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Welfare Benefits in Highly Decentralized FiscalSystems: Evidence on Interregional Mimicking

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Welfare Benefits in Highly Decentralized Fiscal Systems: Evidence on Interregional Mimicking

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Abstract

This paper analyzes the determinants of welfare benefit levels within a highly fiscally decentralized context. More specifically, we analyze the role of mimicking as a driver of the institutional design of subnational government policies in the absence of federal co-ordination and financing. Empirically, we focus on the welfare benefit programs of Spanish regional governments during the period 1996-2015. Our results strongly support the significant role played by mimicking: regional public agents observe what their peers are doing and act accordingly, and this holds even in a context of low mobility of households.

Keywords: welfare, fiscal federalism, yardstick competition, inequality

JEL: H73, I38

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1. Introduction

The benefits of fiscal devolution have been extensively highlighted in the economic literature (Oates, 1972; Lago-Peñas et al., 2018). A decentralized provision of public services is supposed to foster citizens´ wellbeing, since it allows territories to adjust their own policies to the particular needs and preferences of their residents. However, first generation fiscal federalism (Oates, 1972; Musgrave, 1959) also makes it clear that redistribution policies, such as welfare benefits, should be reserved to the central government for several reasons, mainly because poor regions would be able to be less generous than richer ones and because a decentralized policy could lead to a race to the bottom.

From a different perspective, fiscal federalism literature has traditionally suggested that decentralization also boosts public policy innovation, if only because of the larger number of decision makers involved in the process.[1] One implication of fiscal federalism working as a public policy laboratory is that incumbents are expected not only to innovate, but also to make their decisions taking into account what their neighbors are currently doing. Put simply, within a decentralized model, imitation becomes a cheaper way of finding best practices: governments observe what their peers are doing and decide to implement the most successful policies within their own territories. In this context, mimicking can provide a vehicle or response mechanism that can save fully decentralized systems of welfare benefits from the expected race to the bottom.

One of the areas where mimicking could have special relevance is that of the determination of decentralized welfare benefit levels. An extensive literature on welfare inequalities across jurisdictions has revolved around regions' strategic behavior and the possible

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[1] For example, Kotsogiannis and Schwager (2006) show in a theoretical model that federations generate larger incentives to innovate than unitary systems.

responses of subnational governments to changes in welfare policies in neighboring jurisdictions (Schroder, 1995; Berry et al., 2003; Baicker, 2005; Fiva and Rattsø, 2006; Dahlberg and Edmark, 2008). However, most of these studies have examined the possible effect of interregional imitation in welfare programs in contexts where there are either federal funds or some kind of federal coordination.

The objective of this paper is to analyze the determinants of welfare benefit levels within a completely decentralized context. More specifically, we will be analyzing the role of interregional mimicking as a driver of the institutional design of those subnational government welfare policies in a context where there is neither federal policy co-ordination nor financing, that is, within a completely decentralized system.

Empirically, we focus on the minimum income programs of Spanish regional governments (Autonomous Communities, ACs hereafter) during the period 1996-2015. They are the last economic safety net for the most vulnerable households. The Spanish case provides a novel opportunity to research the role of interregional mimicking in shaping welfare benefit policies in extreme or radical decentralization systems. In Spain, these programs were entirely created and regulated by the ACs themselves over three decades ago, without any participation whatsoever of the central government in their design, regulation, or financing. Therefore, the Spanish case is relevant because it allows us to study a case where welfare benefits have been fully decentralized. Because of the clean slate, and therefore lack of historical inertia, the role of self-innovation and imitation across ACs should be expected to be much stronger than on those policies that had been previously provided by the central government.

To empirically test the mimicking hypothesis, the spatial econometric literature has mainly used two different strategies: first, spatial error models, which include a spatial

autoregressive process in the error term, and second, spatial lag models which incorporate a spatially autoregressive dependent variable (Elhorst, 2003). In this paper, we first implement a two-stage-least-squares model, which incorporates the lagged dependent variable in the right side of the equation and therefore fits with the latter strategy in the spatial econometric literature. Second, however, we also run a dynamic (Panel Corrected Standard Errors) model that captures any autoregressive spatial process within a composite error term and follows the first literature approach.

From using both approaches, our empirical results lend strong support to the mimicking hypothesis: regional decision makers observe what their peers are doing and act accordingly. The main contribution of the paper, therefore, is that the hypothesis of mimicking in welfare benefits is validated not only in contexts where there is federal coordination and/or financing, but also in contexts of extreme decentralization with a total absence of those central policies. Our empirical evidence suggests that the divergent trend in welfare benefits triggered by regional differences in fiscal capacity is partially compensated by regional interdependence. Moreover, since the extremely low mobility of poor Spanish households allows us to rule out the fiscal competition hypothesis, this evidence of interregional influence is best attributed to and explained by an imitation process.

The rest of the paper is structured as follows. In section 2, we provide a brief explanation of the institutions surrounding Spanish regional welfare benefits. Section 3 revisits the previous relevant literature on intergovernmental mimicking. In section 4, we present our empirical approach. In section 5, we discuss the results. Section 6 concludes.

2. Spanish Regional Welfare Benefits Programs: The Institutional Framework

The Spanish system of welfare benefits is somewhat singular in a comparative

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framework.[2] Despite the remarkable advances of the Spanish welfare state since the mid-1970s, access to social assistance for the needy population remains a weak area. The current system is the sum of widely diverse benefit systems, which were conceived of at different points of time according to very different logics. The result is a mosaic of benefits, showing high levels of horizontal inequity and heterogeneous levels of protection for individuals or households with otherwise similar needs

The last resort of the safety net in Spain consists of the Minimum Income programs of each of the regional governments (ACs).[3] These benefits are aimed at covering the general risk of poverty. Simultaneously, the central government covers the risk of specific groups through unemployment subsidies or non-contributory disability and retirement pensions. Although there are no overlaps, there are differences in benefit levels and in the protection provided depending on the system accessed.

Regional Minimum Income programs were created in the late Eighties and early Nineties of the 20th century after the central government refused to include non-disabled and non-senior citizens within the non-contributory pension system. As a consequence of this, and inspired by the French experience, the regional government of the Basque Country decided in 1988 to create a regional welfare program for those citizens and households that, under the risk of poverty, did not qualify for the centralized pension program. After that, other territories emulated the Basque initiative and implemented their own regional welfare systems (see Table A.1 in the Appendix). Although some basic characteristics of these programs meet the usual features of any welfare

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[2] For a detailed review of the main characteristics of the income guarantee system in Spain see Ayala Cañon et al. (2016).
[3] In June 2020, the Spanish government launched a new scheme (Ingreso Mínimo Vital, IMV) to provide guaranteed minimum income to the country's most vulnerable families. Regional schemes will be compatible with the new benefit, although so far, no explicit agreements have been established on the complementarity between the national and regional schemes.

program and not only the French one, all the regions replicated the basic scheme of the *Revenu minimum d'insertion*. Like in the French scheme, the programs were designed to provide an economic safety net and to develop activation strategies to promote transitions into the labor market more quickly than through traditional welfare programs. By replicating the French scheme, benefit recipients must sign an 'insertion contract' with the welfare agencies.

By 1996, all autonomous communities had a running program with the goal of fighting poverty. The development of these welfare benefits shows by itself an obvious qualitative imitation process, reinforced by the fact that most regional governments created both a basic benefit and complements regarding the size of claimant households. As in Bennett´s insight (1991), it seems that the perceived urgency of the problem to be addressed boosted the imitation process across regional governments. By the mid Nineties, all regional governments had established their own welfare benefit systems, with similar eligibility requirements but different levels of generosity.

A common feature of these Minimum Income programs is that potential claimants can apply for these benefits only if they have used up all entitlements to the other benefit programs. Otherwise, all households below a given income threshold, set by each region, may be eligible for these programs. Eligibility conditions are restricted to an upper age limit (65 years of age, at which age claimants can benefit from the national non-contributory pension scheme) and a lower age limit (25 years of age, except for claimants with dependent children). An additional legal requirement is that of residency, being officially registered in the corresponding region as a resident—usually setting a minimum time between 12 and 24 months. This minimizes incentives for the "fiscal migration" of poor households. In most regions, benefits are granted for one year and they are automatically renewable.

These regional welfare schemes have played an increasing importance in regional budgets since their creation in the late Eighties, with their beneficiaries growing in numbers even during the expansive phase of the economic cycle prior to the 2008 crisis. The number of beneficiaries, until the new *Ingreso Mínimo Vital* was launched in 2020, amounted to approximately 500,000 people (1.7% of the total population).

The fully decentralized design and provision of these programs allows a close analysis of the advantages and disadvantages of an extreme or radical fiscal federalism model of social assistance. Regional governments in Spain created and regulated their welfare benefits completely *ex novo*, without reference to any pre-existing structure at the central level. Therefore, in the absence of central master lines, each territory was completely free to decide the potential beneficiaries (eligibility), the benefit levels, the temporal limits, and all other aspects of the programs.

