The University of Manchester

Economics
Discussion Paper Series
EDP-1325

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November 2013

Economics
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13th November 2013

Abstract

What drives demand for redistribution? In this paper we empirically test for the presence of other-regarding and insurance motivations underlying demand for redistribution. We consider redistribution in the form of unemployment benefits and estimate how changes in the local unemployment rate affect expressed demand for unemployment benefits by the employed. Using a newly constructed data set, we find evidence that the expressed demand for unemployment benefits by workers with little to no risk of becoming unemployed themselves does not respond to changes in the local unemployment rate. However, the expressed demand for such benefits by the workers who do face a significant risk of unemployment does exhibit sensitivity to changes in the unemployment rate. These results suggest that preferences for redistribution in the form of unemployment benefits are driven by insurance considerations rather than by any form of other-regarding preferences.

Keywords: redistribution, preference formation, public good
JEL Codes: D64, H53, H77, J6

Acknowledgements. The authors are grateful to Sasha O. Becker, Johannes Becker, José Manuel Casado-Díaz, Matias Cortes, Mercè Costa, Maria Cubel, Rachel Griffith, Vilen Lipatov, Rosina Moreno, Ana Nuevo, Amedeo Piolatto, Beatriz Rodriguez Prado, Javier Romaní, Ignacio Ruiz-Conde, Santi Sanchez-Pages, Sara Torregrosa, seminar participants from the BIG series at the University of Barcelona, the Workshop on Federalism and Regional Policy at the University of Siegen, the CAGE Conference Generosity and Well-Being at the University of Warwick and at the University of Manchester. We are also grateful to Angela Mediavilla for superb research assistance. Finally, we acknowledge funding from the Spanish Ministry of Economy and Competitiveness (ECO2012-37873), and from the government of Catalonia (2009SGR102). The usual disclaimer applies.

1 Introduction

The redistribution of income is one of the primary activities of modern governments. Nearly every OECD country has a degree of progressiveness in their income tax system (OECD, 2008, p. 112) designed to redistribute income from the better off to the worse off. However, it remains unclear as to why, precisely, such systems are supported by the populace (Boeri, Börsch-Supan and Tabellini, 2001). Why do people support redistributive policies? For net recipients of any redistribution, the answer may seem trivial, as such people will materially benefit from any increase in the degree of redistribution. In democracies where the median voter is a net recipient we would expect to see redistributive policies in place (Meltzer and Richard, 1981) though this condition is not always met. For example, between 1979 and 2001, less than 45 percent households in the United Kingdom, a country with a large and growing welfare state (Browne and Hood, 2012), were net recipients of the welfare state (Bourne, 2012). This suggests that net contributors do not unanimously oppose redistributive policies even when such policies cost them materially. From an economic point of view, it is important to know whether individual preferences for redistribution via different instruments incorporate an other-regarding component as failure to account for such motives may lead to an under-provision of redistribution. Moreover, the absence of such a component has implications for the conception of redistribution as a public good (Thurow, 1971). Despite increasing attention from economists, the question as to why these net contributors support a redistributive system remains open.

In this paper we examine the demand for redistribution by net contributors and the structure of the preferences underlying that demand. We contend that demand for redistribution by net contributors will be driven by demand for insurance and/or some form of other-regarding preferences. Using a newly constructed data set, we first empirically test whether demand for redistribution of income is a function of the current distribution by modeling the expressed demand of the employed for unemployment benefits as a function of the local unemployment rate. We then attempt to disentangle the selfish insurance and other-regarding motivations underlying the demand for redistribution by net contributors, i.e. the employed. Alesina and Giuliano (2009) note that separating the two motivations empirically is difficult, albeit not 'fatal'. We directly address this difficulty. To do so, we isolate the other-regarding motivation by exploiting the fact that some workers in our setting have virtually inviolable job security. Using a difference-in-differences-*like* design and instrumental variables, we find evidence that the demand of net contributors for redistribution via one instrument, (unemployment benefits) is driven entirely by demand for insurance rather than any other-regarding component to preferences. Our primary contribution to the literature is this empirical disentanglement of the two motivations.

Cowell and Schokkaert (2001) recommend that studies of preferences for redistribution be done in the laboratory and there is indeed a sizable experimental literature in this area (e.g. Fehr and Schmidt, 1999; Charness and Rabin, 2002; and see Fehr and Schmidt, 2006 for a survey). Our results contrast with those generally found in laboratory experiments, where other-regarding preferences underlying distributional concerns are often identified. A smaller number of studies use, like us, survey data to study preferences for redistribution. These studies have tended to focus on relating observable

characteristics of individuals to preferences for redistribution (Piketty, 1995; Croson and Gneezy, 2009; Alesina and Giuliano, 2009), studying the relationship between social mobility and preferences for redistribution (Ravallion and Lokshin, 2000; Alesina and La Ferrara, 2005) and relating political beliefs to preferences for redistribution (Alesina and Angeletos, 2005), though this is not a mutually exclusive typology. While the identification of altruistic or other-regarding motives is central to the experimental literature, it tends to be addressed less directly, if at all, in those studies using survey data. This is likely due to the difficulty of empirically distinguishing the two outside the lab, as noted by Alesina and Giuliano (2009). We locate our paper at this intersection of the experimental literature focused on the identification of other-regarding motives underlying demand for redistribution and the literature considering the determinants of preferences for redistribution using field data.

