 1000. From 1960 to 1988.

The data on Spanish flows are from the German and French Statistics, respectively. It is not the data on emigrants assisted by the Spanish Emigration Institute, but the data on Spaniards going into and leaving Germany for reasons different than tourism provided by the German customs statistics. The French data also comes from similar sources within France.

stock: It is the stock variable which represents the Spaniards in Germany. As we do not
have the stock of Spaniards in Germany prior 1960, we consider it as zero in 1959 and construct the variable by adding to the previous year stock the net flow of Spaniards to Germany of the current year. It is divided by Spanish population and multiplied by 1000. Some caveats apply to this variable, it ignores mortality and spaniards who migrate to and from third countries.

ptadm & ptafr: exchange rate Spanish peseta DM/Franc (pesetas per DM/Franc).

lrwgr, lrwsp & lrwfr: log of real wage rate per worker employed. From 1960 to 1988. Spanish wages are not available until 1963. Therefore, we have estimated 1960–62 by regresing Ln(RWSP) on Ln(Real aggregate WSP), lagged, trend, constant, for 1963 to 1973 and using fitted values to estimate 1960–62. We did the same regression but with real industrial output index as regressor instead of real aggregate wage. The results differ after the third decimal, but a little bit.

lrw: log of German wages in Spanish prices. From 1960 to 1980. It is calculated by multiplying the german nominal wage index by the exchange rate index and deflated by the Spanish price index.

\[ \text{lrw} = \left[ \frac{[\text{wgr*}(\text{ptadm})\text{index no./cpisp}]}{\text{cpisp}} \right] \times 100 \text{ or} \]

\[ \text{lrw} = \left[ \frac{[\text{wgr*}(\text{ptadm})\text{index no.}]}{\text{cpisp}} \right] \]

lrw1: log of French wages in Spanish prices. From 1960 to 1980. It is calculated by multiplying the french nominal wage index by the exchange rate and deflated by the Spanish price index.

lrwd: lrwgr – lrwsp
lrwd2: lrw – lrwsp
lurgr, lursp & lurfr: log of unemployment rate (as a percentage of total labour force) in Germany, Spain & France. From 1960 to 1988.

lud: lurgr − lursp
lud1: lurfr − lursp


lrpid: lrpigr − lrpisp
lrpid1: lrpifir − lrpisp


lrpd:log of per capita disposable income of Germany in Spanish prices. From 1960 to 1988. It is calculated by multiplying the national disposable income per head of Germany by the exchange rate pta–dm. Then we make a index number (1980=100) and we deflate the index number by the spanish consumer price index (1980=100) and it is multiplied by 100.


lrpdid: lrpdisp − lrpdirf
lrpd2: lrpdirfr − lrpdisp
lrpd3: lrpdi − lrpdisp

cpig, cpisp & cpirf: consumer price index (year to year percentage change) of Germany,

legr, lesp, lefr: log of employment rate (employment as a percentage of total labour force) in Germany, Spain and France. From 1960 1988.

legr1, lesp1: Growth rate of unemployment in Germany and Spain. From 1961 to 1988.

$$\text{NB. } \text{legr} = \text{legr} - \text{legr}(-1) = \ln(\text{eggr}) - \ln(\text{eggr}(-1)) =$$

$$=(\text{eggr} - \text{eggr}(-1))/\text{eggr}(-1) = \text{legr}$$

$$\text{lesp1} = \text{lesp} - \text{lesp}(-1) = \text{lesp}$$

legrd: $(\text{legr}1 - \text{lesp}1)*100$. From 1961 to 1988.

$$\text{spmi} = 1/2*(\text{spmigr} + \text{spmifr})$$
$$\text{rpid} = 1/2*(\text{lripigr} + \text{lrfifr}) - \text{lripisp}$$
$$\text{rwd} = 1/2*(\text{lrwgr} + \text{lrfwr}) - \text{l rwsp}$$
$$\text{ud} = 1/2*(\text{l uigr} + \text{l uifr}) - \text{l uisp}$$
$$\text{d id} = 1/2*(\text{l rpdigr} + \text{l rpdifr}) - \text{l rpdisp}$$
$$\text{egr d} = 1/2*(\text{legr}1 + \text{lefr}1) - \text{lesp}1$$
$$\text{rwds} = 1/2*(\text{l r wgr} + \text{l r wfr}) - \text{l r wsp}$$
$$\text{d ids} = 1/2*(\text{l r pdi r} + \text{l r pdi f r}) - \text{l r pdisp}$$
$$\text{ugf} = 1/2*(\text{l uigr} + \text{l uifr})$$

dv: Dummy variable to control for the Spanish wage boom, the higher level of union pressure and the political transition. This variable is 1 from 1973 (death of Franco’s Prime Minister) to 1977 (Pactos de la Moncloa), and zero otherwise.
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