Despite the initial qualitative imitation process that took place after the Basque Country implemented the first regional welfare program, the lack of central coordination and funding resulted in striking differences in benefit levels across regions. These differences, which widen considerably as the size of the household increases, are illustrated in Figure 1. While regions such as the Basque Country or Navarre pay benefits close to 1,000 Euros to larger households, in a quarter of the regions the level of benefits is below 500 Euros.

Figure 1. Regional Benefit Levels (Maximum Benefit for Each Type of Household)
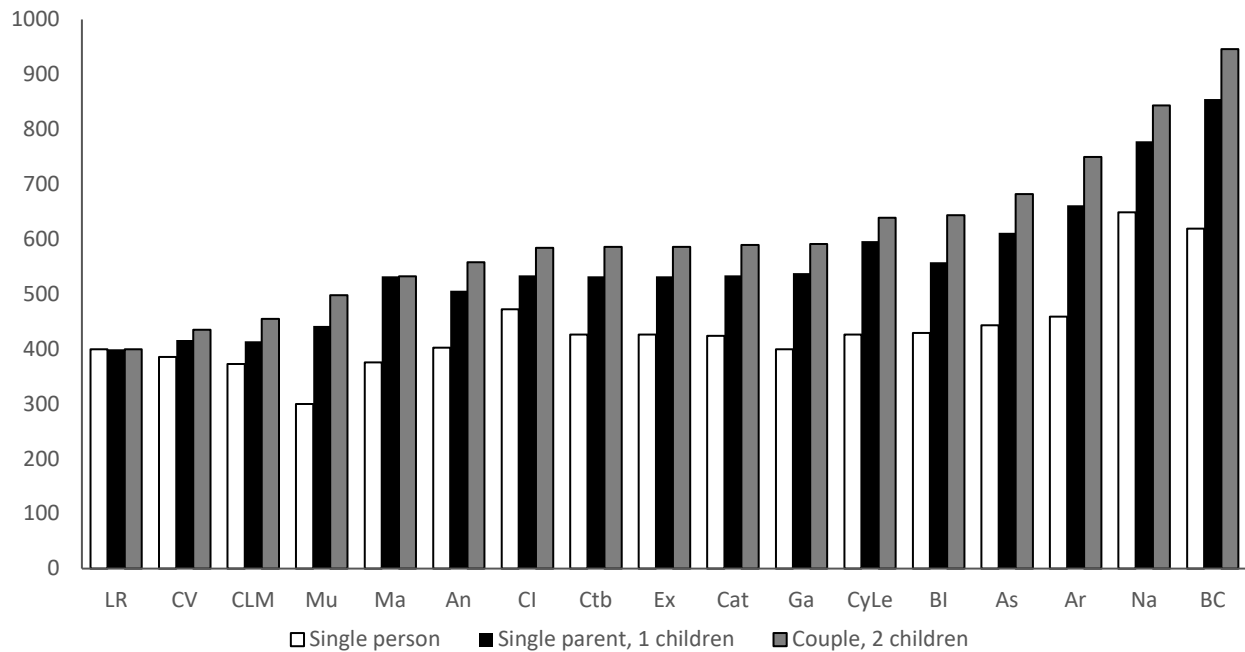
It is not clear what the actual drivers of that diversity are. There is still little empirical

evidence on the potential roles played by regional needs (poverty levels), preferences (sensitivity

to distributional issues/ideology), and regional financial capabilities. While the first two cases

would be a positive outcome of decentralization, the last one would be an undesirable effect of a

badly designed regional financing system (Prud´homme, 1994; Buchanan, 1965). Casual

evidence would seem to suggest that the especially favorable financing system enjoyed by the

so-called "foral" (charter) regions is the main reason for the large differences between their level

of welfare benefits and those provided in the rest of the country—the "common regime"

regions.[4]

Although the qualitative mimicking of ACs was obvious during the creation and basic

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[4] The regional governments of the Basque Country and Navarre enjoy a privileged financing system by which they may collect, on their own, basically all taxes within their respective territories. As a compensation for the services provided by the central government, both regions implement a bottom-up transfer, the calculation of which historically has resulted in a very generous, advantageous financial system for these two regions. In contrast, the so-called "common-system regions" only accrue revenues from some own taxes, revenue sharing in some central taxes, and top-down transfers from the central government.

design of welfare benefits, little is known about the potential quantitative imitation that has taken place afterwards. There is an interregional council or multilateral conference on social services and benefits,[5] without any coordination powers, but which works as the main channel of information exchange of regional governments. Elite networking and epistemic communities can use the information provided in this conference as a benchmark when advising their own governments in the design of regional welfare policies.

3. Mimicking in Welfare Policies

Diversity is the expected result of fiscal federalism models since a decentralized provision of services will be responsive to differences in needs and preferences across jurisdictions. Within a correct institutional design, this generates welfare gains, since the regional fiscal package will better satisfy citizens´ preferences and needs versus the assumed central uniform model of provision (Oates, 1972). However, it is not always possible to affirm that the current diversity of welfare regional expenditure is a direct result of differences in territorial preferences and needs, but rather it may be the result of the asymmetric distribution of economic activity and territorial fiscal capacity (Buchanan, 1950).

The literature on the determinants of sub-central spending is large. Extensive empirical evidence on the impact of differences in demand and supply conditions of public policies, and also on the influence of available resources, can be found in Castles (1989), Cutler et al. (1993), Di Mateo and Di Mateo (1998), Busemeyer (2007), Martínez-Vázquez et al. (2017), etc.

However, most of the literature cited above fails to address the territorial interdependency of policy decisions. After the seminal paper by Case and Rosen (1993), a large literature, using

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[5] The so-called Consejo Territorial de Servicios Sociales y Sistema para la Autonomía y Atención a la Dependencia.

spatial econometrics techniques, focuses on how governments tend to observe what their neighbors do, and act accordingly. As a result, public policies implemented in one region can affect citizens living in other territories. This spatial dependence can take place due to different reasons. Previous literature has identified three main channels of spatial dependence when analyzing regional and local public policies: service spillovers, fiscal competition, and yardstick competition.

Regarding the first channel, it is possible that services provided by one region have effects (positive or negative) on the welfare of citizens living in other territories (Redoano, 2003; López Hernández et al., 2017; Costa et al., 2015). Some papers have found evidence of negative spillovers in public policies involving sports, culture, and specific types of infrastructures: an increase in neighbors´ spending on those items tends to decrease own expenditure in the same programs, since citizens can use services provided in neighboring jurisdictions. However, in this case, those non-residents can generate congestion costs, decreasing residents´ own welfare. Evidence on these two-way negative externalities can be found in Solé-Olle (2006) for Spanish municipalities. Positive spillovers have also been found at the local level in Italy both for total expenditure and for some specific spending programs (Ermini and Santolini, 2010).

The second channel of spatial dependence is fiscal competition, by which governments can use their fiscal policy to induce factor mobility, either to or from their own respective territories. The reduction of regional or local taxes as a means to attract resources residing in other jurisdictions has been extensively analyzed (Redoano, 2003; Solé-Ollé, 2003; Allers and Elhorst, 2005; Besley and Case, 1995; Bordignon et al, 2003; Johnson, 2014). Jurisdictions use mainly taxes on mobile bases to attract economic activity. More in line with the focus of this paper, sub-central governments have also used fiscal competition to stimulate some factors (for

instance, poor households) to move out to other jurisdictions by lowering welfare benefits and other social spending (Dahlberg and Edmark, 2008; Gramlich, 1982).

A third explanation of spatial dependence can be found in the yardstick competition model, where incumbent officials feel that citizens will evaluate their performance in relative terms vis-a-vis what their neighboring governments are doing (Besley and Case, 1995; Boarnet and Glazer, 2002; Caldeira, 2010; Dahlber and Edmark, 2008; Fiva and Rattsø, 2006; Revelli and Tovno, 2007; Rincke, 2007 and 2009; Allers and Elhorst, 2005 and 2011). To improve their reputation and standing, government officials observe what their peers are doing and imitate what they find to be their most successful policies. In this case, a multilateral learning process takes place, generating policy convergence, based on informational externalities and innovation spillovers. Padovano and Petrarca (2014) find that yardstick competition takes place within Italian municipalities, since they tend to set property taxes in line with their own neighbors, to increase their popularity. However, Santolini (2008) finds that this kind of imitation only occurs in jurisdictions governed by the same political coalition, in line with the predictions of the theoretical model suggested in Geys and Vermeir (2008). Additional evidence on yardstick behavior can be found in Bartolini and Santolini (2012) in pre-electoral years within those municipalities that are not subject to deficit limits. Dubois and Paty (2010) also find evidence on yardstick imitation within French local governments regarding property taxes, but in this case it is socio-economic neighbors, and not geographic, that count: municipalities tend to imitate jurisdictions with similar socio-economic characteristics. At the regional level, Esteller-Moré and Rizzo (2014) find evidence of yardstick competition in the USA: States set their taxes on tobacco accounting for their neighbors´ tax rates only when the incumbent governor can run for reelection.