In our analysis, we focus on a particular instrument of redistribution, unemployment benefits, for a number of reasons. First, as Boadway and Oswald (1983) argue, 'casual observation suggests that policy-makers have in mind redistribution of income as at least one rationale for unemployment insurance' (p. 195). That is unemployment benefits are, at least in part, an instrument for redistributing income. Second, Kuzienko, Norton, Saez and Stantcheva (2013) argue that demand for general redistribution might not be too intense because people are unlikely to be unaware of the level and changes in some more general inequality metric. The level of unemployment, however, is a clearly visible, often reported and simple to comprehend variable making it more likely individuals will recognise any change and respond, assuming they respond at all. Third, in the case of unemployment, the instrument (unemployment benefits) and the target of the redistribution (the unemployed) are inextricably linked making it simpler to analyze the relationship between the two. Fourth, unemployment benefits make up a significant amount of social spending. In 2010, expenditure on unemployment benefits by the seventeen Euro area countries was about 6.1 per cent of total 'social protection' expenditure.[1]

The rest of the paper is as follows: in Section 2, we set a basic theoretical framework that serves the purpose of justifying the hypotheses we will test in our empirical analysis using unemployment benefits as the redistributive tool. In Section 3, we present our database and discuss our identification strategy. Results are presented in Section 4 and conclusions drawn in Section 5.

2 Theoretical Framework: Redistribution through Unemployment Benefits

There are a number of models of demand for redistribution (see Alesina and Giuliano (2009) for a review). We take a general approach in which we allow agents to derive

[1] Based on the authors' calculations using data obtained from Eurostat (http://epp.eurostat.ec.europa.eu/portal/pls/portal/). The tables used in this calculation are available from the authors upon request. According to Eurostat the 'social protection' expenditure includes eight categories of spending: Sickness/Health care, Disability, Old age, Survivors, Family/children, Unemployment, Housing and Social exclusion not elsewhere classified.

utility from their own consumption (the insurance motive) and, possibly, from the consumption of others (the other-regarding motive). The insurance motive suggests that, given an increase in inequality, greater demand for redistribution may simply reflect the desire of risk-averse individuals to insure themselves against income fluctuations that may affect themselves (Buchanan and Tullock, 1962; Varian, 1980).

The demand for redistribution by net contributors might also reflect a concern for the net recipients via some form of other-regarding, or pseudo-altruistic, preferences (Fehr and Schmidt, 2006; Cooper and Kagel, 2009). That is, despite not being directly affected by a negative shock, net contributors may demand greater redistribution, as they are inclined toward the greater happiness of others. Such concern may be purely altruistic (see Kolm, 2006, for a detailed classification of altruism). However, such other-regarding preferences may also reflect the self-interest of the net contributor as the increased inequality may affect her materially via, say, an increase in the crime rate resulting from higher levels of poverty. Thus, the presence of other-regarding preferences may also be consistent with the conventional conception of the self-interested Homo Oeconomicus though via a different mechanism. How important other-regarding preferences are for the demand of redistribution remains unclear. Some authors find evidence for such a component in preferences. (e.g. Fong, 2001; Isaksson and Lindskog, 2007; Dahlberg, Edmark and Lundqvist, 2012). However, others conclude that demand of redistribution is mainly driven by self-interested insurance concerns (Cusack, Iversen and Rehm, 2006; Esarey, Salmon and Barrilleaux 2011).

The main aim of our empirical analysis is to ascertain the nature of demand for redistribution in the form of unemployment benefits (UB). To do so, we estimate how worker's demand for redistributive taxation responds to aggregate shocks to local unemployment rates. In this section we develop a simple theoretical model, effectively an extension of Moene and Wallerstein (2001), to more clearly motivate the empirics and to provide a framework within which we can interpret the estimated effects.

We assume an economy consisting of N individuals, where N is normalized to 1. A share of these individuals, u, is unemployed. We assume all employed workers earn the same wage, w, a portion of which, t, is paid into a UB scheme (social security contribution by employees). The consumption of employed individuals, C_e, is thus given by

$$C_e = (1-t)w \tag{1}$$

and the consumption of the unemployed individuals, C_n, is equal to

$$C_n = \lambda \widetilde{w} \tag{2}$$

where $\tilde{w}$ is the average of the wages obtained by the individual in the past; for the sake of simplicity, we assume $w = \tilde{w}$. However, she is not fully compensated according to her past contributions to the UB system, but according to a percentage, λ, such that $1 \geq \lambda > 0$. We assume that $C_n < C_e$, which holds provided $\lambda < (1-t)$. The

inter-temporal budget constraint of the UB system must be balanced such that[2]:

$$(1-u)t = u\lambda \tag{3}$$

Note, though, that according to the explanation of the financing system given above, in the short run, this is compatible, for example, in times of crisis with situations where UB are also funded out of the general budget through transfers from the central government, that is, not only from social security contributions. Analogously, in good times, this is compatible with a situation in the short run where part of the social security contributions are employed to fund other policies related to the functioning of the labor market.

