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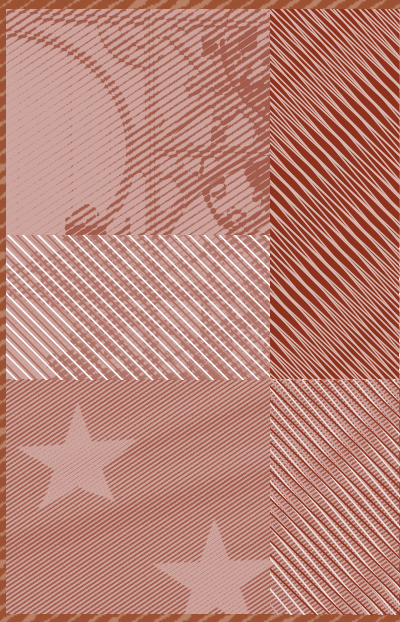

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Juan S. Mora-Sanguinetti (*) (**)

BANCO DE ESPAÑA

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Abstract

Compared with the rest of the European countries the weight of the house property market in Spain is very high, which is consistent with the weakness of the tenancy market. In this context, it has often been argued that an inefficient judicial system, implying a cumbersome procedure to evict a non-paying tenant or simply needing a long period to execute a decision, may be an important determinant of the tenancy market weakness, as it constrains the effective supply by reducing the profitability of landlords. This research has studied this effect econometrically using a panel data approach and exploiting the differences in the judicial efficiency that exists among the Spanish provinces. After controlling for several other factors, this study concludes that the degree of inefficiency of the judicial system has a positive, although minor, impact on the differences in the property share among provinces in Spain.

JEL Classification: K40, R21

Keywords: judicial efficiency, property market, tenancy market, contract enforcement.

1 Introduction

Since the Spanish Civil War (1936-1939) the weight of the house property market has been increasing persistently in Spain. Although the official statistical information available is very scarce, using the census database it is known that the proportion rose from 63.4% to 82.2% between 1970 and 2001. Moreover, following the estimations of the Spanish Ministry of Housing (2008) the average property rate rose in a further 2.1 percentage points in the period 2001-2007.

Several factors may have affected the evolution of the property share in Spain over the last decades. Among those are the interest rates that have fallen down [Blanco and Restoy (2007)] especially after 1995, the liberalization of the banking sector since 1980 that may have played an indirect role [Kumbhakar and Lozano-Vivas (2004), Iacoviello and Minetti (2003)], the tenancy laws that have become more stringent after the II World War [Mora (2008)], or the favorable fiscal regime of buying versus renting [López García (1996), García-Vaquero and Martínez (2005)].

Several studies have pointed out that the factors mentioned above are not exclusive of Spain and that the increase in the property rate can be found in several other markets of the European Union and also in the United States [Louvot-Runavot (2001)]. Nonetheless, the weakness of the tenancy market as compared to the property market is somehow exceptional in Spain. This situation is generally regarded as undesirable for several economic reasons. The most important one is perhaps that a weak tenancy market is related to lower mobility of persons and workers [Maclennan *et al.* (1998) and Barceló (2006)] which tend to increase the unemployment rate [Layard *et al.* (1991)] and to reduce the efficiency of the economy [Hardman and Ionnides (1999)]. More recently, Arce and Lopez-Salido (2007) stressed how a well developed house renting sector can be a crucial device to avoid housing prices bubbles and an excessive concentration of resources in the building sector. As a result of these concerns, and especially during the housing boom experienced in Spain in the last decade, the Spanish authorities have paid systematic attention to the problems of the housing market.

In this context a new Law was passed in December 2009 introducing new regulatory measures aiming to protect the owners of rented dwellings.[1] These reforms were directed to improve the functioning of the tenancy market, and thus, to reduce the weight of the property market. Those measures included, on one hand, a reform of the Spanish "Civil Procedural Law" (CPL, *Ley de Enjuiciamiento Civil*[2]) in order to speed up evictions and the collection of rents by the owners and, on the other hand, a reform of the Spanish Tenancy Law (*Ley de Arrendamientos Urbanos*[3]) giving the owner more legal grounds to shorten up the term of the tenancy contract.

Underlying those measures is the idea that both a slow judicial system (implying a cumbersome procedure to evict a non-paying tenant or simply a lengthy period to execute a decision) and too strict rules governing the tenancy contracts (such as rules limiting the

1. Law 19/2009 of November 23rd (*de medidas de fomento y agilización procesal del alquiler y de la eficiencia energética de los edificios*).
2. Law 1/2000, of January 7th (Civil Procedural Law).
3. Law 29/1994, of November 24th.

possibilities of the landlord to recover the flat for his own use) have been detrimental for the tenancy market as they reduce the effective supply and may have contributed to reduce the share of rented dwellings. That is the result found, in a general (international) basis by some papers in the economic literature. For instance, Djankov *et al.* (2003) proposed a measure of formalism of the judicial system when evicting a non-paying tenant. They concluded that higher formalism is related to more difficult evictions and higher unpredictability of the procedures.[4] Casas-Arce and Saiz (2006) used the measure of Djankov *et al.* (2003) to explain the decision between owning and renting in a set of countries. They found that more formalism is expected to reduce the weight of the tenancy market although their conclusions are directed to an international analysis.

Organization and objectives of this research

This paper aims to analyze the impact of an inefficient judicial system in Spain on the housing tenure outcomes. In order to do that, I exploit the cross-province variation existing in the weight of the house property market in Spain and in the performance of the judicial system when it solves tenancy conflicts (and when it executes decisions). Landlords are supposed to quit the tenancy market when they are opposed to an environment in which it is very difficult to enforce tenancy contracts. Thus, the present research aims to assess to what extent the efficiency of the functioning of the judicial system explains the variation of the weights of the property market in the Spanish provinces.

In order to do that I have constructed an index of judicial efficiency for each Spanish province based on official judicial data.[5] Then, its impact in the property share is estimated after controlling for a set of other relevant economic and demographic factors.

The overall organization of this paper is as follows. Section 2 presents a descriptive analysis of the cross province variation of the property rate in Spain and constructs the judicial efficiency indicator used in the main estimations. Section 3 explores the empirical literature that discusses how to model the housing tenure decisions. It also presents the variables used in this research. Section 4 presents the estimations using panel data techniques. Finally, section 5 offers the conclusions of this study. Two annexes complete the paper. Annex A presents alternative estimations when other judicial efficiency measures are taken into account. Annex B explores theoretically the hypothesis tested in this paper.

4. The results and methodology by Djankov *et al*. (2003), although very relevant, cannot be used in the experiment that is proposed in this paper because, as it was said, they work on an international level and for a specific year. Therefore, they cannot capture the variability in the efficiency within a specific country. The latter may be caused by differences in the application of the Civil Procedural Law and not by the Civil Procedural Law by itself [see Mora (2009) for a discussion on the topic].

5. Other indices are also constructed and tested in the annex A of this paper.

2 Measuring the judicial efficiency and the property rate in the Spanish economy

The owner who wants to collect an unpaid rent or wants to evict a tenant for whatever reason (non-payment, vandalism) in Spain has to use the procedures set up by the CPL.[6] This paper is interested on measuring the efficiency of the judicial system when dealing with those procedures (specifically applied to the tenancy market conflicts).

The CPL is the basic procedural regulation of the judicial system. It establishes the rules of access to the court system, the formalisms that the parties must observe, the role of the judge, the rules governing evidence, the control by superior instances and all related issues. Therefore that Law is a main determinant of the "aggregated" slow (or fast) performance of the judicial system in Spain. Although it is a national-wide Law, its application differs among Spanish provinces. A reasonable explanation for that is that the workload of the judges may be different among the provinces and that the resources invested in the justice Administration differ at least at a region[7] level. However, courts are not specialized in Spain and therefore no information exists on the means invested by type of conflict. In any case, it is possible to observe that the efficiency of the judicial system diverges among the different provinces of Spain over time so that a panel with information on the functioning of the judicial system could be constructed. It is reasonable to expect that in the most inefficient provinces, in which it is more difficult to evict a non-paying tenant or it is more difficult to have the rent paid through the judicial system, landlords will opt to quit the tenancy market (and thus the share of tenancy in the province will diminish).

For tackling this problem, a relevant question arises: What are the specific procedures needed for recovering an unpaid rent (by a tenant) in Spain? The Civil Procedural Law (2000) establishes a specific procedure for recovering such a debt: first, a "*declaratory judgment*" will "declare" the existence of the debt and will declare the obligation of the debtor to pay. We can call that "first stage" or "first procedure" because there is still the possibility that the tenant decides not to pay the debt. In such a case, a final or definitive, procedure *("executory process")* takes place. In the "executory" stage the creditor asks the judge to "execute" the debt. As a result of this final procedure, the judge will seize the amount from the bank accounts of the debtor and probably will evict him from the dwelling.

The General Council of the Judicial Power *(Consejo General del Poder Judicial,* CGPJ) has published a database reporting the number of cases filed, solved and still pending in the Spanish judicial system by subject, region, court[8] and year. From that database a relative measure of efficiency can be constructed for the enforcement of each procedure: the congestion rate (see equation 1 below). The congestion rate is defined as the ratio between the sum of pending cases (measured at the beginning of the period) plus new cases in a specific year and the cases resolved in that same year [Padilla *et al.* (2007)]. A lower congestion rate is related to greater efficiency of the judicial system. Two alternative

6. It must be noted that some extrajudicial solutions may be found by the parties, as sending the case to arbitration. However, only a judge can execute an eviction in Spain.

7. The "*Comunidades Autónomas*" (regions) have some powers related to the administration of justice in Spain. Even though the "judicial power" is not propertly transferred to the regions, the management of the means of the "judicial power" is influenced by the policies developed by the regions. For instance, they decide how much money is invested in new courts each year in their territories, even though the new courts are integrated in a system that is centrally governed.