Analyzing alternative causes of this policy convergence triggered by horizontal imitation, rather than political strategic behavior, a seminal paper by Bennet (1991) distinguishes four different channels of mimicking: 1) pure imitation (the use of external information to evaluate own strategic planning); 2) elite and epistemic communities networking (groups of agents sharing their motivation, targets, knowledge, and expertise) that influence policy design;[6] 3) harmonization (imposed by a coordination institution or a higher level government); and 4) penetration (imposed by external actors).

Focusing on decentralized welfare benefits, the previous literature has mainly analyzed territorial interdependency to test both whether migration of poor households due to the generosity of welfare benefits and migration of rich households and firms can cause a race-to-the-bottom of tax rates and benefit levels. Therefore, most of the research has tested the fiscal competition hypothesis. The bottom-line idea is that households migrating to those jurisdictions with higher benefits would discourage governments from improving their welfare coverage. The empirical evidence on this issue is mixed. While Dahlberg and Edmark (2008), Gramlich (1982), Tweedie (1994) and Smith (1991) find evidence of a race-to-the-bottom, a number of other studies by Berry et al. (2003), Fiva and Rattsø (2006) and Shroder (1995) find no evidence that such a competition game regarding welfare benefits actually exists.[7]

In contrast to the object of study in the previous literature, Spanish poor households have in general an extremely low level of mobility. If mobility for fiscal reasons à la Tiebout (1956) is discarded, then we cannot expect to find evidence of horizontal fiscal competition. Furthermore,

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[6] According to Hass (1992), epistemic communities generate information that can create an exogenous shock, inserting a topic into the public agenda and inducing policymakers to react. They can also act as public agent advisors, framing problems, showing the most usual strategies to solve them, their usual effects, etc.

[7] Brueckner (1998) surveyed the empirical evidence on welfare migration, concluding that while the evidence is mixed, policymakers act as if welfare migration is a significant phenomenon.

since there are residence requirements in most of the regional welfare benefit programs, we can also rule out the existence of policy spillovers. Therefore, for the Spanish case, what we expect to explain processes of horizontal imitation of welfare benefits at the regional level is yardstick competition; regional governments mimic each other for one or more of the reasons discussed by Bennet (1991), as mentioned above. In addition, since no central harmonization or external penetration have taken place in Spain, what we expect to find is evidence of Bennet's (1991) two first channels: pure imitation and elite and epistemic communities networking. Following the terminology in Howlett et al. (2017), we observe that by exchanging information through multilateral institutions, an "endogenous learning process" takes place. New knowledge and new realities on one topic induce changes in policy strategies, making different territories´ policies more alike. This kind of process would be in line with what Redoano (2003) calls the "common intellectual trend," which drives jurisdictions´ fiscal packages in the same direction.

4. Empirical Strategy

4.1. Hypothesis and model

As we have already explained above, the objective of our empirical analysis is to find the determinants of Spanish regional benefit levels and, more specifically, to test whether regional governments imitate each other when setting their own welfare benefits. Therefore, our main hypothesis goes as follows:

Regional governments observe what their peers are doing when setting welfare levels and act accordingly.

As stressed by Brueckner (1998), the socially optimal benefit levels correspond to a framework in which there is no mobility of beneficiaries between jurisdictions, or alternatively

one in which there is a sufficiently balanced system of matching grants that nullify welfare migration. As we saw in section two above, the Spanish case of decentralized provision of welfare benefits is likely to meet the first of these conditions, given that welfare migration is highly restricted by severe requirements regarding residence and by low benefit levels. More importantly, after large population flows from rural to urban areas in the 1960s and 1970s, interregional mobility in Spain has been low.[8] Due to this absence of household mobility, our empirical strategy can therefore discard mobility to find evidence on spillovers and fiscal competition. Thus, any evidence on spatial dependence should be due to a yardstick competition process.

According to previous literature on the determinants of sub-central welfare expenditure, and following the literature on yardstick competition cited above, we are expecting regional benefits to depend on a set of variables that reflect supply and demand characteristics of this specific policy in each jurisdiction, and on neighboring jurisdictions´ benefit levels. First, both the level and weight of households in poverty will determine regional needs´ for redistribution. Second, populations´ preferences for income redistribution will condition the generosity of anti-poverty policies. Furthermore, an incumbent´s ideology can also influence the level of benefits. Finally, and regardless regional preferences and ideology, available resources work as the main constraint to deal with when setting benefit levels.

To address all the factors mentioned above, our empirical exercise will estimate the determinants of regional welfare benefits, according to the following reaction function:

$$WB_{it} = \alpha_0 + \alpha_1 \sum_{i \neq j} WB_{it} + \alpha_2 X_{it} + \alpha_3 Resources_{it} + \alpha_4 RecipRatio_{it} \qquad [1]$$

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[8] Some reasons that have been used to explain the low spatial mobility include the important role played by extended family networks, and the very high percentage of residential property ownership.

Where WB_{it} represents welfare benefits in region i and year t, ΣWB_{it} is the average benefit in neighboring jurisdictions, X is a vector of public services´ supply-demand factors (poor households, pro-redistribution preferences), *Resources* is the volume of available resources in each region, and *RecipRatio* represents the recipiency ratio (weight of recipients in total population).

4.2. Variables

Moving on to the empirical strategy, the first thing to address is the selection of our dependent variable (WB_{it}). Considering that welfare programs provide different benefit levels targeted to specific types of households and with distinct qualification requirements, it is important to use those of a more comprehensive nature or most representative of the regional programs universe. For that reason, we will be using the maximum amount—received by those who do not have any income—corresponding to single persons (the so-called basic benefit) as our dependent variable (WB_{it}), since it is the most representative measure of the generosity of regional governments welfare policies.[9]

In line with equation [1] presented in the previous section, the reaction function of government i will depend on the following set of explanatory variables:

- Starting with our explanatory variable of interest—mimicking variables—the first thing to tackle is to decide which territories are relevant neighbors and which are not. Different approaches have been followed in the literature on this specific issue.[10] Here

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[9] We have run robustness checks with two alternative specifications of the dependent variables: the amount received by a two-adult-and-two-child household, and the amount received by a single-parent-and-two-child household. Results point to the same kind of horizontal mimicking we found with the so-called basic benefit and are available from the authors upon request.

[10] Some authors have used the inverse distance between two territories (Anselin, 1988; Solé-Ollé, 2006). With this perspective, Pinkse and Slade (1998) use a fixed number of those nearest neighbors. Other researchers have used income levels or ethnic composition (Case et al., 1993; Redoano, 2003; Dubois and Paty, 2010) and the structure of the social network (Doreian, 1980) as indicators of proximity.

we will be using the most commonly used approach (Bartolini and Santolini, 2012; Ermini and Santolini, 2010), which considers as relevant neighbors only those regions that share a common geographical border. As a sensitivity test, we will also consider that interdependencies do take place among all regions, so all of them need to be included as neighbors (Liu and Martínez-Vázquez, 2014). In this case, we are assuming that a multilateral surveillance process takes place, through the existence of epistemic networks. Finally, as an additional sensitivity test, regions will be clustered depending on their per capita GDP (following Redoano, 2003, and Dubois and Paty, 2010), so that territories with a similar level of income are considered neighbors, irrespectively of their geographical location.[11] After establishing which regions influence each other, we will follow the most usual approach in the literature and construct a matrix of welfare benefits in t-1 with the same weight for each neighbor $(\sum NWB_{it-1})$.[12,13]

- Taxpayers´ income in the region, proxied as regional GDP per capita ($GDPpc_{it}$).

- A vector of regional socioeconomic and institutional characteristics (X_{it}) that proxies regions´ supply and demand conditions of welfare policies: severe poverty (percentage of total households with no earned income), which captures regional social needs; pro-

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[11] According to this criterion, regions were clustered into four groups: 1) Madrid and the Basque Country, with a GDP per capita over 30,000 Euros; 2) Aragón, Catalonia and Navarre, with a GDP per capita between 25,000 and 30,000 Euros; 3) Asturias, Balearic Islands, Cantabria, Castile-Leon, Valencia, Galicia and Rioja, with a per capita GDP between 20,000 and 25,000 Euros; and 4) Andalusia, Canarias, Castile-La Mancha, Extremadura and Murcia, whose GDP falls below 20,000 Euros.

[12] We also used a "placebo" neighborhood to test the validity of our three neighborhood criteria. By randomly attributing fictious neighbors to both archipelagos we found that the statistical results did not point to a mimicking process, while the three real ones did point to the same kind of strategic behavior (although with different intensities).