We substitute Equation (2) into Equation (3) and re-arrange to get:

$$C_n = \frac{1-u}{u}t \tag{4}$$

We assume employed individuals perceive some risk of transitioning from employment to unemployment with probability α. Similarly, the perceived probability of transitioning from unemployment to employment is given by β. Both α and β vary across individuals and are functions of that individual's socio-economic characteristics, the observable characteristics of i's job, as well as the actual unemployment rate, u, such that the elasticity of α with respect to the unemployment rate, $\varepsilon_{\alpha,u}$, is non-negative and $\varepsilon_{\alpha,u}\,|_{\alpha=0} = 0$. The elasticity of β with respect to the unemployment rate, $\varepsilon_{\beta,u}$, is non-positive. These elasticities are measures of an individuals immunity to common unemployment shocks.

For the sake of simplicity, we take α and β as exogenous with respect to t, though we recognise that β could negatively depend on the generosity of the welfare system provoking a 'poverty trap'[3]. Note that in the steady-state, the unemployment rate must remain constant (i.e., the outflows must equal the inflows) and so it must be the case that $u = \frac{\alpha}{\beta+\alpha}$.

In addition to deriving utility from their own consumption, we allow for the possibility that agents are other-regarding; that is, they may derive utility from the consumption of others. The degree to which preferences are other regarding is captured by θ. When $\theta = 0$, the consumption of others does not enter agent i's utility function.

We assume infinitely lived, risk-averse individuals and specify the expected lifetime utility of a representative agent according to the following set of Bellman equations:

[2] In a political-economy framework, Moene and Wallerstein (2001) analyse the optimal choice of λ, which they denote by $1-\gamma$. Although we are not going to analyse it, note it is a complementary instrument to t to balance the budget constraint of the system in the long run. For instance, the Spanish government recently carried out several measures which amount to a modification of λ while keeping t unchanged, although we do not know whether this is the reflection of a long-term or a short-term policy. For example, λ falls from 0.6 to 0.5 after the seventh month of unemployment. Given a large increase in the unemployment rate, the government may decide to set more stringent conditions for those applying for UB, which implicitly amounts to decrease λ.

[3] Note, however, that during our period of analysis (see section 3), the generosity of the welfare system has remain unchanged (i.e. t is fixed).

$$rV_e = U(C_e) - \alpha\left(V_e - V_n\right) + \theta U(C_n) \tag{5}$$

$$rV_n = U(C_n) + \beta(V_e - V_n) + \theta U(C_n) \tag{6}$$

where r is a common discount rate. Equation (5) describes the lifetime utility of an employed individual. Should, however, she become unemployed, she loses the flow of utility, $V_e - V_n$, which is strictly positive. Equation (6) describes the expected life-time utility of a currently unemployed individual. The interpretation of this equation is similar to the previous one. We assume the degree to which preferences are other-regarding is not contingent on the employment status, although relaxing this assumption does not qualitatively alter the result. Substituting Equation (6) into Equation (5) we obtain the expected life-time utility of an employed individual as:

$$rV_{\mathrm{e}} = \frac{r+\beta}{r+\beta+\alpha}U(C_e) + \frac{\alpha}{r+\beta+\alpha}U(C_n) + \theta U(C_n) \tag{7}$$

The maximisation of Equation (7) with respect to t will determine the utility maximising t for a given employed individual (FOC):

$$t^*: \ \frac{1-u}{u}U'(C_n)\left[\theta + \frac{\alpha}{r+\beta+\alpha}\right] = U'(C_e)\left[\frac{r+\beta}{r+\beta+\alpha}\right] \tag{8}$$

The right hand side of Equation 8 is the discounted marginal cost of increasing t, and thus UB, which decreases (increases) in α (β). The left hand side is the marginal benefit of an increase in t, which is increasing in the degree of other-regarding (θ), including altruism, and increasing (decreasing) in α (β). We further restrict θ such that $0 \leq \theta < \frac{\alpha}{r+\beta+\alpha}$, ensuring that individuals derive more instant utility from their own consumption when unemployed than from the consumption of others.

Our primary interest is in $^{dt^*}/_{du}$; so we take the derivative of Equation (8) with respect to u and substitute in the FOC to obtain:

$$\frac{dt^*}{du} = \frac{t}{u}\left\{\frac{\alpha\left\{(1+\theta)\left[\varepsilon_\alpha - \frac{\beta}{r+\beta}\varepsilon_\beta\right] - \frac{[1-RA(C_n)]}{1-u}\right\} - \theta\frac{(r+\beta+\alpha)}{1-u}\left[1-RA(C_n)\right]}{\left[\theta(r+\beta+\alpha)+\alpha\right]\left[RA(C_n) + \frac{t}{1-t}RA(C_e)\right]}\right\} \geq 0 \tag{9}$$

where $RA(C_n)$, such that $RA(C_n) \equiv -\frac{C_n U''(C_n)}{U'(C_n)}$, is the coefficient of relative risk aversion (RRA) which we assume is strictly greater than 1 (Meyer and Meyer, 2005). Thus, Expression (9) is non-negative suggesting that an increase in the unemployment rate will lead to an increase in demand for redistributive taxation. This effect operates via two channels observable from the numerator. The first summand is picking up a *self-insurance effect* as long as $\alpha > 0$ (there is also a second order effect on others' welfare as long as the individual has other-regarding preferences). The second summand is picking up an *other-regarding effect* as long as $\theta > 0$. Hence, if the individual does not have other-regarding preferences, $\theta = 0$, we just have a self-insurance effect, which is greater, the lower the degree of immunity to macro shocks (picked up by the corresponding elasticities defined before) and the higher the degree of risk aversion. However, if $\alpha = 0$,

demand of redistributive taxation might still respond positively as long as the individual has other-regarding preferences, $\theta > 0$, and will be greater the higher the level of RRA, which, in fact, in this case should be interpreted as inequality aversion. For the rest, their demand would be modified in front of an unemployment shock due to a combination of a self-insurance and an other-regarding effect.