8. The "courts" analyzed in this study are the *"juzgados de primera instancia"* and the *"juzgados de primera instancia e instrucción"*. Those are the courts available for the parties at the "entry level".

measures of efficiency (the resolution rate and the pending cases rate) are explained and tested in the annex A.

$$Congestion\ rate_{i,t} = \frac{Pending\ cases_{i,t} + New\ cases_{i,t}}{Cases\ resolved_{i,t}} \quad (1)$$

The CGPJ offers homogeneous data for the different procedures for the period 2001-2007.[9] The prefix "*prt*" precedes the efficiency measure related to procedures in the "declaratory stage" (or as we called it, "first" procedure): *prtcongestion*. The prefix "*ex*" precedes the efficiency measure related to the executions: *excongestion*. Table 1 shows the descriptive statistics for those computations (also for the alternative efficiency measures studied in the annex A). Table 2 shows the results for the congestion rate when studied for the executions *(excongestion)* in the period 2001-2007.[10]

An average congestion rate of 3.97 over the period 2001-2007 (see table 1) indicates that around four cases (summing up the pending cases and the new cases arriving to the courts in a specific year) were waiting to be solved when the courts were able to solve just one. In the worst case, this amount was almost 10. As it can be seen, there was, on average, a difference of 5.98 congestion points between the most efficient and the least efficient province throughout the period.

Graph 1 represents this quotient for the years 2001 and 2007. A decrease in the efficiency of the system can be observed throughout the period. Looking at the graph it can also be seen that no specific provincial pattern seems to show up in the reduction of the efficiency of the judicial system. However, the Basque Country has a better performance all over the period.

What was the evolution of the property rate during this period (2001-2007)? The proportion of property among the total number of principal dwellings in Spain (called "*Prprop*" in the tables) is in fact chosen as dependent variable in this research. That proportion is the aggregate counterpart of the individual housing tenure decision. The data are obtained from the Spanish Ministry of Housing (2009) and are available for the period 2001-2007 for 50 Spanish provinces (then, excluding Ceuta and Melilla).[11] This classification divides the principal houses in three groups: dwellings in the property market, dwellings in the tenancy market, and "transferred dwellings" (cessions or non-lucrative use of the houses). On average, in 2007, 88.2% of the dwellings were in the property market, 9.8% were in the tenancy market and 1.9% were "transferred houses" (cessions). Table 3 shows the descriptive statistics of this variable.

On average the share of property in the Spanish economy is very high (with a mean of 88.6% over the whole period) although some strong differences can still be found among provinces (share below 80% in the Balearic Islands, Las Palmas, Girona or Barcelona in several years and above 94% in Lugo, Soria or Castellón at the end of the period).

9. Note that the new CPL (2000) entered into force on 7th of January of 2001. This new CPL changed radically several aspects of the civil procedures in Spain [Mora (2009)] and therefore it is not advisable to relate the data after 2001 with previous observations in this specific research.

10. Excluding Ceuta and Melilla (no information is available for them).

11. Note that the data is provided in November of each year and not in January. That fact is taken into account in the estimations.

Thus, there is some ground to explain and exploit inter-provincial differences. Table 4 presents the property shares between 2001 and 2007.

Moreover, some strong dynamics can be found at a provincial level. The province with the highest proportion of property in 2007 was 3.9% higher than the equivalent in 2001. More importantly it is to note that during this period there is a difference of at least 14% between the province with a higher proportion of property and that with the smaller one. Thus, some local factors may be affecting the provincial markets that are different from those that can be identified at an aggregate level.

Graph 2 represents the average congestion rate (and also the resolution rate and the pending cases rate as defined in annex A) over the period 2001 and 2007. The graph confirms the reduction in efficiency already seen in the maps. The graph also represents the average property rate in the same period. As it can be seen in this graph, a reduction in the efficiency of the judicial system when solving tenancy conflicts (by an increase in the congestion rate) took place at the same time that the property rate was increasing.

The aim of this paper is to test econometrically (taking into account all the usual controls analyzed and identified in the literature) if there exist any significant relation between an increasing rate of inefficiency in the judicial system (when dealing with the conflicts related to the tenancy market) and the observed increase in the property share in the period analyzed. An increase in that proportion is expected if, ceteris paribus, the judicial system becomes more inefficient when solving conflicts affecting the rental market (that is, if renting becomes more “problematic”).

3 Modeling the effects of institutions on the housing tenure outcomes

Empirical literature review

Several economic studies point out that a wide group of socio-economic factors (economic, demographic or social determinants) affect the decision of buying or renting a dwelling (from the point of view of a potential tenant or a potential buyer) or the decision of putting a property in the rental market (from the point of view of the potential landlord). Among them it can be included the permanent income of individuals, the relative price of buying versus renting (or the user cost), financial restrictions, taxation and some demographic variables.[12]

Although all the determinants affecting one side of the market will have an effect in the equilibrium share of property or tenancy of the economy (and thus would be affecting indirectly both sides in any moment), some studies split those factors as mainly "demand factors" or "supply" factors (affecting more directly the decisions of landlords). Other determinants, as prices would affect both sides of the contracts at the same time and should be treated as endogenous.

This subsection aims to provide a very partial survey of both the empirical literature and the most studied variables affecting the housing tenure choice. Special attention is paid to the "demand" or "supply" considerations if they were analyzed.

First of all, several works discussed the effect of pure demographic factors such as the proportion of young population or the proportion of married couples on the share of property of the economy (as an outcome of the housing tenure choice) [see Jaffe and Rosen (1979) or Green (1995)]. We would expect that the tenancy rate is positively related to the proportion of young population but negatively related to an increase in the share of married couples. Following the same references, those factors are usually identified as "demand" factors. In fact, the age of a landlord has not been a point of discussion in the same research.

In turn, another demographic factor, the population density, would be affecting mainly the landlord decisions (the supply side) and not the tenant side. Linneman (1986) argues that landlords face reduced costs of monitoring and higher efficiency in supplying housing services in the case of highly populated towns. Thus, we would expect to find a negative relation between homeownership and population density coming from the landlords side [also Fisher and Jaffe (2003)].

The effect of wealth in the house tenure decision is also widely studied in the literature [De Leeuw and Ekanem (1971), Haurin *et al.* (1996)]. In several studies it is found that, among other factors, the homeownership rate is positively related to GDP *per capita* or similar income measures (reducing the demand for tenancy), although that relation is not always significant [Fisher and Jaffe (2003)].[13]

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12. Other factors cited in the introduction, such as the tenancy Laws are not studied in the rest of this work as they will not introduce any interregional variation to exploit in the estimations.

13. Theoretically it could even have the opposite sign (Henderson and Ioannides, 1983). See the discussion in the annex B.

Credit constraints and financial capacity are also determinants of the tenancy or property share observed in the economy. They affect mainly the tenant/buyer side as the financial constraint will prevent some tenants to buy a property [Jaffe and Rosen (1979), Hargreaves (2003), Lauridsen and Skak (2007), and Mayordomo (2008)]. In fact, this effect may be coincident with the age, as younger individuals may face higher constraints because their actual income is much lower than their future earnings [Lafayette *et al.* (1995)].

Finally, the price of renting versus buying affects both sides of the contracts. To put it another way, it can be understood as the outcome of the contracts in the market. In any case, the higher the price of buying (with respect to the price of renting a dwelling), the higher the number of individuals opting for renting a house. The opposite argument would hold for the other side of the contract (the landlord/seller). The measure of "prices" takes very different forms in the literature: in some cases some works have estimated the effect of rental prices [Jaffe and Rosen (1979)], while others opt for relative measures. For instance, Hendershott and Shilling (1980) studied the effect of the relative cost of owner-occupied dwellings and the rental prices. In turn, Rodríguez and Barrios (2004) and Barrios and Rodríguez (2004) calculated a user cost taking into account both the price of buying and the price of renting and some fiscal issues related to them. Several types of public intervention such as the fiscal incentives or the provision of public housing may play also a significant role [Rosen (1979), Rosen and Rosen (1980), and Lauridsen and Skak (2007)].

Thus, in general, while the demand of housing services is directly driven by a group of heterogenous factors ranging from demography to wealth, the supply side (landlords and sellers) is mainly affected by the interaction with costs, frictions and prices (derived from some heterogenous factors as the user cost of the properties, the actual relative prices of selling versus renting, the population density or the regulatory measures introduced by the tenancy laws). If more frictions are suffered in the tenancy market some landlords will decide to quit the tenancy market.

In this context, one extra "cost" that a landlord face and that is not studied in the previous literature is the "judicial inefficiency". The landlord, who cannot enforce a tenancy contract because the judicial system is slow or costly enforcing those contracts, will loose part of the flow of rents or will loose part of the value of his property. Thus, an owner may decide not to put his dwelling into the tenancy market affecting with his decision the share of property and tenancy observed in equilibrium. This argument is also discussed theoretically in the annex B.

The judicial efficiency can be considered then, as an exogenous variable affecting the equilibrium price (together with the quantity of housing services in the market) affecting the equilibrium through movements in the supply curve (the theoretical framework explained in annex B can be used to rationalize this argument). Therefore, in an econometric implementation the price should be treated as endogenous and thus it must be instrumented with demand factors (see next subsection). For instance, an exogenous shock increasing the judicial inefficiency will affect the equilibrium price and quantity of housing services through a shift in the supply side (or investment) of housing services but not through the "demand curve". Thus, it will be necessary to instrument the price (or the user cost) using strictly "demand" instruments (that is, demand shifters which are not affecting the supply).

Empirical strategy

As it was already introduced, the objective of this research is to offer estimations of the effect of the inefficiency of the judicial system on the proportion of property in the economy. The judicial inefficiency can be understood as an extra cost that landlords face when they rent their properties in the market. Therefore, I propose to estimate a *supply* curve.