[13] Since the Balearic and Canary Islands are archipelagos, the first neighbourhood criterion we use implicitly assumes they do not take part within the imitation process. However, the second and third neighbourhood criteria explained above assumes that both regions can participate in the imitation process as any other region.

redistribution preferences, which reflect the regional residents' willingness to fight poverty;[14] government´s ideology, defined as a dummy variable (left-right), which captures regional authorities´ bias towards alleviating poverty; and a dummy variable called *Foral*, which controls for the larger affordability of welfare benefits in the two charter regions (the Basque Country and Navarre).[15]

- The recipiency ratio, expressed as the share of welfare beneficiaries in the regional population (*RecipRatio$_{it}$*).

4.3. Data

To test our hypothesis, we use a panel dataset for Spanish regional welfare benefits from 1996 to 2015. Unlike many of previous research on horizontal imitation, that focuses on cross-section analysis (Dubois and Paty, 2010; Santolini, 2008; Ermini and Santolini, 2010; Solé-Ollé, 2006), our panel helps to better reflect the dynamic behavior that lies underneath the imitation process, in line with the empirical strategies used in Padovano and Petrarca (2014), Esteller-Moré and Rizzo (2014), and Costa et al. (2015): one region decides to change its welfare policy, and in the following years, neighboring jurisdictions tend to follow the same policy pattern. As highlighted by Elhorst (2003, p. 244) "panel data are more informative, and they contain more variation and less collinearity among the variables. The use of panel data results in a greater availability of degrees of freedom and hence increases efficiency in the estimation." This also applies to the estimation of spatial interdependence that takes place over the time. Variables´

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[14] Pro-redistribution preferences were assessed based on the information provided by the "Opinión Pública y Política Fiscal" (Public Opinion and Fiscal Policy) poll implemented each year by the Spanish Center of Sociological Research (CIS). Based on the answer to the question "What are taxes used for?", we used the percentage of people answering "They are a tool to better distribute wealth within our society" as a proxy of the regional willingness to implement redistribution policies.

[15] The potential interaction of ideology and poverty was also tested, but preliminary results suggested that such an influence does not seem to exist. Therefore, this variable was dropped from our final estimations.

descriptive statistics of our panel are presented in Table 1.

Table 1: Variables' Descriptive Statistics

	N	Average	Standard Deviation	Min	Max
BB	340	345.7	94.9	180.3	665.9
Poverty	340	2.39	1.07	0.36	7.15
Pro-redistribution preferences	238	11.0	6.94	0	42.4
Resources	340	19.4	5.37	7.76	32.2
Foral	340	0.12	0.32	0	1
Ideology	340	0.37	0.48	0	1
Pension (Neighborhood 1)	323	618.6	162.8	363.4	985.8
Pension (Neighborhood 2)	323	621.2	156.5	395.3	878.3
Pension (Neighborhood 3)	323	622.6	168.5	366.8	1076.7
NWBB (Neighborhood 1)	340	304.6	134.4	0	537.3
NWBB (Neighborhood 2)	340	345.8	74.6	222.5	444.2
NWBB (Neighborhood 3)	340	345.5	89.2	205.0	665.9
Recipiency Ratio	340	0.0035	0.0055	0.0002	0.0397

Source: Own elaboration

(*) BB: Basic benefit in region i; NWBB: Neighbors´ average welfare benefit; Neighborhood 1: Geographic criterion; Neighborhood 2: all territories are neighbors; Neighborhood 3; economic criterion.

4.4. Econometric approach

Literature on spatial econometric analysis has used mainly two different strategies to test for interregional dependence. First, spatial lag models include a spatially autoregressive dependent variable that depends on its spatially lagged value and other control variables. The coefficient of the former can be interpreted as the degree of interregional interaction. This variable is modeled with a spatial weights' nonnegative matrix of order *N* that reflects the spatial interaction of the observed territorial units. The diagonal elements of this matrix have to be zero, since no jurisdiction can be its own neighbor, and interaction variables are defined as the weighted average of neighboring territories (Elhorst, 2003; Allers and Elhorst, 2011).

Second, spatial error models include a spatial autoregressive process in the error term as a way to capture any unobserved spatial interaction dependence between observations other than the fiscal imitation process captured by the spatial weights matrix independent variable. These

models estimate a compound error term that incorporates a spatial autoregressive component and a random disturbance.

Our first econometric strategy will be to use the spatial lag approach (Besley and Case, 1995; Revelli, 2006), including as a regressor a matrix of neighbors´ welfare benefits. However, if benefit levels in region *i* are contingent on benefit levels in region *j*, we can expect this interaction to be bidirectional. The simultaneous determination of neighbors´ benefits leads us to an endogeneity problem.

To address this endogeneity problem, we adopt a two-stage ordinary least squares estimation model (Anselin, 1988). Furthermore, we use the neighbors´ level of benefits in t-1 as our explanatory endogenous variable in the main equation [2], and the average Social Security pension payed by the Central Government in each territory in t-2 (*Pension_{it-2}*) as an instrument in the auxiliary instrumental equation [3]:[16]

$$WB_{it} = \beta_0 + \beta_1 GDPpc_{it} + \beta_2 X_{it} + \beta_3 \sum_{j \neq i} \widehat{NWB_{jt-1}} + \beta_4 Pensions_{it} + \beta_5 RecipRatio_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad [2]$$

$$\sum_{j \neq i} \widehat{NWB_{jt-1}} = \alpha_0 + \alpha_1 GDP_{jt-2} + \alpha_2 X_{jt-2} + \alpha_3 Pensions_{jt-2} + \alpha_4 RecipRatio_{jt-2} + u_{jt-2} \quad [3]$$

Where $\sum_{j \neq i} \widehat{NWB_{jt-1}}$ represents the matrix including the neighbors´ welfare benefits in *t-1*, μ_i are regional fixed effects,[17] δ_t are the temporal effects, and ε_{it} and u_{jt} represent the respective error terms. Therefore, the logic of our model is that the central government decides Social Security pensions in *t-2*, influencing neighboring regions´ welfare benefits in *t-1*. After

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[16] The intuition is that regional governments could be using the Social Security pensions payed by the central government within their jurisdiction limits as a reference benchmark when setting their own benefit levels. Therefore, we are expecting Social Security pensions in region *j* to work as a good exogenous instrument of benefits in region *j*. At the same time, pensions in region j are independent of benefits in region *i*, since they are determined by the central government. We will further discuss the suitability of this instrument in the context of our model below, in the results section.

[17] Elhorst (2003) states that random effects are not an appropriate specification when observed units are irregular, which is the case of Spanish regions.

that, region *i* decides the maximum amount of basic benefits in year *t*.

Following Elhorst (2003), the incidental parameter problem that takes place in short panels with a small T and a large N disappears with a large T and a small N. Therefore, we can expect to estimate both the slope coefficients and the spatial fixed effects consistently.

There are several other issues regarding temporal effects in the estimation of equations 2 and 3 that need to be addressed. We consider three strategies. First, we use a dummy variable that addresses the impact of the economic downturn after 2010 (Crisis).[18] Second, we introduce year effects. But, as Devereux et al (2008) and Klemm and Van Parys (2012) suggest, using time dummies within a model with spatial lag variables tends to generate multicollinearity problems, especially in the case of long time-lapse panels. So, as a way to address those multicollinearity issues, we use a linear trend variable instead of year effects (Liu and Martínez-Vázquez, 2014; Caldeira, 2012).

After analyzing the determinants of regional welfare benefits with a spatial lag model, we check the robustness of the results by estimating a spatial error model, which, as remarked upon above, includes an error term that captures any spatial autocorrelation processes other than the horizontal imitation we are trying to address. Specifically, we use a dynamic approach (Panel Corrected Standard Errors model):

$$WB_{it} = \beta_0 + \beta_1 WB_{it-1} + \beta_2 GDPpc_{it} + \beta_3 X_{it} + \beta_4 \sum_{j \neq i} N\widehat{WB}_{jt-1} + \beta_5 Pensions_{it} + \beta_6 RecipRatio_{it} + \mu_i + \delta_t + \varepsilon_{it} \qquad [4]$$

where μ_i represents the unobservable heterogeneity, δ_t are the temporal effects, and ε_{it} is

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[18] 2010 was the first year in which Spanish regional governments started suffering the loss of resources due to the economic crisis and was also the moment in which they were forced to implement budget cutbacks in order to fulfill the requirements of the excessive deficit protocol applied to Spain by the EU. Therefore, we could expect a change in regional strategies regarding welfare benefits after 2010.

the error term. The Panel Corrected Standard Error model estimates a composite error term (ε_{it} in [4]) that includes both an autoregressive vector and the usual random walk, that is:

$$\varepsilon_{it} = \alpha_1 WB_{it-1} + \vartheta_{it} \qquad [5]$$

As highlighted by Lago-Peñas et al. (2018), Panel Corrected Standard Errors are robust to both cross correlation and cross-section heteroskedasticity. When there are long time lapses—larger than 20—the usual bias of autoregressive models with fixed effects becomes small and therefore this method is suitable for our sample. Other alternatives to estimate a dynamic panel model, such as System-GMM do not fit with the characteristics of our panel data set, since it has a small number of individuals (17 regions) and a long-time lapse (21 years).[19]

5. Results

5.1 Static (spatial lag) approach

Tables 2 and 3 show the results obtained when a static strategy (2SLS) is applied. Our first step is to test for endogeneity using the Hausman test. The null hypothesis here is that both OLS with fixed effects and 2SLS estimators are consistent, but the second one is also efficient. Results of this test can be found in the last row of Table 3, pointing to the existence of endogeneity.