To disentangle these two effects empirically, we are interested in two special cases:

Case I: $\alpha > 0$**,** $\theta \geq 0$

For some sup-populations of the employed we know $\alpha > 0$. For example, those individuals working in the private sector carry a positive probability of becoming unemployed. That is, there is a sub-population of employed agents for which we know $\alpha_i > 0$. If θ is positive, then a positive estimate of $^{dt^*}/_{du}$ will be a combination of an insurance effect, and the degree to which preferences are 'other regarding', θ. There will be further variation in α within this sub-population given differences in experience, education, age etc. With this sub-population alone, however, we cannot say anything about the role, if any, that other-regarding preferences play in driving demand for unemployment benefits.

Case II: $\alpha = 0$**,** $\theta \geq 0$

The second special case in which we are interested involves workers for whom $\alpha = 0$, or at least $\alpha \approx 0$. Such workers would have no insurance motivation. For such a group if the estimated value of $^{dt^*}/_{du} > 0$ then it must be the case that $\theta > 0$, thus providing evidence that preferences for unemployment benefits include some other-regarding component.

3 Data and methodology

We use data from Spain, a country which provides an ideal 'laboratory' in which to carry out our research for a number of reasons. First, the Spanish economy is extremely diverse with substantial differences in the make up and size of regional and municipal economies, including local unemployment rates. Moreover, Spain experienced a large shock to unemployment following the 2008 financial crisis which came at the end of significant economic growth. These traits provide us with substantial temporal and spatial variation in the unemployment rate, our explanatory variable of interest.

Second, is the structure of the unemployment benefit system in Spain. Unemployment benefits (UB) in Spain are calculated in such a way that they mix redistribution

and self-insurance components.[4] The compensation rate, λ in our model, in Spain is around 0.7 (see, for example, van Vliet and Caminada, 2012), which is quite similar to that of other Euro area countries. This value implies a high degree of insurance protection. However, the existence of maximum and minimum amounts of UB and the consideration of family obligations for its calculus means low-income workers receive proportionality higher benefits (CES, 2013). This redistributive pattern is reinforced by the existence of a 'minimum integrated income' for those who have exhausted UB or are ineligible for it (Bentolila, Cahuc, Dolado and Le Barbanchon, 2012)[5].

Third is the stability of the Spanish UB system. Benefits are homogenous across the country (with some minor exceptions for seasonal agricultural workers in certain Autonomous Communities (ACs)).[6] This also helps to mitigate concerns over possible sorting. Moreover, there was no change in the true value of t (the tax paid by workers) or in λ (the compensation weight) in Spain during the observed period. This simplifies the empirical approach.

Fourth, internal migration is known to be relatively low in Spain (Bentolila and Jimeno, 1998; Bentolila et al., 2012), limiting problems arising from Tiebout sorting of the labor force which could lead to potential biases in our estimates. This helps to mitigate concerns about the possible endogeneity of the unemployment rate to individual preferences for redistribution. We return to this point below.

Lastly, individuals working in the public sector in Spain enjoy virtually inviolable job security. The positions are so secure that these individuals do not even pay the social security tax that funds the unemployment benefit scheme in Spain. This level of job security allows us to disentangle the insurance and other-regarding motivations underlying demand for redistribution on the form of unemployment benefits because it in effect provides us with a sub-population for which $\alpha \approx 0$. We discuss this issue in greater detail later.

We construct our data set using the 2005-2010 waves of an annual survey, carried out by the Centre for Sociological Research (CIS). The repeated cross section survey, based on a nationally representative sample of individuals, focuses on subjective perceptions of the tax system and publicly provided goods and services in Spain. Socio-economic

[4] The Servicio Público de Empleo Estatal (SPEE) is a public entity charged with managing a number of social welfare programs including the Spanish UB system. The UB system is funded through a direct, 'social security' tax on earned income, collected from both employees and employers, that is earmarked for the SPEE and, when necessary, through transfers from the central government to the SPEE. According to data provided by TC (2012), the Spanish UB system was fully funded by the direct tax until 2009. In 2009 and 2010, when the unemployment rate in Spain rose significantly, nearly half of the system's funding came from the central government transfers to the SPEE. This means that the rise in unemployment places stress on the entire public budget. In light of an increase in unemployment, the maintenance of UB requires a reduction in expenditure on other public services, an increase in public borrowing or an increase in the social security tax rate. Therefore, even those who do not pay the social security tax, may bear a cost of increasing UB, albeit only indirectly via the first two channels (spending cuts or greater borrowing).