As it was discussed before, the "price" (taking the form of a relative rent or a user cost) will be an endogenous variable as we face a simultaneity problem. That is, the price and quantity are jointly determined by the demand and supply curves of the market. Thus, as my objective is to estimate a supply curve I will instrument the price using several demand shifters (proportion of young renters, wealth, credit availability and the proportion of social housing) (see subsection 3.4).

The following general model is proposed (equation 2).

$$\text{Share of property in the province}_{i,t} = c + \Sigma c_t T_t + \beta_1 \text{ "Price"}_{i,t} + \beta_2 \text{ Judicial inefficiency}_{i,t} + \beta_3 \text{ Density}_{i,t} + (\eta_i + \nu_{i,t}) \quad (2)$$

Measuring β_2 is the focus of this research. We also expect that the population density is negatively related to the property share. The "price" will take the form of a user cost or a relative price and will affect both landlords and tenants. As I aim to estimate a supply curve, the price should enter the equation with a positive sign. Other controls such as regional effects and time effects will be included.

Variables in the supply curve

Apart from the proportion of housing in the property (or the tenancy) market and the judicial efficiency measure, a supply curve should include also a measure of the price of buying (versus renting) or an approximation of the user cost and, following the literature, a measure of the population density.

PRICE AND USER COST

In the main estimations I will include a measure of "user cost" *(Usercost)* as independent variable (it will be treated as an endogenous variable in the estimations). The user cost is constructed as follows (see equation 3):

$$User\,\text{cost} = \frac{PViv(i + \delta - \Delta PViv)}{P\,\text{Rent}} \quad (3)$$

In (3) *PViv* is the price of the squared meter of the average house in the province (obtained from the official accounts of the Ministry of Housing) and *PRent* is the rent paid for renting a squared meter in the average dwelling offered for renting in the province. The Ministry of Housing of Spain provides the average rent just for 2006 so the series have been enlarged following the evolution of the component of the consumer price index that captures the evolution of the rents. The resulting variable is defined for the period 2001-2007. "*i*" is the interest rate[14] that changes across time but no across provinces (see table 5).

14. Interest rate on lending for house purchase.

Finally, I also add a house depreciation rate "δ" of 2%.[15] Finally $\Delta PViv$ stands for the inter-annual increase in the housing price.

"*Price to rent*" is a variable constructed as the quotient of the price of the squared meter of the average house in the province and the rent paid for renting a squared meter in the average dwelling offered for renting in the province. As before, the variable is defined for the period 2001-2007.

POPULATION DENSITY

As it was already discussed, it also seems advisable to control the results by the population density *("density")* of the province as a way to control for the diversity of provinces in Spain and for the "efficiency" of landlords [Linneman (1986)]. Related to that, previous works have found a reduced share of property in areas with higher urban population [Fisher and Jaffe (2003)]. The population distribution in Spain differs greatly among the provinces. On the one hand the population in Spain is concentrated in the coastal provinces (Barcelona, Valencia, Málaga, etc). On the other hand, some provinces inland are quite low populated and have not attracted much of the new immigrants (Soria, Teruel, etc). See table 3 for some summary statistics.

"Demand shifters" and other controls

DEMOGRAPHIC VARIABLES

This work proposes to instrument the "price" by the following "demographic" variables: the proportion of "young" population in the Spanish provinces *(ppob2039)* defined as the ratio of the population that is 20 to 39 years old and that it is expected to have a higher proportion of tenancy than other population groups (although, at the same time, it is the group that applies more actively for mortgages) [Rodríguez and Barrios (2004)], the rate of nuptiality in the province, as it can influence the decision of buying a house *(nuptiality)* and the proportion of foreign population living in the province *(foreign)* because immigrants may be inclined towards renting as a result of their higher mobility. These variables are obtained from the official municipal population accounts (Padrón Municipal, INE). However, in the final estimations, the rate of nuptiality and the share of foreign population are not included as they do not have any significant impact in the relation.

"FINANCIAL" VARIABLES

Probably the most important controls to include in this study are those that can be grouped as "financial" variables: a measure of income *per capita* and two measures of easiness of access to credit and financial services (bankarization of the province and credit constraint). Both of them were studied theoretically by Henderson and Ioannides (1983) (annex B).

"ln GDPpc" represent the logarithm of the current GDP *per capita* once corrected by provincial purchasing power parities (PPPs). The source of the raw data is the regional accounts of the National Statistics Institute (INE). The information on provincial PPPs is obtained from Alcaide Inchausti *et al.* (2004) and Alcaide Inchausti and Alcaide Guindo (2008). Higher income is related in the literature with a higher weight of the property markets.

15. Following the Spanish Census of 2001, 2% of the buildings were in poor condition. I opt to use that percentage, although other sources point to higher rates: Naredo *et al.* (2005) propose a rate of house demolition of 0,397%, the American Housing Survey arrives to a rate of 0,295 and in the case of France the rate would be 0,25.

The rate of temporary employment, that is another typical macro variable, showed up to be non significant in this study.[16]

An increased access to financial services may also make available more credit to the individuals, and therefore may increase the share of property in the province. No direct measures of "financial" or "credit constrained" families is available for the Spanish economy for the whole period. Just some surveys provide that information for very specific years. Thus, it is necessary to construct alternative variables providing similar information for all the period under analysis. Two variables are proposed in this study: a measure of "*bankarization*" and an *ad hoc* measure of credit constraint *("credit")* (see below).

"*Bankarization*", that could be understood as a proxy for banking competition, is a variable constructed as the quotient of the number of banks, savings banks and other financial offices in a specific province and the population of the province in the specific year. The hypothesis could be that if more banks compete in the province more credit could be available. This variable does not have significant effects on the share of property.

Finally, it would be interesting to control for a variable of "*credit constraint*". As it was already discussed, no specific variable is available at a provincial level in Spain for all the years of study. Thus, this study captures that concept through at *ad hoc* variable called "*credit*". "*credit*" would be the residual ($\mu_{i,t}$) of the following estimation (see equation 4):

$$\text{Number of Mortgages}_{i,t} = c + \lambda_1 \text{GDPpc}_{i,t} + \lambda_2 \text{ppob2039}_{i,t} + \lambda_3 \text{Coast}_{i,t} + \mu_{i,t} \quad (4)$$

The residual of the regression (4) will assign a positive sign to the provinces and years in which the number of mortgages given to the families (obtained from the statistics of the National Statistics Institute and the Banco de España-Eurosystem) is still positive (on average) after controlling for its wealth (GDP *per capita,* with the same source as before), its population (taken as young population as defined before) and a dummy variable ("*coast*") taking value 1 for the Mediterranean and Andalusian coastal provinces plus the Balearic islands and the Canary islands).[17] It seems necessary to control for the variable "*coast*" as those provinces are a typical destination of tourism and foreign real-estate investments and that would be influencing the number of mortgages observed in the statistics. Note that the dependent variable of regression (4) is the number of mortgages and not the quantity of those mortgages (although that information is also available). That seems better because taking the quantity of the mortgages would bias the estimations in favour of provinces such as Madrid, Barcelona, Valencia, San Sebastian etc. in which the prices of housing are much higher than in the rest of Spain.

Thus, this variable ideally captures unexpected easiness of credit after controlling for the most typical and expected factors of concession of mortgages. Therefore it would be

16. Obtained from the EPA micro-data.

17. "*Coast*" takes value 1 for the following provinces: Girona, Barcelona, Tarragona, Castellón, Valencia, Alicante, Murcia, Almería, Granada, Málaga, Sevilla, Cádiz, Balearic Islands and Canary Islands (provinces of Santa Cruz de Tenerife and Las Palmas).

taken as a proxy for the inverse of credit constraint.[18] Table 3 presents some summary statistics of the variables already discussed.

PUBLIC SUPPORT, RULE OF LAW AND OTHER VARIABLES

An issue that may add some variation among the Spanish provinces is the differential "government support" [see among others, Atterhög (2005)] of renting or buying in the different regions or provinces of Spain. The provinces have no power to pass specific tax deductions for renting or buying a dwelling, although the regions (Comunidades Autónomas) do have that power.[19] Table 6 presents the evidence of regional tax deductions applied to home ownership (O) or tenancy (T) in the period 2002-2007.[20] It also highlights that the Basque Country and Navarre have a special (foral, F) tax system. It must be noted that no one of the deductions applicable in the rest of regions are "general deductions" because they apply to very specific population groups (young residents, handicapped citizens, etc.) or to special circumstances (for instance small towns in risk of population loss).

As a result, it would be advisable to take into account the different taxing systems in the Basque Country and Navarre. However, note that as long as we are going to estimate the model using fixed effects or first differences (see section 4) a dummy variable, "*basque*", taking value 1 for the three Basque provinces (Alava, Guipuzcoa and Vizcaya) will be dropped in any case because of collinearity.[21] With respect to the rest of deductions, it does not seem advisable to construct variables to capture all those effects for the following reasons (taking into account the small number of observations available for this research): most of them apply to young population, thus their effect is captured by the proportion of young population in the Spanish provinces, *ppob2039*, that will be taken into account in the estimations. With respect to other deductions applicable for even more specific circumstances (handicapped citizens, targeted towns), their scope is too limited to be taken into account in this setup.

A final relevant question would be this: Are there other main interventions in the housing market in Spain? Spain has some strong instruments of intervention, such as a general house ownership deduction, a National Housing Plan and a Tenancy Law affecting the rules of the tenancy contracts. The Tenancy Law is the same for all the country and thus is not taken into account in this research. However, as result of the Housing plans, the number of social houses constructed in the provinces may differ. I take into account its effect in the market through the variable "*housing"* that is defined as the proportion of social housing (houses sold or rented at prices below market price by the public administration) over the total number of houses in the specific year and province.