Table 2 displays the results of the auxiliary (first stage) equation [3], using average Social Security pensions payed by the central government in each region as an instrument variable. Two basic requirements are needed for an instrument to be used in the first stage. First, it needs to be relevant, which means that it should have explanatory power over the instrumented (endogenous)

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[19] Nevertheless, System-GMM estimations were run and their results are available from the authors upon request.

variable. Results of Table 2 show that Social Security pensions have strong explanatory power (and with the expected sign) over our endogenous variable, and therefore work as potential instruments of our model.

Second, the instrument needs to be orthogonal to our dependent variable, meaning the latter cannot be explained by the instrument (and vice-versa). In this case, it is important to remark that the average pension payed in each territory is the result of long-term trends in the amount and quality of employment taking place in different regions, as well as the result of the (centralized) Social Security institutional framework in place in each moment. Therefore, Social Security pensions payed in neighboring jurisdictions of region i are not contingent on welfare benefits payed in region i since they are centrally and uniformly determined and can be considered exogenous.

Table 2: First Stage Estimations. Static Model. Neighborhood 1: Regions Sharing a Border Are Neighbors

	1S	2S	3S	4S	5S
GDP Per	2.465**	3.143**	-0.615	4.293***	4.862***
Capita	(0.791)	(0.986)	(1.121)	(0.851)	(1.015)
	-12.538***	-12.217***	-0.396	-11.035***	-10.771***
Poverty	(2.576)	(2.589)	(1.795)	(2.495)	(2.508)
	1.164	1.142	-0.735	0.416	0.402
Foral	(0.838)	(0.838)	(0.554)	(0.821)	(0.821)
	8.254**	6.633**	2.944	7.229**	7.563**
Ideology	(3.718)	(3.730)	(2.532)	(3.579)	(3.593)
Recipiency	1521.68**	1454.728**	1932.025***	1417.829*	1361.029**
Ratio	(528.259)	(531.118)	(353.1806)	(508.066)	(510.988)
Neighbors´					
Social Security	0.4280***	0.396***	1.465***	0.689***	0.660
Pension (t-2)	(0.023)	(0.036)	(0.072)	(0.059)	(0.065)
Fixed Effects	YES	YES	YES	yes	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
F Test	10.20 [0.0000]	10.30 [0.0000]	38.08 [0.0000]	12.64 [0.0000]	12.72 [0.0000]
R^2					

Within	0.9447	0.9449	0.9794	0.9491	0.9493
Between	0.6655	0.6361	0.7408	0.7136	0.6946
Overall	0.8964	0.8912	0.7816	0.8548	0.8507
N	285	285	285	285	285

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%. Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories

Table 3: Static Approach. 2SLS, Second Stage

	1S	2S	3S	4S	5S
GDP Per	4.064**	4.479**	6.908**	4.085**	4.449**
Capita	(1.352)	(1.837)	(2.361)	(1.387)	(1.842)
	-3.456	-3.744	-8.939**	-2.868	-2.965
Poverty	(3.099)	(3.150)	(3.810)	(3.909)	(3.910)
	8.369***	8.399***	8.654***	8.275***	8.277***
Foral	(1.215)	(1.207)	(1.170)	(1.283)	(1.278)
	-7.503	-7.028	-2.501	-7.892	-7.582
Ideology	(5.342)	(5.453)	(5.424)	(5.607)	(5.683)
Recipiency	1903.921**	1925.283**	2591.704***	1837.668**	1838.927**
Ratio	(828.918)	(825.979)	(788.810)	(843.368)	(839.809)
Neighbors´	0.667***	0.632***	0.285**	0.706***	0.6861***
Benefit (t-1)	(0.081)	(0.133)	(0.104)	(0.133)	(0.153)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
Wald Test	50199.37 [0.0000]	51050.48 [0.0000]	61098.05 [0.0000]	48881.75 [0.0000]	49314.72 [0.0000]
F Test	18.21 [0.0000]	18.15 [0.0000]	11.80 [0.0000]	12.04 [0.0000]	12.18 [0.0000]
R^2					
Within	0.8886	0.8909	0.9147	0.8861	0.8875
Between	0.6686	0.6701	0.6963	0.6586	0.6576
Overall	0.8044	0.8043	0.8124	0.7992	0.7980
N	285	285	285	285	285
Hausman Test for endogeneity	11.54 [0.0730]]	3.88 [0.7930]	6.36 [0.9998]	7.68 [0.3613]	5.46 [0.7070]

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%. Dependent variable: basic benefit received by an individual irrespective of the size of his/her own household. Endogenous variable: neighbors´ basic benefits. Instrument: average pension payed by the Social Security in each region. Neighborhood definition: purely geographical; those who share a border are considered neighbors.

All estimations of the main equation (Table 3) point to the presence of mimicking in the

design of regional welfare benefits. Neighbors´ benefits act as an important driver of own

benefits, with a positive and always significant coefficient. To test the robustness of our results, we run several additional regressions using the two alternative neighborhood criteria already mentioned above. As shown in Tables A.3 and A.4 in the Appendix, our results also hold when we consider that all regions are neighbors, pointing to the presence of a multilateral regional surveillance process. In addition, Tables A.5 and A.6 in the Appendix suggest the existence of horizontal mimicking when we consider that regions with similar economic conditions are neighbors, in line with the results obtained, for example, by Liu and Martínez-Vázquez (2014) for China. Comparing the results obtained under the three different neighborhood approaches, we observe that geographic proximity prevails over multilateral surveillance and economic similarity, since coefficients are systematically larger, although not by much.

Meanwhile, the recipiency ratio shows a positive relationship with benefits, pointing to a simultaneous use of the coverage and the generosity of the program to achieve the corresponding poverty reduction goals.

The static results also suggest that, under the current institutional design of welfare benefits with no federal funding or coordination whatsoever, regional resources seem to explain the generosity of benefits to a good extent, in line with the evidence also found in Herrero-Alcalde and Tránchez-Martin (2017). This evidence indicates that, as far as regional welfare benefits are concerned, the Spanish model of "radical federalism" in welfare policies does not promote interregional cohesion, since it allows the richer to be more generous than the poorer regions. This is in line with the literature that has extensively examined the under-provision of welfare under a decentralized design in the U.S. (Brown and Oates, 1987; Brueckner, 2000; Wheaton, 2000; Ayala Cañon et al., 2017). These results are further enhanced by the significant, positive, and large coefficients of the variable "Foral", which controls for the special generous

financial regime of the two charter regions in Spain (Navarre and the Basque Country). The greater revenue autonomy those two regions enjoy, together with their low contribution to the interregional solidarity funding for non-charter regions, allows them to have large budgetary resources, which they choose to use in part to implement much more generous welfare benefits.[20]

5.2 Dynamic (spatial error) approach

Although we find strong evidence of mimicking in the generosity of basic benefits, it is important to highlight that the results obtained under the static approach could be somewhat biased due to the strong inertia of budgetary variables, such as the level of welfare benefits.

To check the robustness of the results obtained under the static approach, we also run a dynamic model that allows us to disentangle the influence of neighbors´ policies and the role of any other underlying autoregressive spatial processes. Tables 4 and 5 display the results of the dynamic approach under a Panel Corrected Standard Errors model of estimation, with the same regressors used in Tables 2 and 3.[21] The values of the Rho statistic (between 0.5 and 0.6) in Table 4 point to the existence of an autoregressive process, therefore validating the dynamic strategy. First stage estimations can be found in Table 4, which shows the relevance of the instrument chosen in the auxiliary equation (Social Security pensions in t-2).

Table 4: First Stage Estimations. Panel Corrected Standard Errors Model. Neighborhood 1: Regions Sharing a Border Are Neighbors

	1M	2M	3M	4M	5M
GDP Per	3.337***	3.925***	-1.276	6.060***	6.135***
Capita	(0.798)	(1.013)	(1.236)	(0.954)	(1.082)
	-13.491***	-13.005***	-0.588	-11.276***	-11.214***
Poverty	(2.786)	(2.834)	(1.879)	(2.712)	(2.749)

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[20] Note that results for pro-redistribution preferences were not included in the tables. Although many specifications including this variable were tested, no statistical significance seemed to exist in any of them for this variable. We therefore decided to drop the variable from our estimations.