[5] Due to the current severe economic crisis, for example, according to TC (2012), Table 3, p. 28, the percentage of unemployment benefits for those who have exhausted UB has increased from 39.4% in 2009 to 51.6% in 2010.

[6] Autonomous Communities are an intermediate layer of government in Spanish federal system similar to US states in their degree of autonomy from the central government.

data on the respondents and their households is also collected.

In addition to the survey questions and personal characteristics we know the municipality in which the respondent resides. We obtain annual unemployment rates for each municipality from La Caixa.[7] We obtain additional municipal-level data (population, *valor catastral*[8], number of foreign residents, physical area) from National Statistics Institute (INE) in Spain. Note that municipal units cover all of Spain.

Our primary unit of analysis are the individual survey respondents. Our complete data set includes 13,982 observations with roughly half of these being employed at the time they were surveyed. Table 1 presents descriptive statistics for individual-level, divided into workers (the left two columns of Panel A) and non-workers, the retired, unemployed or out-of-the-job market (the right two columns of Panel A), and municipal level variables (Panel B).

[7] See: http://www.lacaixa.comunicacions.com/se/pbae.php?idioma=esp

[8] This is an administrative, rather than market, valuation of property. It is a periodically updated valuation of municipal property values administered by a national agency.

Table 1: Descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	Workers		**Unemployed**		**Out of job market**	
Panel A: Individual characteristics	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Prefers more UB	0.369	0.483	0.473	0.499	0.299	0.458
Household head	0.683	0.465	0.315	0.465	0.452	0.498
Bachillerato	0.339	0.473	0.309	0.462	0.178	0.383
Post-bachillerato	0.275	0.447	0.139	0.346	0.087	0.283
Catholic	0.691	0.462	0.689	0.463	0.86	0.347
Religious	0.239	0.427	0.218	0.413	0.508	0.510
Married	0.562	0.496	0.420	0.494	0.616	0.486
Young child	0.451	0.498	0.380	0.486	0.161	0.368
Age	39.233	11.49	35.997	11.844	58.623	19.289
Male	0.582	0.493	0.469	0.499	0.369	0.483
Public Sector	0.152	0.358	0.065	0.247	0.095	0.294
Private Sector	0.844	0.362	0.933	0.251	0.901	0.299
Observations	7,051		1,523		5,408	
Panel B: Municipal characteristics						
Unemployment rate	0.089	0.039				
Population ('000)	103.663	268.208				
Area (km^2)	161.518	253.689				
Valor catastral	1,229.934	15,941.199				
Share foreign residents	0.034	0.039				
Crimes ('000)	58.245	86.038				
Net payer to central gov.	0.467	0.499				
# of municipalities	1,236					

Note: This table presents the mean and standard deviations for the primary variables of interest. Panel A presents the descriptive statistcs for the individual respondent level data we use. Panel B presents the descripitve statistics for the municipal (and provincial in the case of crime) data we use. The data are sourced from CIS, INE and La Caixa.

The first variable in Panel A of Table 1, our dependent variable, is a dummy equal to 1 if respondents indicate that they believe the state dedicates too little money to unemployment benefits and 0 otherwise[9]. We take it as given that this means they would prefer more money to be spent on unemployment benefits and thus an indication of their preferences for greater redistribution. We assume that respondents are aware of the mechanism through which unemployment benefits are funded, and which was

[9] In Spanish, the survey question reads as follows: "*Como Ud. sabe, el Estado destina el dinero que en España pagamos en impuestos a financiar los servicios públicos y prestaciones de las que venimos hablando. Dígame, por favor, si cree que el Estado dedica demasiados, los justos o muy pocos recursos a cada uno de los servicios que le voy a mencionar*". In English: "As you know, the state spends the money that we pay in taxes in Spain to finance public services and benefits about which we are speaking. Tell me, please, if you think the state spends too much, the right amount or too little on each of the services we will mention." One of the several publicly provided goods and services that is asked about is unemployment benefits.

explained in the previous section. Respondents are reminded that greater expenditure is funded via taxation in the question about preferences for public sector expenditures.

This binary variable we use is based on a survey question which allows for five possible (mutually exclusive) responses: 'too much', 'too little', 'just the right amount', 'unsure' and refusal to answer. In our sample, 35.3 per cent of all respondents indicate that they believe 'too little' is spent on unemployment benefits. Only 6.3 per cent believe 'too much' is spent on such benefits and 40.7 per cent feel unemployment benefits are at the right level. A further 17.2 per cent do not know how to answer. We exclude the 0.5 per cent of respondents who refuse to answer and we test the sensitivity of our results to various definitions of the dependent variable below. Our definition of the dependent variable is similar to the approach used in Luttmer (2001).

For employed people (column (1)), 36.9 percent demand greater spending on UB whereas 47.3 percent of the unemployed (column (3)) demand an increase in UB spending. For those out of the job market (column (5)), only 29.9 percent would like an increase in UB spending. The pairwise differences are all significant at the 1 percent level. We consider these differences in greater detail below.