Other studies [Gwin and Ong (2004)] argue that the approach to the "rule of Law" may be different in different countries and that can influence the housing market. In the case of this research it can be argued that no significant variations in the "rule of Law" exist among the different provinces of a single country like Spain. Moreover, the relevant information about the "rule of Law" (if we can capture it as "delinquency" in the tenancy market) is already captured by the judicial system ratios.

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18. The residual takes positive values in all the years for the following provinces: A Coruña, Alicante, Asturias, Badajoz, Barcelona, Cáceres, Córdoba, Jaén, León, Madrid, Málaga, Ourense, Sevilla, Valencia and Toledo.

19. Local taxes (as the IBI, "*impuesto de bienes inmuebles*") are not taken into account although they could add some variation.

20. Law 21/2001 of December 27th established that the regions *(Comunidades Autónomas)* have the possibility to pass new deductions on the basis of personal or family circumstances or non-entrepreneurial investments.

21. No dummy for Navarre is included in the panel data regressions as its differential effect must be captured by the fixed effects. Please note that Navarre is a province and a region at the same time.

4 Estimation and results

Following the variables discussed in section 3, the subsequent model (equation 5) will be estimated following two-step (instrumental variables) generalized method of moments (GMM estimation) [Wooldridge (2001), Arellano (2002), Baum *et al.* (2003)].[22]

Two sets of results are provided to take into account two different ways to transform the data: on the one hand table 7 provides the results when we include fixed effects (FE). On the other hand, table 8 provides the results when we take "first differences" (FD). In both cases I present standard errors robust to both heteroskedasticity and serial correlation.

$$Prprop_{i,t} = c + \sum c_t T_t + \beta_1 Usercost_{i,t} + \beta_2 Excongestion_{i,t-3} + \beta_3 Density_{i,t} + (\eta_i + \nu_{i,t}) \qquad (5)$$

In equation (5) the dependent variable is the proportion of property in the province. As independent variables I include mainly "supply" factors: the rate of efficiency of the judicial system and density. Time dummies are included to take into account the cycle. Wald tests of significance for those time dummies are reported in the tables.

As it was already discussed, the user cost approximates the relation between the price to buy and the price to rent. Those prices are present in the decisions of both tenants and landlords and therefore connect both sides of the market. Thus, in this kind of "simultaneity", the user cost will be instrumented.

As instruments I choose a set of variables affecting directly the demand side of the market: the proportion of young population in the province, *ppob2039* and its lagged value, the proxy to credit constraint, *credit* and its lagged value, the lagged value of income *per capita, ln GDPpc* and the proportion of social housing in the province, *Shousing*. Also the lagged user cost will be included as instrument. For choosing the set of instruments and providing evidence of their validity, the Hansen J statistic (as overidentification test) is computed with satisfactory results in both cases.[23] Note that in general the strategy of including as instruments the lagged dependent variables of equation 5 has been avoided thus providing a more robust experiment.

Following section 2 the judicial efficiency has been studied in the two stages of the procedure (declaratory and execution) in the form of a congestion rate. *Prtcongestion* and *excongestion* enter the equation lagged several periods, up to four, taking into account that the decision to put a dwelling into the tenancy market may take into account the "judicial environment" observed some periods before. This fact would also mitigate any problems of endogeneity of the judicial variables. In any case, there are no reasons to suspect of the endogeneity of the judicial variables in this research. The courts taken into account in this study ("*juzgados de primera instancia*" and "*juzgados de primera instancia e instruccion*") are not specialized courts and solve very different types of conflicts, ranging from inheritance conflicts to some bankruptcy proceedings, thus the distribution of tenancy conflicts (generated in part by the amount of tenancy and property contracts in the province) is not

22. Under the presence of heteroskedasticity GMM estimators are more efficient than the IV robust ones.
23. Note that I did not assume homoskedasticity. Otherwise, the Sargan´s statistic would be reported.

necessarily influencing the distribution of "*juzgados de primera instancia*" and "*juzgados de primera instancia e instrucción*").

As a first result it is important to note that the efficiency of the declaratory stage has no significant impact on the share of property.[24] Therefore, this paper focuses the analysis on the final or definitive step (execution). Nevertheless, this is an interesting result by itself as it will be discussed in the conclusions.

For completeness, tables 9 and 10 show the results of the estimation of this alternative model (equation 6) similar to the previous one, but including the measure of simple relative prices *(pricetorent)* instead of the user cost.

$$\text{Prprop}_{i,t} = c + \sum c_t T_t + \beta_1 \text{Pricetorent}_{i,t} + \beta_2 \text{Excongestion}_{i,t-3} + \beta_3 \text{Density}_{i,t} + (\ldots) + (\eta_i + \nu_{i,t}) \quad (6)$$

Results

First of all it is worth noting that both the user cost (in tables 7 and 8) and the relative price (in tables 9 and 10) enter the equation with a positive sign. The sign confirms that we have estimated a supply curve once we take into account that the overidentification tests were passed satisfactorily. On one hand, when we include fixed effects, the effect of the user cost is significant and quite robust to different specifications. On the other hand, when we take first differences, the results for the variables are generally not significant. However, the sign keeps on being positive in the majority of cases. Also, it should be taken into account that taking first differences has a high cost in terms of estimation in the case of this panel. Note that the T is very short and therefore an important part of heterogeneity is lost when we loose one year in the estimations.

The variable density has the expected (negative) sign in all the cases. When we include fixed effects the variable is significant at 1% level and the results are quite robust to the different specifications. When we take first differences, the significance reduces to 5% and keeps the negative sign.

Finally, looking at the results for the judicial variables, we find the expected effects. First of all, it is found that a higher congestion or pendency rates have positive effects in the share of houses in the property market (by definition, in the case of the resolution rate the effect is the opposite). That is, a lower efficiency of the judicial system attracts more houses to the property market. That is to say that a "problematic" tenancy market prevents the owners/landlords to put their dwellings into the tenancy market.

Table 7 shows that an increase in one point in the congestion rate would increase, the share of property in around 0.14-0.21 percentage points. Thus, taking the example of Madrid, the decrease in the congestion rate would attract to the rental market an amount of around 3200-4800 dwellings. Those results are significant at around 5% or 1% respectively.

24. The estimations are available on demand.

5 Conclusions

This research presents some estimations of the effect of the efficiency of the judicial system on the proportion of property in the Spanish provinces. The problem is analyzed econometrically through panel data techniques. Specifically, the generalized method of moments (2-step GMM) is used in the estimations as several instrumental variables are taken into account. This study is the first one in the economic literature tackling the case of Spain at the local level.

The judicial efficiency is measured through the construction of a "congestion" indicator in two stages of the procedure: the declaratory stage and its final executory stage.

First of all, this research does not find any significant impact of the efficiency in the declaratory stage on the housing property share. However, this research concludes that an increase in the judicial efficiency in the execution stage would have a positive, although minor, impact on the share of property in the Spanish provinces. The effect amounts from 0.1 to 0.2 percentage points of the housing market (higher effects are found if other efficiency measures are taken into account) (see annex A). That effect would be denoting that homeowners avoid the tenancy market when they cannot enforce their contracts.

The discussions presented in this research give some ground to improve the efficiency of the judicial system, at least in the execution stage, as a way to develop the Spanish tenancy market.

ANNEX A: Estimations with alternative judicial efficiency measures

Judicial efficiency can be measured in different ways. This research has opted to study the "congestion rate", even though other efficiency measures could be computed using the same database.

This annex offers the results of the study if two alternative efficiency measures are taken into account: the "resolution rate" and the "pending cases rate". The resolution rate is defined as the ratio between the cases resolved and the cases that entered the system for a specific year and for a type of procedure. The pending cases rate is defined as the ratio between pending cases in a specific year and the cases resolved in the same period (see equations grouped as 7).

$$\text{Resolution rate}_{i,t} = \frac{\text{Cases resolved}_{i,t}}{\text{New cases}_{i,t}}$$

$$\text{Pending cases rate}_{i,t} = \frac{\text{Pending cases}_{i,t}}{\text{Cases resolved}_{i,t}} \qquad (7)$$

Higher resolution rate or lower pending cases rate are related to greater efficiency of the judicial system.

As before, those measures are calculated for both stages of the procedures (declaratory and executory) The prefix "*prt*" precedes the efficiency measures related to procedures in the "declaratory stage" (or as we called it, "first" procedures): *prtresolution* and *prtpendency* (in the tables). The prefix "*ex*" precedes the type of efficiency measures related to the executions: *exresolution* and *expendency* (in the tables). Some summary statistics are included in table 1.

With respect to the first measure of efficiency related to executions, *exresolution*, the following can be said: on average the judicial system was able to solve nearly the same amount of cases that were entering the courts (resolution rate of 0.87). This does not imply a constant workload because some conflicts may be waiting in the pile at the beginning of the year (this aspect is better analyzed with more complete measures of efficiency as the pendency cases rate and the congestion rate). Even though some provinces underperformed quite radically (minimum of 0.42), others were able to solve two times more cases than the number of new cases entering the system, and thus were able to reduce the workload for future periods. Graph 3 represents the resolution rate in the Spanish provinces in 2001 and 2007. As it can be seen in the graph, the resolution rate diminished all over Spain (thus, the efficiency of the system diminished over time).

On average (see table 1), almost three times more cases were pending (waiting to be solved) with respect to the cases that the courts were able to solve. As before, although some provinces had, on average, very good results (pendency rate of 0.46), other provinces had more than seven times more cases waiting to be solved than the average workload they were able to solve in a year. Graph 4 represents the pendency rate in 2001 and 2007. The rate grew over the period denoting a reduction in the efficiency of the system.

As it happened with the case of congestion, no significant results are found when the models are computed taking into account the efficiency in the "declaratory" stage.