[21] We have run several System-GMM specifications to address the inertia of the dependent variable. However, we discarded them due to the instability of the results we obtained. Nevertheless, they are available upon request.

	1M	2M	3M	4M	5M
Foral	1.016	0.995	-0.730	0.235	0.236
	(0.918)	(0.918)	(0.587)	(0.895)	(0.897)
Ideology	7.860**	8.127**	3.527	7.135*	7.180*
	(3.870)	(3.882)	(2.553)	(3.714)	(3.734)
Recipiency Ratio	1472.069**	1431.716**	2013.157***	1170.686**	1166.167**
	(556.308)	(558.068)	(359.118)	(537.145)	(539.067)
Neighbors´ Social Security Pensions (t-2)	0.421***	0.392***	1.516***	0.733***	0.727***
	(0.024)	(0.039)	(0.077)	(0.069)	(0.081)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
F Test	9.94	9.98	37.34	12.38	12.31
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
R^2					
	0.9364	0.9366	0.9778	0.9418	0.9418
	0.6527	0.6218	0.7265	0.6945	0.6911
	0.8768	0.8699	0.7736	0.8138	0.8132
N	270	270	270	270	270

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%. Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories.

Table 5: Dynamic Approach. Panel Corrected Standard Errors; Second Stage.

	1M	2M	3M	4M	5M
GDP Per Capita	6.079**	5.460**	5.901*	6.050**	5.556**
	(2.093)	(2.412)	(3.182)	(2.013)	(2.302)
Poverty	6.109**	6.040**	-0.955	3.835	4.062
	(2.469)	(2.672)	(2.978)	(3.750)	(3.864)
Foral	8.156***	8.196***	8.050***	8.401***	8.360***
	(2.008)	(1.931)	(2.034)	(2.047)	(2.007)
Ideology	-4.739	-5.501	1.250	-4.091	-4.692
	(5.661)	(5.838)	(5.243)	(5.825)	(5.969)
Recipiency Ratio	1893.483	1801.385	2771.516**	2046.605*	1950.142
	(1240.814)	(1247.584)	(1228.225)	(1207.129)	(1211.989)
Neighbors´ Benefit (t-1)	0.481***	0.544***	0.288**	0.4066*	0.474**
	(0.112)	(0.160)	(0.124)	(0.221)	(0.238)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
Wald Test	2851.29	3604.19	7569.77	3436.68	3695.13
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Rho	0.6168	0.5737	0.5845	0.560	0.5365
R^2	0.7629	0.7908	0.8265	0.7990	0.8123
N	270	270	270	270	270

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%,

**Significant at 5%, ***Significant at 1%. Dependent variable: basic benefit received by an individual irrespective of the size of his/her own household. Endogenous variable: neighbors´ basic benefits. Instrument: average pension payed by the Social Security in each region. Neighborhood definition: purely geographical; those who share a border are considered neighbors.

Once again, we find strong supporting evidence of interregional imitation of welfare benefits setting at the Spanish regional level: neighbors´ benefits positively affect the amount of each region´s own welfare benefits. In line with what we found under the static strategy, per capita GDP has a positive effect in the level of benefits, and so does the special institutional status of the charter (foral) regions. The recipiency ratio, once again, shows a positive influence on welfare benefits.

The robustness of the results obtained under the dynamic strategy are also tested using the two alternative neighborhood criteria explained above. As shown in Tables A.7 and A.8 in the Appendix, horizontal mimicking is also present when all territories are considered neighbors (Neighborhood 2). Regions observe the behavior of the rest of the country and then decide their own level of benefits. The same conclusions can be drawn from the analysis of Tables A.9 and A.10, which show the results of the dynamic model applied under the economic neighborhood definition perspective (Neighborhood 3).

5.3 Economic and policy implications

Summarizing, very similar results are found in both the spatial lag and the spatial error models. While benefit levels in each region largely depend on their budget resources, our empirical results also lend strong support to the mimicking hypothesis: regional public agents observe what their peers are doing and act accordingly. Since the existence of strict residency requirements and the extremely low mobility of Spanish poor households allow us to rule out both the spillovers and fiscal competition hypothesis, the evidence points to the existence of a

yardstick competition process. This imitation, however, does not seem to respond to a strategic electoral behavior, since regional welfare benefits have not been subject to open public debate for years. What we are finding here is evidence of an "intellectual trend" that triggers policy convergence within a political union, in line with what Redoano (2003) found for the European Union.

Therefore, according to our results, it appears that the full decentralization of welfare benefits does not necessarily lead to a race-to-the-bottom with very different levels. It seems like, through mimicking, some logic is imposed into the decentralized system. These results are very useful for other countries that are decentralized or decentralizing their welfare benefits. Selecting a decentralized route for some welfare benefits may actually result in a system that is not in disarray.

6. Conclusions

The literature on welfare decentralization has traditionally stressed the potential positive effects of fiscal devolution both in terms of efficiency and coverage of the programs. Regional governments are in a better position to understand both social preferences and needs of poor households and generally they can implement these programs more effectively. However, the expectation that a decentralized provision of welfare is supposed to foster citizens´ wellbeing is challenged by problems of coordination and financing, which at the end may produce a mosaic of highly varied programs—with a striking disparity of protection levels. In addition, competition among jurisdictions does not always yield the result of positive innovation. Ignoring these constraints can result in a generally regressive nationwide distribution of benefits, with the richest jurisdictions paying much higher benefits than the less wealthy ones.

These limitations, common to any decentralized welfare system, can be fostered in

models of "radical fiscal federalism", where federal coordination and/or funding do not exist. This was the case of the Spanish safety net design, where these programs were entirely created and regulated by the regional governments.

In this paper, we use panel data for Spanish regions with the aim of answering one essential question: Does mimicking among ACs partly explain the level of regional welfare benefits in Spain? While the answer to this question is not a priori obvious, our empirical results corroborate the presence of significant interregional interactions. We find strong evidence of a mimicking behavior: ACs observe what their neighboring governments are doing and then decide their own basic benefit levels. Therefore, our results confirm the conventional wisdom on the territorial interdependency of policy decisions with respect to welfare benefit levels, even within a highly fiscally decentralized framework—where there is no participation of the central government in the design, regulation, or financing of the system. Therefore, mimicking provides a vehicle that can save fully decentralized systems of welfare benefits from the expected race-to-the-bottom. Our results suggest that the divergent trend in welfare benefits triggered by regional differences in fiscal capacity is partially compensated by regional interdependence.

Our results are obtained utilizing the spatial lag approach and confirmed when the proposed relationships are analyzed using the spatial error approach. Given the probable inertia of benefit levels, the results obtained under static approaches could be somewhat biased. However, the use of a dynamic model also suggests that, while benefit levels in each region largely depend on regional resources, the mimicking hypothesis is still validated: regional public agents observe what their peers are doing and act accordingly.

In short, in this paper we contribute to the current literature by providing strong supporting evidence for the role played by imitation in the determination of decentralized

welfare benefits in contexts where these policies are completely decentralized. Therefore, we confirm the results anticipated by other studies that governments pay attention to what their neighbors do, but in our case with the novelty of confirming it even when there is no system of coordination or co-financing from the central government whatsoever.

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Appendix

Figure A.1. GDP Per Capita
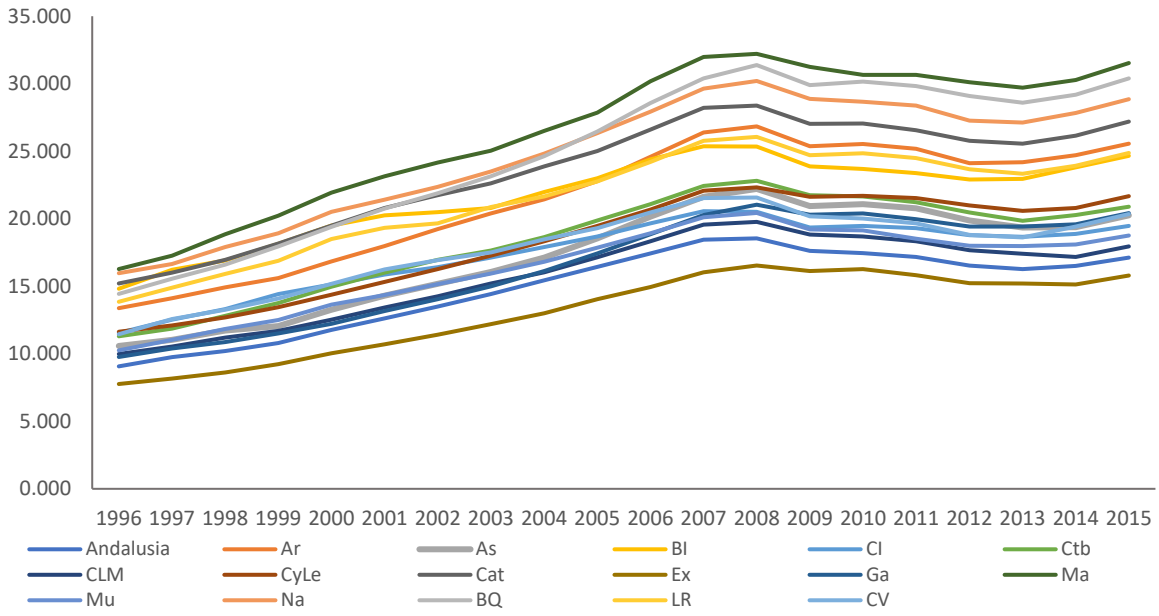
Source: Regional National Accounts