For the sample of employed people, about 68 percent of the sample are household heads, 34 percent obtained only their *bachillerato* (i.e. high school diploma), 28 percent pursued some post-*bachilerato* education (e.g. university) the remaining 38 percent left school before the age of 16. Nearly 70 percent of respondent workers are Catholic though only 24 percent are 'religious' attending services more than 'a few times a year'. 56 percent are married and 45 percent have children under 18 year old in the household. The average age of the employed is 39 years and 58 percent are men. The unemployed are of a similar age, though those out of the job market are significantly older, reflecting the fact that many of these people are retired. The differences in the other variables between those people who are out of the job market and the other two groups are consistent with them being older (e.g. fewer young children, more religious, less education etc). The respondents are asked to declare the sector in which they work or had worked in their previous job. Of the employed, 15.2 percent are in the public sector (though not necessarily with civil servant status) and 84.4 percent are in the private sector.[10] Some private sector workers are self-employed (11 percent of all workers). In the econometric work that follows we also control for the political party for which the individual voted in the most recent election, the industry in which they work and their occupation, though we do not present descriptive statistics for these in the interest of space as they are a large number of dummies.[11]

Only 6.5 percent of the unemployed previously worked in the public sector versus 93.3 percent that previously worked in the private sector. This is consistent with the idea that public sector jobs are more secure. We return to this issue below.

In Panel B we present summary statistics for the municipal level data. The municipal unemployment rates are calculated using the potential labor force (those aged 15-64) in the denominator rather than the conventional active labor force participants. Note that the crime variable refers to provincial level data, rather municipal, as no municipal level crime data is available for Spain. The 'net payer' dummy takes a value of 1 for those

[10] The residual difference did not answer the question.

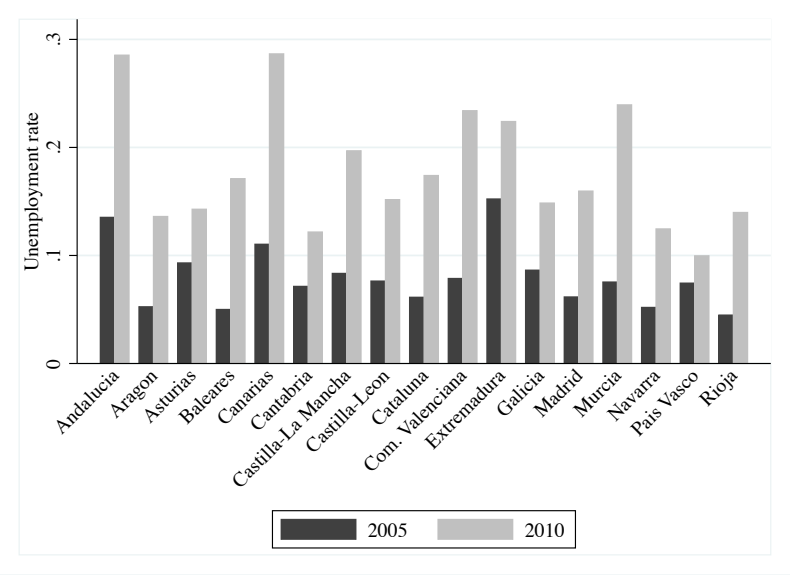
[11] These descriptive statistics are available from the authors upon request.

municipalities in ACs which are net contributors to the central government coffers.

3.1 Unemployment rates and demand for redistribution

The period considered provides substantial spatial and temporal variation in the local unemployment rates which we exploit to aid identification. The global financial crisis and the bursting of a property speculation bubble in Spain have severely affected employment (EEAG, 2011). In 2005, national unemployment stood at 9.2 percent, falling to 8.1 percent in 2007. By 2010, the national unemployment rate had more than doubled to 20 percent. Between 2005 and 2010, *every* municipality in our data experienced an increase in unemployment. Figure 1 shows the unemployment rates for different ACs in 2005 and 2010.

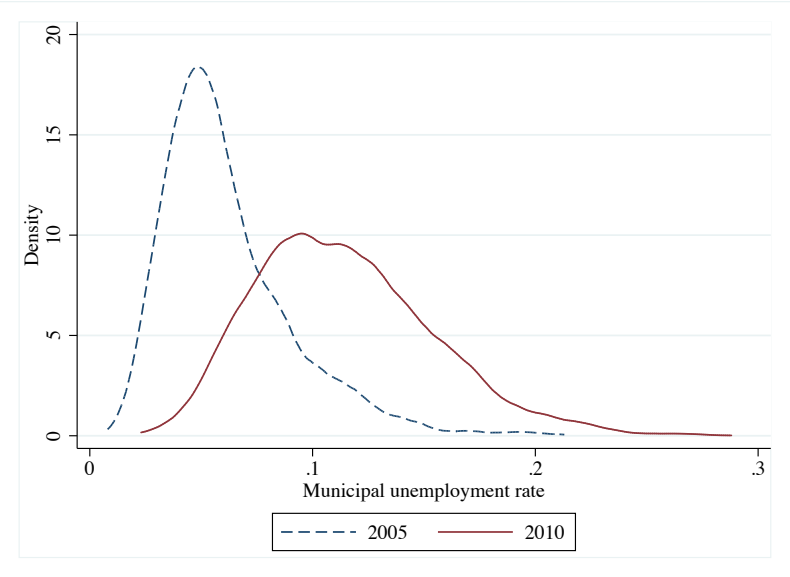
Figure 1: Unemployment in Autonomous Communities, 2005 & 2010