Table 11 shows the results of the estimations when we consider the pendency cases rate instead of the congestion rate as a measure of efficiency. The results are consistent with the previous ones. An increase of the pendency rate in one point would increase the property share of the province in around 0.17-0.27 percentage points (around 3900-6200 houses in Madrid). The results are significant at 5% level. In the case of estimating equation 6, the effect of the pendency rate would be around 0.15 percentage points (see table 12). Tables 13 and 14 show the results when first differences (FD) are taken.

Finally, an increase in one point of the resolution rate (see Table 15) implies a reduction in the property rate of around 0.69 percentage points (that would be approximately 15000 houses passing from the property market to the tenancy market and related options in Madrid). However, the effect is not always significant in the case of the resolution rate. In the case of estimating equation 6, the effect of the resolution rate would be around 0.55 percentage points (table 16). Tables 17 and 18 show the results when first differences (FD) are taken.

ANNEX B: Theoretical background

To integrate all the reasonings offered in this paper, it seems useful to discuss how agents (on the demand or supply side of the market) behave in theoretical terms when they are confronted to the housing tenure choice. Moreover, it is useful to add to that theoretical background how those agents react when they are confronted to an inefficient judicial system.

Henderson and Ioannides (1983) offer a useful model for this issue as they study the behavior of both owner-occupiers and renters through their decisions to consume and invest in housing services. If the investment demand for housing is large enough relative to consumption demand, the individual will own a dwelling and will rent part of the free space in the housing market. Thus, he will be a landlord offering housing services. On the contrary, if the consumption demand is larger than the investment demand, the individual will opt for renting and will not own a house (we will observe him as a tenant consuming housing services but not investing).

In the model, the housing consumption demand will depend on several factors such as wealth, the income path or financial restrictions. For instance, an individual confronted to less wealth at the beginning of his lifetime will be a tenant if he is also confronted to financial restrictions.

It is even more relevant to observe how the investment side works. If the profitability of investing in housing diminishes, less "space" will be offered in the market (the number of "landlords" will diminish in the economy). In fact, the profitability of the investment in housing services is affected by several factors such as maintenance costs, taxation or depreciation. This paper studies the effects on the market of a very specific transaction cost: the judicial inefficiency that will affect exclusively the landlords.

Following Henderson and Ioannides (1983) the individuals maximize the following multi-period utility function.

$$U(x, f(u)h_c) + V(w)$$

Where *U* stands for the utility obtained from the consumption bundle and *V (w)* stands for the indirect utility function of wealth remaining after period 1. The services obtained from a house (as a durable good) are determined by *u* (the rate of utilization) and h_c (the capacity). *X* stands for the consumption in period 1 of the numeraire.

If the individual is an owner, he will maximize the utility function subject to the following constraints:

$$y_1 = x + Ph_c + S$$
$$w = y_2 + S(1+r) + Ph_c - T(u)h_c$$

Where *T(u)* is the utilization cost function, *Y* represents income, *P* is the market purchase price of a unit of housing stock, *S* is savings and *r* is the rate of interest.

If the individual is a tenant, the constraints he faces are the following:

$$y_1 = x + Rh_c + S$$
$$w = y_2 + S(1+r) - \tau(u)h_c$$

Where *R* stands for the rental price of housing and $\tau(u)$ is the tenant cost function.

To introduce the judicial inefficiency *(J)* in the model of Henderson and Ioannides (1983) I could model the utilization cost function of the dwelling as:

$$T(u) = \alpha J u^2$$

J will increase the transaction costs for the landlord. Three different ways to measure *J* are explained in section 2 and annex A. In any case, the judicial inefficiency *(J)* will take always positive values. α is a parameter and *u* is the rate of utilization. As required, *T(u)* is a convex function: $T'(u)>0$ and $T''(u)>0$.

On the other hand, the tenant cost function could take the following simple form that is not depending on the judicial efficiency:

$$\tau(u) = u^2$$

Where $\tau(u)$ is also a convex function. $\tau'(u)>0$ and $\tau''(u)>0$.

With those two cost functions, the equilibrium condition of the Henderson-Ioannides model will take the following form:

$$\frac{rP}{1+r} = R - \frac{u^2[\alpha J - 1]}{1+r}$$

That is,

$$u = \sqrt{\frac{R(1+r) - rP}{\alpha J - 1}}$$

Where, $\frac{\partial u}{\partial J} < 0$, $\frac{\partial u}{\partial R} > 0$, $\frac{\partial u}{\partial r} < 0$ and $\frac{\partial u}{\partial P} < 0$, if $1 - \alpha J > 0$.

Thus, following that derivation, in equilibrium the rate of utilization will depend negatively on the judicial inefficiency. As it was already said, judicial inefficiency can be understood as a cost for the landlord.

$$u = \underset{-}{f}(\underset{-}{J}, \underset{-}{r}, \underset{+}{R}, \underset{-}{P})$$

Even though we consider *J* and *r* as exogenous variables affecting the equilibrium, R and P (together with the quantity of housing services in the market) are defined within the model. Therefore, in an econometric implementation they should be treated as endogenous and thus they must be instrumented. For instance, an exogenous shock increasing the judicial inefficiency will affect the equilibrium price and quantity of housing services through a shift in the supply side (or investment) of housing services but not through the demand curve as defined before. Thus, in the case of estimating econometrically the supply curve we will have to instrument the price (or the user cost) using for instance strictly "demand" instruments (that is, demand shifters which are not affecting the supply).

Theoretically, Henderson and Ioannides (1983) provide a discussion on some important factors affecting the equilibrium mainly thorough the demand side of housing services (that is, those who actually rent their consumption of housing services). In their model, higher wealth individuals will be renters, even though that is not the general finding in the empirical literature (see section 3) and the result is found without taking into account life cycle considerations. The issue of the life cycle is partly taken into account in this paper through the use of the proportion of "young population" as instrument in the econometric model.

Capital market imperfections also play a role in the Henderson and Ioannides model and are taken into account in this paper (although through a very imperfect measure). Following the theoretical model, those with a high wealth in the future but a low wealth in the present will opt for renting rather than for owning. That can be understood as a result of the difficulties that the agents face when they try to smooth consumption and investment through time if there are capital market imperfections.

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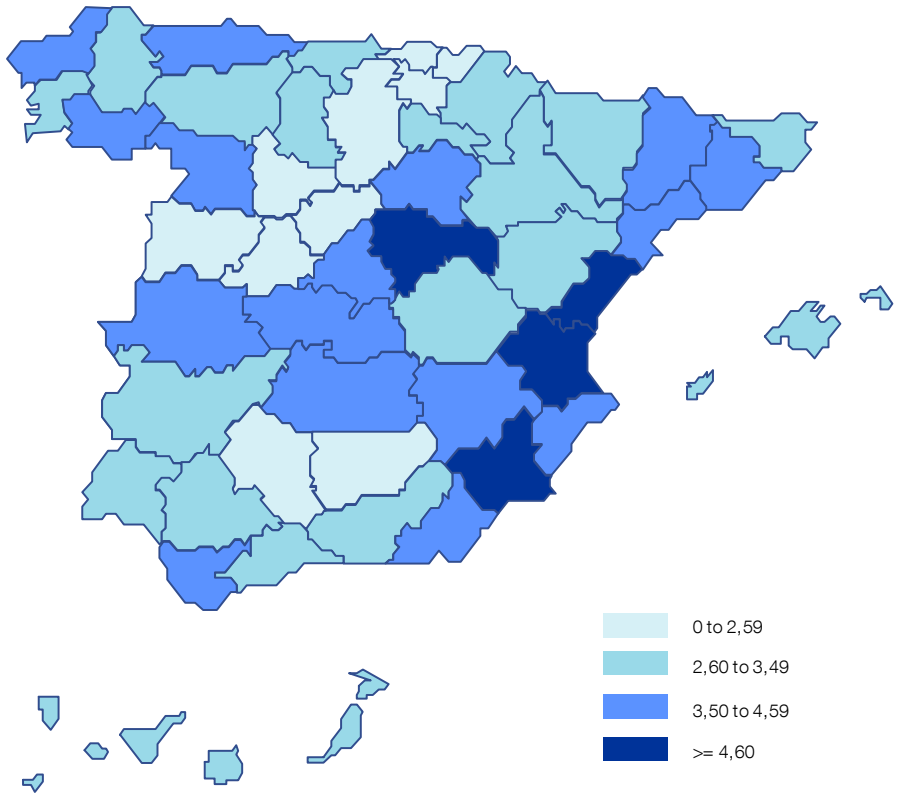
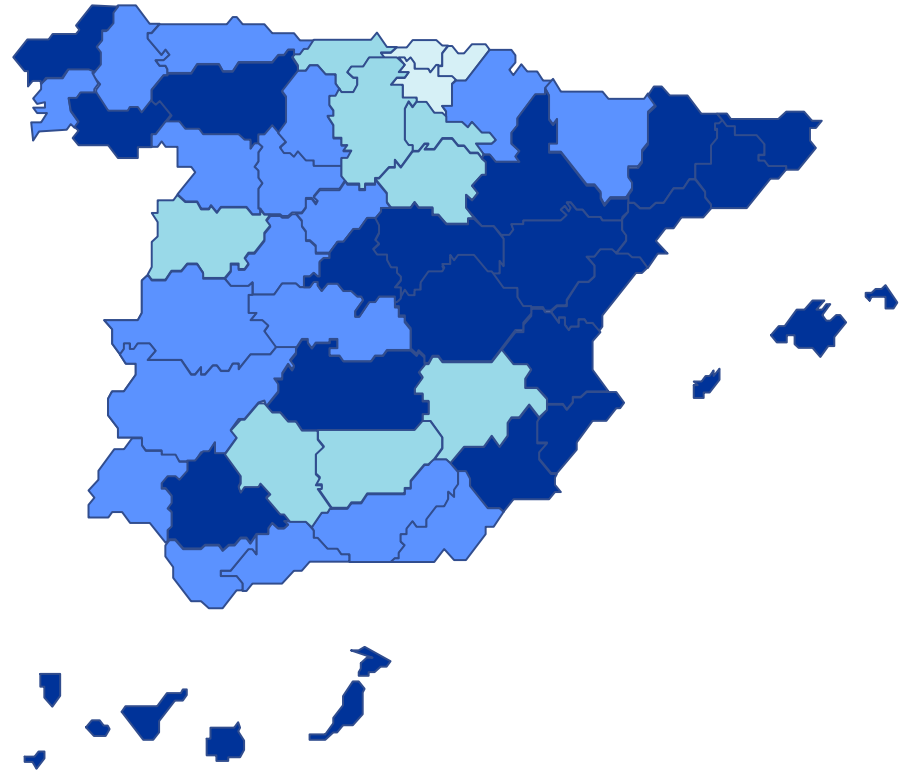
CONGESTION RATE (EXECUTORY STAGE) GRAPH 1