Table A.1: Regional Minimum Income Programs: Basic Data

		Number of recipients (Basic Benefit in Euros)					
Region	**1st Year**	**1990**	**1996**	**2000**	**2005**	**2010**	**2015**
Andalusia	1991		8,758 (242)	15,962 (263)	19,445 (318)	29,644 (393)	51,656 (402)
Aragon	1993		1,112 (198)	1,396 (255)	1,470 (324)	3,382 (441)	8,582 (459)
Asturias	1991		1,512 (249)	1,116 (282)	2,129 (337)	8,129 (436)	20,263 (443)
Balearic Islands	1996		583 (246)	570 (282)	1,065 (337)	2,076 (396)	3,071 (429)
Canary Islands	1992		3,096 (180)	5,358 (239)	6,621 (343)	4,900 (472)	12,136 (472)
Cantabria	1990	400 (180)	490 (213)	2,340 (249)	1,193 (287)	3,424 (426)	6,445 (426)
Castile-La Mancha	1991		2,116 (234)	813 (298)	554 (329)	1,411 (373)	2,993 (373)
Castile Leon	1991		3,306 (180)	2,814 (260)	2,539 (352)	3,444 (399)	15,351 (426)
Catalonia	1990	370 (198)	8,372 (234)	9,726 (286)	12,866 (338)	30,277 (414)	29,537 (424)
Extremadura	1990	515 (150)	671 (189)	998 (319)	500 (352)	1,580 (399)	11,023 (426)
Galicia	1992		5,003 (214)	5,893 (242)	5,587 (305)	6,948 (399)	13,848 (399)
Madrid	1990	1034 (198)	7,815 (238)	7,855 (249)	10,677 (315)	15,014 (376)	29,865 (376)
Murcia	1992		532 (216)	290 (240)	280 (260)	1,370 (300)	4,820 (300)
Navarra	1990	417 (198)	1,837 (245)	1,820 (319)	2,515 (376)	7,444 (633)	12,875 (649)
Basque Country	1989	8 (180)	16,052 (243)	16,550 (305)	31,654 (506)	66,545 (650)	80,378 (619)
La Rioja	1990	28 (156)	254 (236)	179 (289)	145 (329)	1,287 (373)	2,950 (399)
Valencia	1990	429 (180)	3,713 (249)	2,565 (298)	2,709 (337)	5,265 (385)	16,383 (385)

Table A.2: Variables Description

Variable	Description	Source
BB	Basic benefit (maximum amount) received by an individual	
Poverty	Severe poverty rate	
Pro-redistribution preferences	Percentage of citizens that, asked about the purpose of taxes, answer that they are collected in order to better distribute wealth within the society. Constructed based on the results of a poll implemented by the Spanish Centre of Sociological Research: "Opinión Pública y Política Fiscal". (1996-2016).	Centro de Investigaciones Sociológicas www.cis.es
Resources	As a proxy of regional resources, per capita GDP was used	Instituto Nacional de Estadística www.ine.es
Foral	Dummy variable that amounts 1 when a special regional financial regime applies	
Ideology	Dummy variable that amounts 1 with a left-wing or center-left-wing incumbent	
Pension	Average Social Security pension in t-2 in region i	Social Security www.seg-social.es
NWBB	Neighbors´ welfare basic benefits in t-1	
RecipRatio	Recipiency ratio: share of total population that qualifies for welfare benefits	
LR	La Rioja	
CV	Valencia	
CLM	Castile-La Mancha	
Mu	Murcia	
Ma	Madrid	
An	Andalusia	
CI	Canary Islands	
Ctb	Cantabria	
Ex	Extremadura	
Cat	Catalonia	
Ga	Galicia	
CyLe	Castile-Leon	
BI	Balearic Islands	
As	Asturias	
Ar	Aragon	
Na	Navarra	
BC	Basque Country	

Table A.3: Robustness Test with Neighborhood 2 (All Territories Are Neighbors). 2SLS. 1st Stage.

	6S	7S	8S	9S	10S
GDP Per	3.931***	5.766***	-0.036	4.196***	5.371***
Capita	(0.419)	(0.513)	(0.175)	(0.556)	(0.562)
	-4.504***	-2.937**	-0.018	-4.453***	-2.852**
Poverty	(1.352)	(1.312)	(0.228)	(1.355)	(1.309)
	-0.430	-0.661	-0.604***	-0.449	-0.647
Foral	(0.512)	(0.487)	(0.085)	(0.513)	(0.486)
	1.281	1.598	0.206	1.366	1.436
Ideology	(1.940)	(1.842)	(0.331)	(1.945)	(1.838)
Recipiency	-1100.542***	-1281.579***	-166.078***	-1120.346***	-1257.905***
Ratio	(294.545)	(281.387)	(51.342)	(296.045)	(280.810)
Neighbors´					
Social Security	0.431***	0.345***	0.204*	0.468***	0.245***
Pension (t-2)	(0.012)	(0.195)	(0.122)	(0.051)	(0.061)
Fixed Effects	YES	YES	YES	Yes	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
F Test	9.11 [0.0000]	11.67 [0.0000]	9.36 [0.0000]	6.14 [0.0000]	8.67 [0.0000]
R^2					
Within	0.9795	0.9816	0.9995	0.9795	0.9818
Between	0.0028	0.0219	0.8097	0.0047	0.0194
Overall	0.9409	0.9043	0.9990	0.9364	0.9127
N	306	306	306	306	306

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories.

Table A.4: Robustness Test with Neighborhood 2 (All Territories Are Neighbors). 2SLS. 2nd Stage

	6S	7S	8S	9S	10S
GDP Per	5.407***	5.637**	0.825	5.095***	1.378
Capita	(1.353)	(2.244)	(2.529)	(1.377)	(4.007)
	2.591	2.649	1.259	4.605	5.210
Poverty	(3.237)	(3.315)	(3.094)	(3.582)	(3.839)
	10.629***	10.601***	-2.359	10.712***	11.194***
Foral	(1.336)	(1.361)	(5.301)	(1.348)	(1.500)
	0.275	0.325	4.075	0.165	-0.679
Ideology	(5.001)	(5.008)	(4.646)	(5.042)	(5.295)
Recipiency	2084.121**	2048.861**	-1265.281	2425.367**	3211.237**
Ratio	(742.318)	(776.098)	(1633.994)	(787.352)	(1169.992)
Neighbors´	0.560***	0.543***	-19.601**	0.954***	1.512**
Benefit (t-1)	(0.076)	(0.154)	(8.125)	(0.288)	(0.724)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
Wald Test	56366.02 [0.0000]	56161.13 [0.0000]	82213.60 [0.0000]	55475.41 [0.0000]	51034.38 [0.0000]
F Test	12.31 [0.0000]	11.69 [0.0000]	0.45 [0.9542]	12.12 [0.0000]	10.63 [0.0000]
R^2					
Within	0.8793	0.8793	0.9222	0.8778	0.8677
Between	0.7520	0.7472	0.9806	0.7599	0.8095
Overall	0.8221	0.8193	0.9396	0.8260	0.8471
N	306	306	306	306	306
Hausman Test for endogeneity	0.03 [1.0000]	0.14 [1.0000]	0.54 [1.0000]	0.03 [1.0000]	0.16 [1.0000]

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories.

Table A.5: Robustness Test with Neighborhood 3 (Regions with Similar Economic Conditions Are Neighbors). 2SLS. 1st Stage.