Note: This figure shows the unemployment rates across autonomous communities in Spain and over time. The dark grey bars show the unemployment rate in each autonomous community in 2005. The light grey bars show those rate in 2010. The data on autonomous community unemployment rate were obtained from La Caixa (http://www.lacaixa.comunicacions.com/se/pbae.php?idioma=esp))

This figure shows two things clearly. First, there is substantial variation in unemployment rates over ACs in a given year. In 2005 the unemployment rate varied from 4.5 percent in La Rioja to 15.2 percent in Extremadura. Similar variation can be seen in 2010. Second, there is substantial variation in unemployment over time, between 2005 and 2010. This can be seen in Figure 1 and is made even clearer in Figure 2 which presents the kernel densities for municipal unemployment rates in 2005 and 2010.

Figure 2: Distribution of municipal unemployment rates, 2005 & 2010

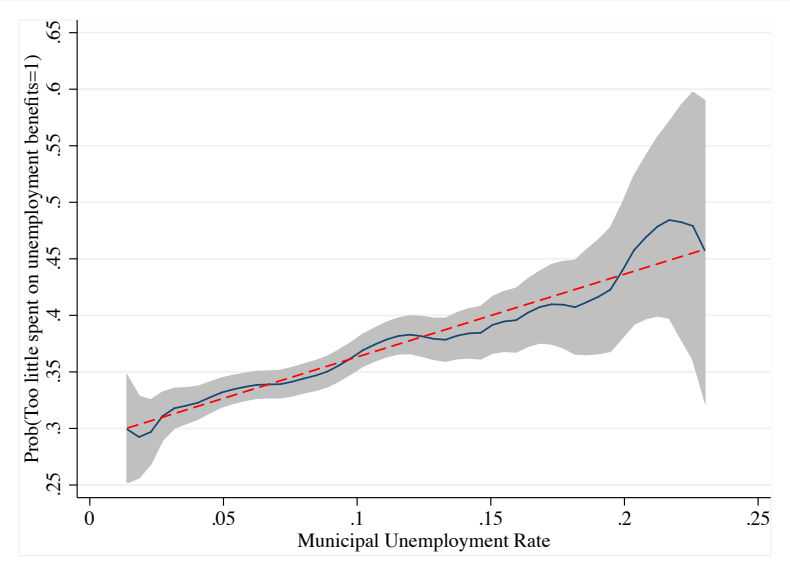


Note: This figure shows the kernel densities of the unemployment rates across Spanish municipalities in 2005 and 2010. The data on municipal unemployment rate were obtained from La Caixa (http://www.lacaixa.comunicacions.com/se/pbae.php?idioma=esp)).

Over the observed period there have been changes in both the location and shape of the distribution of municipal unemployment rates in Spain. We exploit the temporal and cross-sectional variation to identify the relationship between the level of local unemployment and demand, by the employed, for redistribution via unemployment benefits.

In Figure 3 we present some preliminary descriptive evidence of the relationship between unemployment and the expressed demand for unemployment benefits using a local polynomial smoother with an 'optimal' bandwidth from Silverman (1986). Note the figure is constructed using the full sample (13,982 observations), not only workers.

Figure 3: Municipal unemployment rates and preferences for more generous unemployment benefits, all individuals

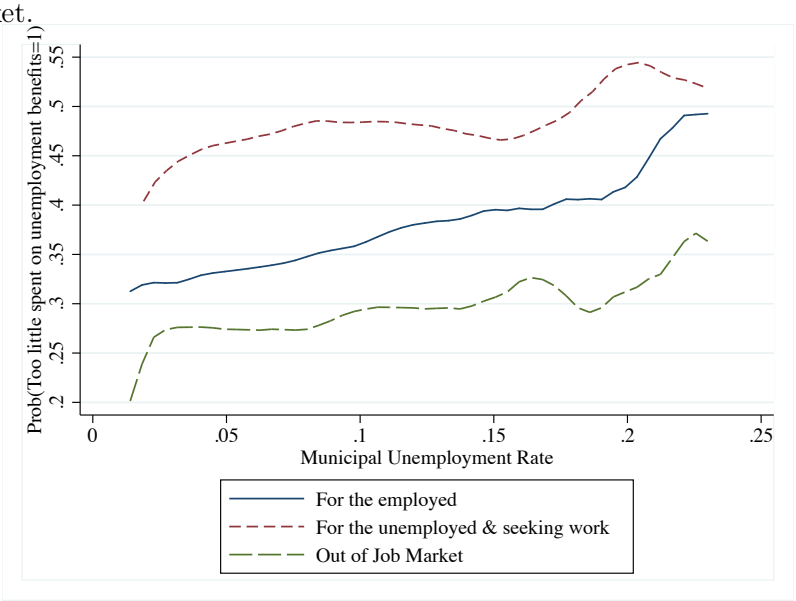


Note: This figure shows the relationship between unemployment and the expressed demand for unemployment benefits plotted with a local polynomial smoother with an 'optimal' bandwidth from Silverman (1986) (the solid line) and a linear fit (the dashed line) using all respondents. The grey area is the 95 percent confidence interval around the smoother. Along the $x-$axis is the municipal unemployment rate in the municipality of residence and along the $y-$axis is the probability that a respondents believes 'too little' is currently spent on unemployment benefits. The figure is constructed using all 13,982 individuals in our sample.