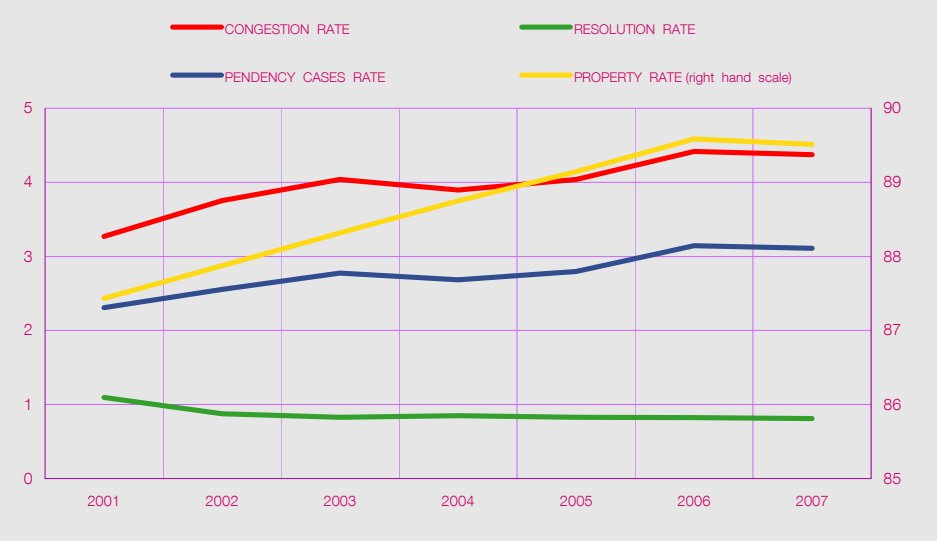
2001



2007



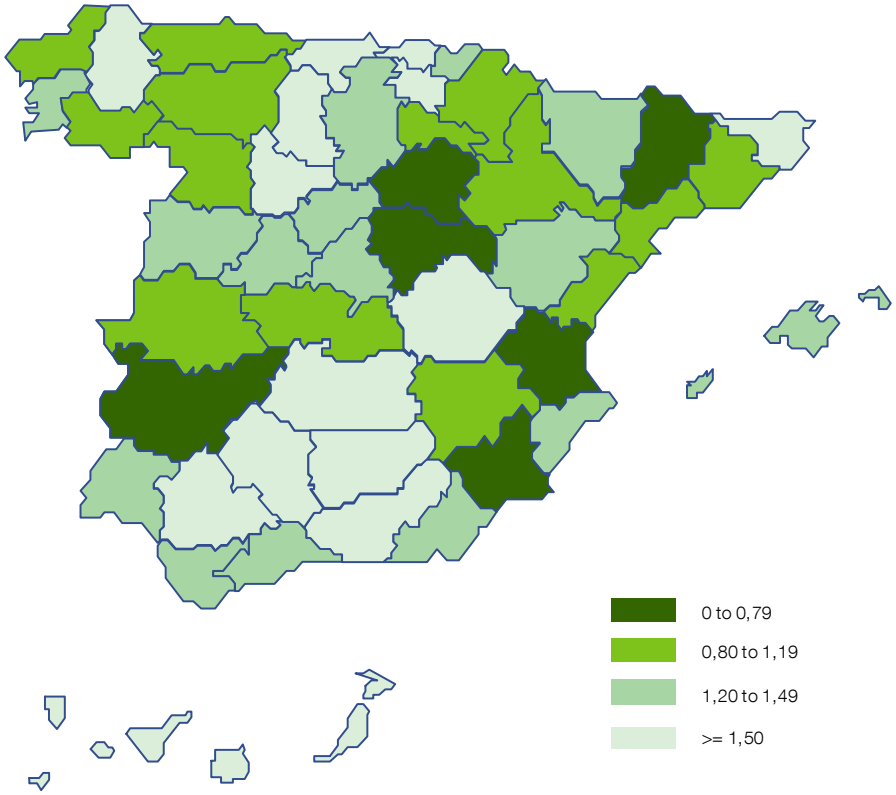
JUDICIAL EFFICIENCY (EXECUTORY STAGE) AND THE PROPERTY RATE IN SPAIN GRAPH 2



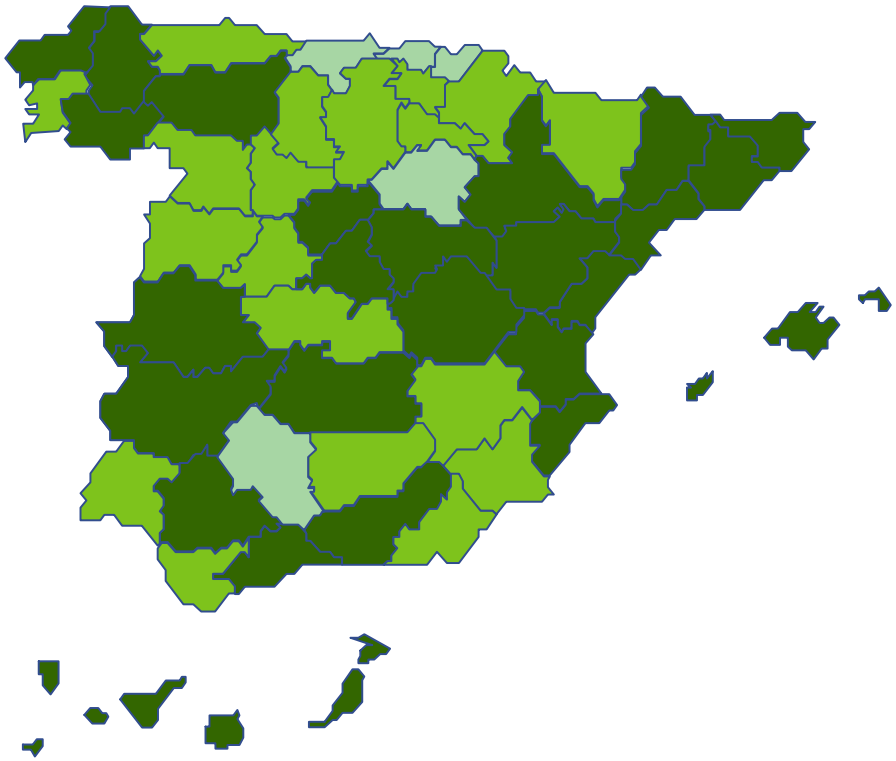
Source: CGPJ (2009) and self elaboration