	11S	12S	13S	14S	15S
GDP Per	3.731***	5.016***	-0.667	7.850***	8.508***
Capita	(0.948)	(1.248)	(2.135)	(0.954)	(1.173)
	-9.127***	-8.201**	1.076	-4.344*	-3.887
Poverty	(2.908)	(2.959)	(2.303)	(2.622)	(2.665)
	-1.738	-1.754	-4.303***	-3.536***	-3.527***
Foral	(1.108)	(1.105)	(0.839)	(0.998)	(0.999)
	-6.246	-6.145	-9.483**	-5.807	-5.756
Ideology	(4.270)	(4.259)	(3.333)	(3.771)	(3.771)
Recipiency	-2627.048***	-2673.24***	-2606.258***	-3246.209***	-3265.241***
Ratio	(657.3531)	(656.290)	(508.056)	(584.471)	(584.879)
Neighbors´					
Social Security	0.491***	0.432***	1.561***	0.9864***	0.9495***
Pension (t-2)	(0.028)	(0.047)	(0.098)	(0.060)	(0.071)
Fixed Effects	YES	YES	YES	Yes	YES
		Dummy		Linear	Dummy Crisis
Time Effects	No	Crisis	Year Effects	Trend	Linear Trend
	9.91	10.11	25.00	16.16	16.22
F Test	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
R^2					
Within	0.9143	0.9150	0.9571	0.9334	0.9336
Between	0.7520	0.7371	0.7275	0.7152	0.7113
Overall	0.8753	0.8712	0.7736	0.7655	0.7637
N	306	306	306	306	306

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories

Table A.6: Robustness Test with Neighborhood 3 (Regions with Similar Economic Conditions Are Neighbors). 2SLS. 2nd Stage

	11S	12S	13S	14S	15S
GDP Per	6.287***	8.500***	5.664*	6.159	9.156***
Capita	(1.538)	(2.276)	(3.310)	(0.085)	(2.016)
	6.746**	6.531**	1.849	6.159***	2.819
Poverty	(3.384)	(3.229)	(3.621)	(1.422)	(3.615)
	10.404***	10.117***	9.917***	10.421***	10.032***
Foral	(1.528)	(1.481)	(1.364)	(1.401)	(1.395)
	3.183	2.355	0.521	0.848	0.323
Ideology	(5.918)	(5.710)	(5.280)	(5.366)	(5.303)
Recipiency	2569.433**	2107.864**	2138.887**	1866.579**	1423.979*
Ratio	(837.228)	(865.388)	(847.951)	(795.093)	(813.012)
Neighbors´	0.458***	0.305**	-0.061	0.108	-0.009
Benefit (t-1)	(0.078)	(0.140)	(0.098)	(0.085)	(0.104)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
Wald Test	43205.41 [0.0000]	47279.03*** [0.0000]	59831.92 [0.0000]	51436.42 [0.0000]	52853.29 [0.0000]
F Test	20.25	20.88	10.34 [0.0000]	11.06 [0.0000]	11.69 [0.0000]
R^2					
Within	0.8426	0.8567	0.8931	0.8683	0.8722
Between	0.5777	0.5868	0.7745	0.7011	0.6719
Overall	0.7107	0.7122	0.8403	0.7891	0.7649
N	306	306	306	306	306
Hausman Test for endogeneity	9.80 [0.1334]	1.04 [0.9941]	5.35 [0.5003]	0.06 [1.0000]	0.14 [1.0000]

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories

Table A.7: Robustness Test with Neighborhood 2 (All Territories Are Neighbors). Panel Corrected Standard Errors. 1st Stage

	6D	7D	8D	9D	10D
GDP Per Capita	3.931***	5.766***	-0.036	4.196***	5.371***

	(0.419)	(0.513)	(0.175)	(0.556)	(0.562)
	-4.504***	-2.937**	-0.018	-4.453***	-2.852**
Poverty	(1.352)	(1.312)	(0.228)	(1.355)	(1.309)
	-0.430	-0.661	-0.604***	-0.449	-0.647
Foral	(0.512)	(0.487)	(0.085)	(0.513)	(0.486)
	1.281	1.598	0.206	1.366	1.436
Ideology	(1.940)	(1.842)	(0.331)	(1.945)	(1.838)
Recipiency	-1100.542***	-1281.579***		-1120.346***	-1257.905***
Ratio	(294.545)	(281.387)		(296.045)	(280.810)
Neighbors´					
Social Security	0.431***	0.345***	0.204*	0.468***	0.2457***
Pensions (t-2)	(0.012)	(0.019)	(0.122)	(0.051)	(0.061)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
	9.11	11.67	9.36	6.14	8.67
F Test	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
R^2					
Within	0.9795	0.9816	0.9995	0.9795	0.9818
Between	0.0028	0.0219	0.8097	0.0047	0.0194
Overall	0.9409	0.9043	0.9990	0.9364	0.9127
N	306	306	306	306	306

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories.

Table A.8: Robustness Test with Neighborhood 2 (All Territories Are Neighbors). Panel Corrected Standard Errors. 2nd Stage

	6D	7D	8D	9D	10D
GDP Per	5.270**	3.274	-0.942	5.614**	3.373
Capita	(2.213)	(2.730)	(3.6016)	(2.244)	(5.735)
Poverty	5.705**	4.989**	2.195	4.250	4.802

	(2.297)	(2.306)	(2.541)	(3.277)	(4.015)
	9.010***	9.424***	-0.499	9.035***	9.413***
Foral	(2.376)	(2.309)	(7.458)	(2.306)	(2.364)
	-0.963	-1.332	5.375	-0.654	-1.197
Ideology	(4.632)	(4.684)	(4.865)	(4.663)	(4.948)
Recipiency Ratio	2812.165**	3035.669**	526.3405	2502.073**	2981.433
	(1125.6)	(1110.694)	(2649.6)	(1269.512)	(1871.699)
Neighbors´ Benefits (t-1)	0.495***	0.666***	-14.858	0.230	0.624
	(0.109)	(0.169)	(11.867)	(0.522)	(1.209)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
Wald Test	28020.18 [0.0000]	35266.09 [0.0000]	30793.75 [0.0000]	33836.75 [0.0000]	37307.19 [0.0000]
Rho	0.7293	0.690	0.666	0.7057	0.6878
R^2	0.6397	0.6768	0.7532	0.6628	0.6789
N	306	306	306	306	306

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories

Table A.9: Robustness Test with Neighborhood 3 (Regions with Similar Economic Conditions Are Neighbors). Panel Corrected Standard Errors. 1st Stage

	11D	12D	13D	14D	15D
GDP Per Capita	3.731***	5.016***	-0.667	7.850***	8.508***
	(0.948)	(1.248)	(2.135)	(0.954)	(1.173)
	-9.127**	-8.201**	1.076	-4.344*	-3.887
Poverty	(2.908)	(2.959)	(2.303)	(2.622)	(2.665)
Foral	-1.738	-1.754	-4.303***	-3.536***	-3.527***

	(1.108)	(1.105)	(0.839)	(0.998)	(0.999)
	-6.246	-6.145	-9.483**	-5.807	-5.756
Ideology	(4.270)	(4.259)	(3.333)	(3.771)	(3.771)
					-
Recipiency Ratio	-2627.048***	-2673.24***	-2606.258***	-3246.209***	3265.241***
	(657.353)	(656.290)	(508.056)	(584.471)	(584.879)
Neighbors´ Social Security Pensions (t-2)	0.4919***	0.432***	1.561***	0.986***	0.949***
	(0.028)	(0.047)	(0.098)	(0.060)	(0.071)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
F Test	9.91	10.11	25.00	16.16	16.22
	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
R^2					
Within	0.9143	0.9150	0.9571	0.9334	0.9336
Between	0.7520	0.7371	0.7275	0.7152	0.7113
Overall	0.8753	0.8712	0.7736	0.7655	0.7637
N	306	306	306	306	306

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%. Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories

Table A.10: Robustness Test with Neighborhood 3 (Regions with Similar Economic Conditions Are Neighbors). Panel Corrected Standard Errors. 2nd Stage

	11D	12D	13D	14D	15D
GDP Per Capita	5.619**	4.8877*	1.438	5.740**	6.219**
	(2.239)	(2.551)	(3.299)	(2.318)	(2.533)
Poverty	7.739***	7.666***	2.454	3.393	3.226

	(2.246)	(2.307)	(2.537)	(2.457)	(2.496)
	8.740***	9.142***	9.163***	8.806***	9.070***
Foral	(2.370)	(2.202)	(2.117)	(2.417)	(2.216)
	2.337	2.821	2.658	-0.360	-0.398
Ideology	(4.681)	(4.760)	(4.297)	(4.717)	(4.759)
	3426.322**	3475.808**	3137.009**	2427.528*	2249.736*
Recipiency Ratio	(1109.579)	(1106.635)	(1189.484)	(1265.626)	(1247.888)
Neighbors´	0.4288***	0.506***	-0.000	0.010	0.008
Benefits (t-1)	(0.098)	(0.137)	(0.097)	(0.157)	(0.156)
Fixed Effects	YES	YES	YES	YES	YES
Time Effects	No	Dummy Crisis	Year Effects	Linear Trend	Dummy Crisis Linear Trend
Wald Test	24824.42 [0.0000]	42520.29 [0.0000]	91359.92 [0.0000]	23941.38 [0.0000]	47341.07 [0.0000]
Rho	0.7370	0.6624	0.658	0.7430	0.6665
R^2	0.6283	0.6960	0.7576	0.6262	0.6961
N	306	306	306	306	306

Standard errors reported in brackets; P Values reported in square brackets. *Significant at 10%, **Significant at 5%, ***Significant at 1%.   Endogenous variable: neighbors´ basic benefits. Instrument: average Social Security Pension in neighbors´ territories