RESOLUTION RATE (EXECUTORY STAGE) GRAPH 3

2001



2007



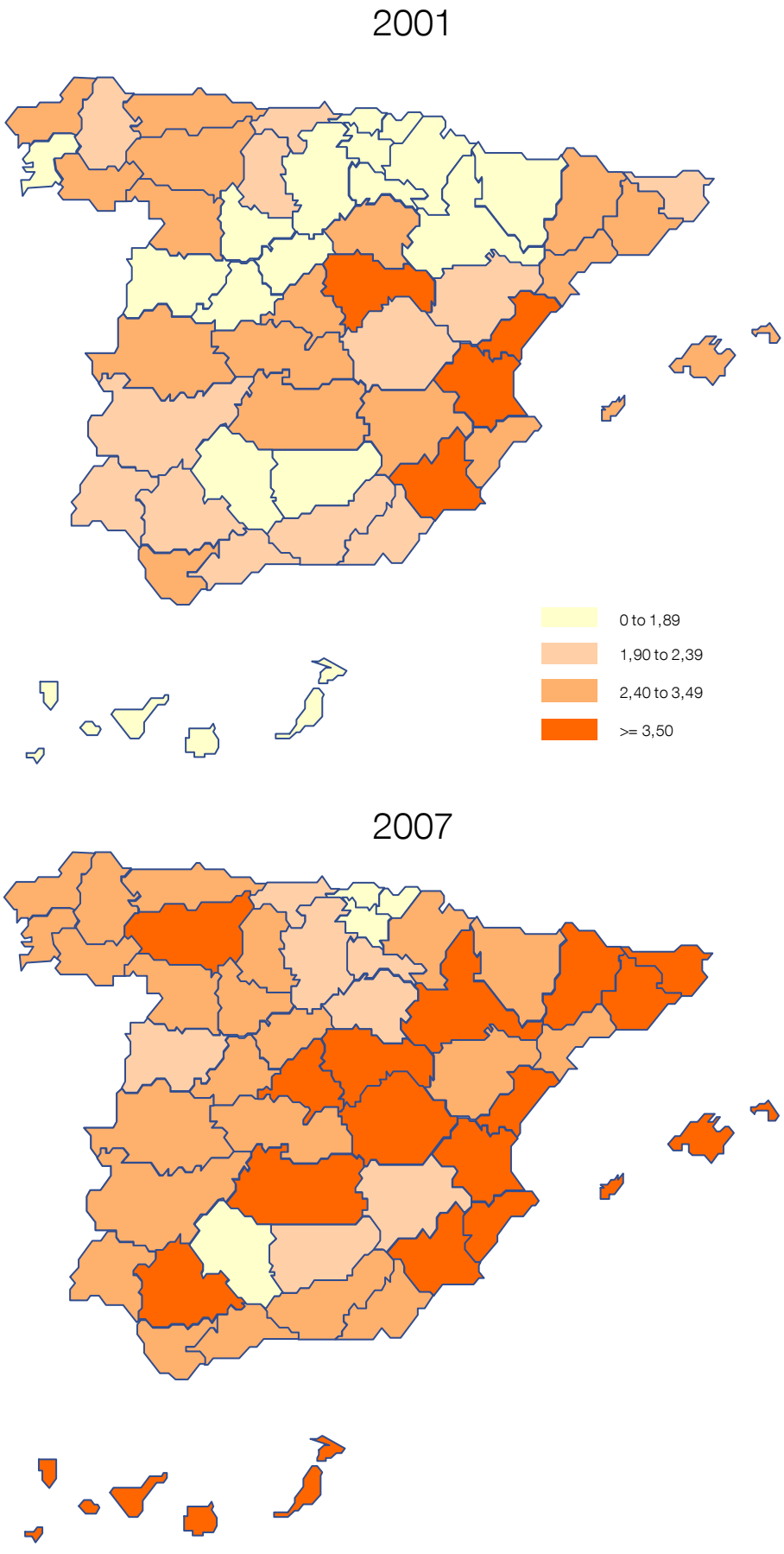

2001
0 to 1,89
1,90 to 2,39
2,40 to 3,49
>= 3,50
2007

Table 1: Judicial system variables

Type of procedure	Variable	Obs	Mean	Std. Dev.	Min	Max
Declaratory	Prtcongestion	350	1.53	0.36	1.03	4.17
Declaratory	Prtresolution	350	0.92	0.14	0.39	1.18
Declaratory	Prtpendency	350	0.41	0.16	0.13	1.59
Execution	Excongestion	350	3.97	1.20	1.20	9.99
Execution	Exresolution	350	0.87	0.20	0.42	2.02
Execution	Expendency	350	2.77	0.98	0.46	7.59

Source: CGPJ (2009) and self elaboration.

Table 2: Judicial congestion rate by province (execution)

province	2001	2002	2003	2004	2005	2006	2007
Álava	1.20	1.88	1.25	2.62	4.28	1.23	2.28
Albacete	3.81	3.00	4.78	3.01	2.95	2.46	3.49
Alicante	3.77	4.68	6.01	4.46	5.72	6.23	5.64
Almería	3.08	4.38	3.92	4.14	3.54	3.60	4.11
Ávila	2.52	1.85	3.48	2.95	4.19	5.64	3.74
Badajoz	3.30	3.76	3.25	3.28	3.81	3.95	4.52
Baleares	3.44	3.30	4.94	6.70	6.36	8.99	9.47
Barcelona	4.07	4.80	5.34	4.79	4.76	4.99	4.98
Burgos	2.31	3.28	3.14	2.79	3.36	3.16	2.95
Cáceres	3.92	5.93	3.41	4.62	3.31	3.28	4.32
Cádiz	3.55	3.29	3.71	3.99	3.08	4.89	3.91
Castellón	4.72	5.50	9.99	5.33	5.40	6.42	5.95
Ciudad Real	3.62	5.50	6.89	4.11	5.02	5.02	5.30
Córdoba	2.13	3.08	3.52	4.92	3.69	3.15	2.79
A Coruña	3.56	3.96	3.24	3.70	4.27	4.39	4.60
Cuenca	2.99	4.81	4.11	4.26	5.48	5.56	4.84
Girona	2.87	4.33	3.77	4.24	4.23	4.70	5.30
Granada	2.62	3.07	3.48	4.04	3.81	5.94	4.53
Guadalajara	6.14	3.99	4.58	5.20	2.80	4.43	5.78
Guipúzcoa	2.12	1.94	1.65	2.00	2.52	2.68	2.39
Huelva	2.89	3.51	2.76	3.52	3.92	4.82	3.79
Huesca	2.69	3.88	4.31	2.90	2.97	3.27	3.93
Jaén	2.54	2.47	3.63	3.45	3.37	3.32	3.16
León	3.46	3.98	4.88	3.49	4.36	3.18	5.54
Lleida	4.52	4.31	5.01	4.13	4.47	4.50	5.30
La Rioja	2.75	2.32	2.93	3.99	3.95	3.15	3.43
Lugo	2.83	2.75	2.57	2.51	2.89	3.67	4.30
Madrid	3.83	4.66	5.22	5.23	4.89	5.74	5.53
Málaga	3.04	3.45	3.30	3.89	4.05	3.98	4.07
Murcia	5.34	4.88	4.53	4.83	5.32	5.39	4.78
Navarra	2.87	4.67	3.84	3.99	4.56	5.16	4.06
Ourense	3.92	2.91	3.16	3.43	4.04	4.47	4.86
Asturias	4.05	3.90	4.26	3.91	4.31	4.01	4.14
Palencia	2.88	3.27	2.58	4.40	4.58	3.08	4.13
Las Palmas	3.07	4.56	6.16	4.61	5.13	5.16	4.89
Pontevedra	2.72	3.25	3.19	3.46	3.86	5.23	4.11
Salamanca	2.16	3.42	2.55	2.90	2.32	3.35	3.04
Santa Cruz de Tenerife	2.91	3.03	4.65	4.51	5.55	5.17	4.99
Cantabria	2.85	2.89	3.44	3.45	4.05	3.84	3.15
Segovia	2.51	2.68	3.20	3.08	2.54	3.85	3.96
Sevilla	2.83	3.25	3.81	3.58	3.33	4.23	5.17
Soria	4.42	2.62	3.84	1.90	2.32	3.43	2.96
Tarragona	4.22	4.62	4.64	4.69	3.81	4.88	4.75
Teruel	3.25	6.07	5.56	5.41	5.17	6.11	4.75
Toledo	4.38	3.98	4.48	4.77	4.40	5.27	3.88
Valencia	5.23	5.71	6.12	5.29	5.64	6.39	6.13
Valladolid	1.30	4.28	2.10	4.03	3.86	4.07	3.72
Vizcaya	1.76	1.80	2.69	1.91	2.83	2.64	2.21
Zamora	3.62	3.58	3.22	2.77	2.76	3.75	3.93
Zaragoza	2.98	4.70	4.84	3.52	4.18	5.05	5.20

Source: Self elaboration from CGPJ (2009) data.

Table 3: Dependent variable and controls

Variable	Obs	Mean	Std. Dev.	Min	Max	Sources
Prpr	350	0.8865862	0.0358094	0.773687	0.9558229	MVIV
Ln GDPpc	350	9.692512	0.1878638	9.2653	10.18491	INE (Regional accounts)
Usercost	300	-13.42913	16.34021	-67.84351	31.59234	Banco de España, INE, MVIV
Pricetorent	350	345.9964	93.57316	150.9641	642.566	INE, MVIV
Density	350	118.3864	152.3166	8.801572	761.345	INE (Padrón)
Ppob2039	350	31.22394	2.680948	25.05463	38.30739	INE (Padrón)
Credit	300	314.9468	24621.52	-33022.94	124393.2	Banco de España, INE

Source: Self elaboration. Data for Ceuta and Melilla is not included in this table.

Table 4: Share of property in the Spanish

Province	2001	2002	2003	2004	2005	2006	2007
Álava	91.65	91.27	90.61	90.22	89.73	89.31	88.63
Albacete	88.47	89.59	90.48	91.25	92.06	92.82	92.82
Alicante	89.04	89.50	89.98	90.41	90.86	91.36	91.36
Almería	85.60	86.26	87.13	88.19	88.97	89.79	89.79
Ávila	90.61	91.28	91.91	92.58	93.22	93.84	93.84
Badajoz	86.17	87.09	87.83	88.48	89.14	89.74	89.74
Baleares	77.37	78.41	79.76	81.16	82.21	82.91	82.91
Barcelona	80.88	80.42	80.12	80.14	79.94	79.91	79.91
Burgos	89.29	89.01	88.91	88.79	88.89	88.76	88.76
Cáceres	85.47	86.30	87.41	88.20	89.06	89.82	89.82
Cádiz	83.27	83.43	83.85	84.44	84.91	85.22	85.22
Castellón	89.01	90.17	91.20	92.29	93.27	94.44	94.44
Ciudad Real	89.68	90.15	90.71	91.08	91.62	92.59	91.95
Córdoba	88.73	89.27	89.83	90.35	91.10	91.67	91.67
A Coruña	84.79	85.46	86.18	87.05	87.69	88.20	88.20
Cuenca	91.32	90.66	89.97	89.33	88.86	88.29	88.29
Girona	82.46	81.95	81.55	80.33	79.45	78.85	78.85
Granada	86.43	87.42	87.99	88.74	89.54	90.05	90.05
Guadalajara	90.60	91.08	91.40	91.91	92.36	92.75	92.75
Guipúzcoa	90.12	89.55	88.90	88.36	88.12	87.58	87.58
Huelva	87.46	88.16	89.11	89.90	90.51	91.19	91.19
Huesca	88.49	88.47	88.30	88.21	87.88	87.33	87.33
Jaén	89.20	89.98	90.84	91.60	92.49	93.25	93.25
León	85.39	86.14	86.71	87.27	87.78	88.38	88.38
Lleida	85.78	87.52	89.03	90.34	91.58	92.71	92.71
La Rioja	88.78	89.52	90.40	90.97	91.38	91.99	91.99
Lugo	90.69	91.85	92.78	93.74	94.66	95.58	95.58
Madrid	84.49	84.24	83.91	83.62	83.13	83.37	83.06
Málaga	86.25	86.09	85.77	85.73	85.69	87.24	85.53
Murcia	88.01	88.67	89.30	90.10	90.81	91.54	91.54
Navarra	90.14	90.67	91.42	92.08	92.66	93.17	93.17
Ourense	90.03	89.20	88.61	87.78	87.16	86.51	86.50
Asturias	84.49	85.08	85.46	85.92	86.25	86.71	86.71
Palencia	88.78	89.36	89.89	90.55	91.33	91.95	91.93
Las Palmas	78.30	78.96	80.02	80.58	80.75	81.47	81.47
Pontevedra	85.94	85.58	85.48	85.89	86.20	85.87	86.19
Salamanca	88.85	89.30	89.73	90.30	90.85	91.33	91.33
Santa Cruz de Tenerife	81.45	82.08	82.90	83.34	83.86	84.58	84.58
Cantabria	88.90	89.29	89.85	90.29	90.98	91.36	91.36
Segovia	87.75	87.96	87.86	87.97	87.69	87.96	87.96
Sevilla	89.08	89.05	88.81	88.48	88.35	88.66	88.04
Soria	89.48	90.74	92.04	93.24	94.35	95.36	95.36
Tarragona	86.06	87.05	87.93	88.87	89.41	90.22	90.22
Teruel	89.35	90.25	91.14	92.20	93.18	94.00	94.00
Toledo	90.02	90.55	91.23	91.83	92.31	92.79	92.79
Valencia	89.79	90.16	90.44	90.68	90.93	91.21	91.21
Valladolid	88.56	89.22	89.64	90.02	90.46	90.90	90.90
Vizcaya	91.55	91.81	92.33	92.71	93.23	93.50	93.50
Zamora	90.82	91.29	91.86	92.36	92.83	93.27	93.27
Zaragoza	86.66	87.05	87.37	87.56	87.67	87.91	87.91

Source: Ministry of Housing of Spain (2009) and self elaboration

Table 5: Interest rate on lending for house purchase

Year	i
2000	0,0584
2001	0,0589
2002	0,0490
2003	0,0385
2004	0,0344
2005	0,0331
2006	0,0417
2007	0,0515
2008	0,0565

Source: Banco de España (2009)

Table 6: Fiscal regimes in the Spanish Autonomous Regions

Region (Comunidad Autónoma)	2002	2003	2004	2005	2006	2007
Andalusia		O,T	O,T	O,T	O,T	O,T
Aragón						
Balearic Islands	O	O,T	O,T	O,T	O,T	
Canary Islands						O,T
Cantabria				O,T	O,T	O,T
Castile-La Mancha						
Castile and León				O	O,T	O,T
Catalonia		T	O,T	T	T	T
Valencian Community	O, T	O,T	O,T	O,T	O,T	O,T
Extremadura	O	O	O	O,T	O,T	O,T
Galicia		T	T	T	T	T
Madrid		T	T	T	T	T
Murcia	O	O	O	O	O	O
Navarre	F	F	F	F	F	F
Basque Country	F	F	F	F	F	F
Asturias		O,T	O,T	O,T	O,T	O,T
La Rioja	O	O	O	O	O	O

O: Regional Home ownership tax deduction
T: Regional House tenancy tax deduction
F: Foral Tax regime

Sources: Agencia Tributaria (Ministry of Economics of Spain) and self elaboration

Table 7: Effects of the judicial congestion rate and the user cost (FE)

Model	**1**	**2**
Method of estimation	**2-Step GMM**	**2-Step GMM**
Data transformation	**FE**	**FE**
Excongestion (t-3)	0,137	
	0,05**	
Excongestion (t-4)		0,213
		0,071***
User cost	0,079	0,064
	0,033***	0,031**
Density	-0,072	-0,051
	0,02***	0,02**
Time effects	Yes	Yes
Observations	250	200
Groups/Clusters	50	50
Hansen J statistic (P-value)	0.709	0.834
Wald Test for time dummies	0	0

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: User cost
Instruments: User cost (t-1), Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 8: Effects of the judicial congestion rate and the user cost (FD)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FD	FD
Excongestion (t-3)	0,046	
	0,016***	
Excongestion (t-4)		0,064
		0,024***
User cost	0,000	0,003
	0,002	0,004
Density	-0,041	-0,029
	0,016**	0,018
Time effects	Yes	Yes
Observations	200	150
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,11	0,376
Wald Test for time dummies	0.094	0.114

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: User cost
Instruments: User cost (t-1), Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 9: Effects of the judicial congestion rate and the relative price (FE)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FE	FE
Excongestion (t-3)	0,138	
	0,04***	
Excongestion (t-4)		0,115
		0,037***
Pricetorent	0,019	0,002
	0,019	0,016
Density	-0,041	-0,035
	0,017**	0,019*
Time effects	Yes	Yes
Observations	250	200
Groups/Clusters	50	50
Hansen J statistic (P-value)	0.123	0,336
Wald Test for time dummies	0	0.694

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: Pricetorent
Instruments: Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 10: Effects of the judicial congestion rate and the relative price (FD)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FD	FD
Excongestion (t-3)	0,049	
	0,015***	
Excongestion (t-4)		0,060
		0,024**
Pricetorent	-0,013	0,000
	0,014	0,011
Density	-0,042	-0,029
	0,017**	0,018
Time effects	Yes	Yes
Observations	200	150
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,283	0,237
Wald Test for time dummies	0.028	0.424

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: Pricetorent
Instruments: Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 11: Effects of the judicial pendency rate and the user cost (FE)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FE	FE
Expendency (t-3)	0,176	
	0,09**	
Expendency (t-4)		0,274
		0,134**
User cost	0,075	0,061
	0,031**	0,035*
Density	-0,070	-0,048
	0,02***	0,02**
Time effects	Yes	Yes
Observations	250	200
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,729	0,810
Wald Test for time dummies	0	0

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: User cost
Instruments: User cost (t-1), Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 12: Effects of the judicial pendency rate and the relative price (FE)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FE	FE
Expendency (t-3)	0,183	
	0,080	
Expendency (t-4)		0,150
		0,075**
Pricetorent	0,020	0,001
	0,018**	0,017
Density	-0,040	-0,035
	0,017**	0,02*
Time effects	Yes	Yes
Observations	250	200
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,134	0,349
Wald Test for time dummies	0	0.765

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: Pricetorent
Instruments: Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 13: Effects of the judicial pendency rate and the user cost (FD)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FD	FD
Expendency (t-3)	0,045	
	0,020**	
Expendency (t-4)		0,079
		0,046*
User cost	-0,001	0,002
	0,002	0,004
Density	-0,040	-0,029
	0,016**	0,018
Time effects	Yes	Yes
Observations	200	150
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,146	0,379
Wald Test for time dummies	0.039	0.256

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: User cost
Instruments: User cost (t-1), Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 14: Effects of the judicial pendency rate and the relative price (FD)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FD	FD
Expendency (t-3)	0,053	
	0,021**	
Expendency (t-4)		0,065
		0,045
Pricetorent	-0,017	-0,005
	0,014	0,013
Density	-0,042	-0,033
	0,017**	0,019*
Time effects	Yes	Yes
Observations	200	150
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,39	0.273
Wald Test for time dummies	0.049	0.437

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: Pricetorent
Instruments: Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 15: Effects of the judicial resolution rate and the user cost (FE)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FE	FE
Exresolution (t-3)	-0,050	
	0,315	
Exresolution (t-4)		-0,690
		0,284**
User cost	0,073	0,060
	0,03**	0,022***
Density	-0,067	-0,052
	0,021***	0,022***
Time effects	Yes	Yes
Observations	250	200
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,727	0,803
Wald Test for time dummies	0	0

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: User cost
Instruments: User cost (t-1), Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 16: Effects of the judicial resolution rate and the relative price (FE)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FE	FE
Exresolution (t-3)	-0,525	
	0,285*	
Exresolution (t-4)		-0,573
		0,256**
Pricetorent	0,023	0,012
	0,019	0,014
Density	-0,037	-0,028
	0,017**	0,019
Time effects	Yes	Yes
Observations	250	200
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,121	0,217
Wald Test for time dummies	0	0.267

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: Pricetorent
Instruments: Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 17: Effects of the judicial resolution rate and the user cost (FD)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FD	FD
Exresolution (t-3)	-0,102	
	0,068	
Exresolution (t-4)		-0,185
		0,093**
User cost	0,000	0,004
	0,003	0,004
Density	-0,041	-0,029
	0,017**	0,018
Time effects	Yes	Yes
Observations	200	150
Groups/Clusters	50	50
Hansen J statistic (P-value)	0,121	0,282
Wald Test for time dummies	0.752	0.206

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: User cost
Instruments: User cost (t-1), Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

Table 18: Effects of the judicial resolution rate and the relative price (FD)

Model	1	2
Method of estimation	2-Step GMM	2-Step GMM
Data transformation	FD	FD
Exresolution (t-3)	-0,111	
	0,079	
Exresolution (t-4)		-0,262
		0,1***
Pricetorent	-0,013	0,008
	0,015	0,007
Density	-0,042	-0,025
	0,018**	0,018
Time effects	Yes	Yes
Observations	200	150
Groups/Clusters	50	50
Hansen J statistic (P-value)	0.291	0.192
Wald Test for time dummies	0.267	0.284

Dependent variable: Share of property
Standard errors robust to heteroskedasticity and serial correlation beneath coefficients
Instrumented: Pricetorent
Instruments: Ppop2039, Ppop2039 (t-1), Credit, Credit (t-1), ln GDPpc (t-1), Shousing
***** p<1%**
**** p<5%**
*** p<10%**

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