Figure 3 suggests that individuals residing in municipalities with higher rates of unemployment are more likely to prefer increased spending on unemployment benefits. Note also that the relationship is approximately linear; the linear fit (dashed line) never falls outside the 95% confidence intervals of the smoother.

The observed relationship may, however, be driven by one's employment status as those living in areas of higher unemployment are more likely to themselves be unemployed. That the unemployed (and eligible for benefits) would prefer more generous unemployment benefits is trivial. Our primary interest is in the more complicated case of demand for unemployment benefits by the currently employed. Figure 4 plots the relationship for three distinct groups: 1) the currently employed, 2) the unemployed and seeking work (eligible for benefits) and 3) out of the labour market.

Figure 4: Municipal unemployment rates and preferences for more generous unemployment benefits of the currently employed, unemployed and seeking work and out of the labour market.



Note: This figure shows the relationship between unemployment and the expressed demand for unemployment benefits plotted with a local polynomial smoother with an 'optimal' bandwidth from Silverman (1986) for three distinct groups: the employed, the unemployed and seeking work and those out of the job markets. The corresponding 95 percent confidence intervals can be seen in Appendix A. Along the $x-$axis is the municipal unemployment rate in the municipality of residence and along the $y-$axis is the probability that a respondents believes 'too little' is currently spent on unemployment benefits. The figure is constructed using three sub-samples: the employed (7,051 observations), the unemployed and seeking work (1,523 observations) and those individuals who are out of the job market (5,408 observations).

While each plot slopes upwards, only that for the employed sub-sample exhibits a statistically significant (at the 5 percent level) increase (see Figures 1-3 in the Appendix A). Moreover, although the smoothers exhibit non-linearities, each can be approximated by a linear fit within the 95 percent confidence intervals. This suggests that the positive relationship between the unemployment rate and preferences may only exist for those who are currently employed, the only sub-sample for which there is an insurance motive underlying such preferences.

3.2 Estimation

We seek to explain variation in demand for UB using a number of individual characteristics as well as a number of characteristics of the municipality in which the respondent lives, including the 'local' unemployment rate. In general we define 'local' as the municipality in which the individual lives though we consider alternative definitions of 'local' below.

Our basic model is

$$d_{ijt} = x_{ijt}^{'}\gamma_1 + m_{jt}^{'}\gamma_2 + \gamma_3 U_{jt} + e_{ijt} \tag{10}$$

where d_{ijt} is the binary indicator for individual i in municipality j at time t which equals 1 if that individual believes 'too little' is spent on unemployment benefits, x_{ijt} is a vector of individual characteristics (age, gender, education, employment status, sector, industry, occupation, whether or not self employed, religiosity, presence of children in the household, marital status and an indicator of whether or not the respondent is the primary earner in the household) and γ_1 is the corresponding vector of coefficients to be estimated, m_{jt} is a vector of characteristics of municipality j at time t (log population, log area (km^2), log crimes[12], log VC per parcel, the log number of foreign residents, dummy if municipality is in a AC which is a net contributor into the federal system), γ_2 is the corresponding vector of coefficients to be estimated, U_{jt} is the unemployment rate in municipality j at time t, γ_3 is the impact of the local unemployment rate on preferences for UB ($\partial t*/\partial u$) and e_{ijt} is an error term.

Estimation is complicated by three factors: the presence of geographic or temporal fixed effects, possible sorting by workers and omitted variable bias. For example, geographic fixed effects may be problematic as the level of local unemployment may be correlated with political beliefs about the role of the state and redistribution. We address the presence of fixed effects, at the regional, municipal and year level, simply by including in our model regional, municipal and year dummies in various permutations.

The potential problem of sorting is based on individuals sorting themselves according to their level of human capital. Those with larger endowments of human capital are more mobile than others (Stambøl, 2003) and may migrate towards the areas with higher wages and/or lower unemployment. Such individuals will generally prefer less redistribution (Alesina and La Ferrara, 2005). As a result estimates of the impact of unemployment rates on demand for redistribution obtained via OLS may be biased upwards. While such sorting may be a concern in theory, labour mobility in Spain is in fact very low (Bentolila and Jimeno, 1998; Bentolila et al., 2012). We are less concerned with sorting based on geographic variation in the unemployment benefit as in Spain the unemployment benefits are centralised and nominally homogenous across the country.[13] This feature of the Spanish system is valuable in a study such as ours as it greatly reduces problems that can arise from Tiebout-type sorting.

Although we are able to control for a number of individual characteristics correlated with income, such as age, gender, education, sector of employment, occupation and industry of employment, we do not observe income itself. We expect income to be negatively correlated with local unemployment and so our coefficient may be biased upwards. Our estimated coefficient $\hat{\beta}_3$ will equal the true coefficient plus the product of $\frac{\partial preference}{\partial income} < 0$ and $\frac{\partial income}{\partial unemployment} < 0$.

We address the potential bias of our estimate arising from sorting and omitted variables by using instrumental variable estimation in the form of two-stage least squares

[12] As noted above, crimes are reported at the provincial rather than municipal level.

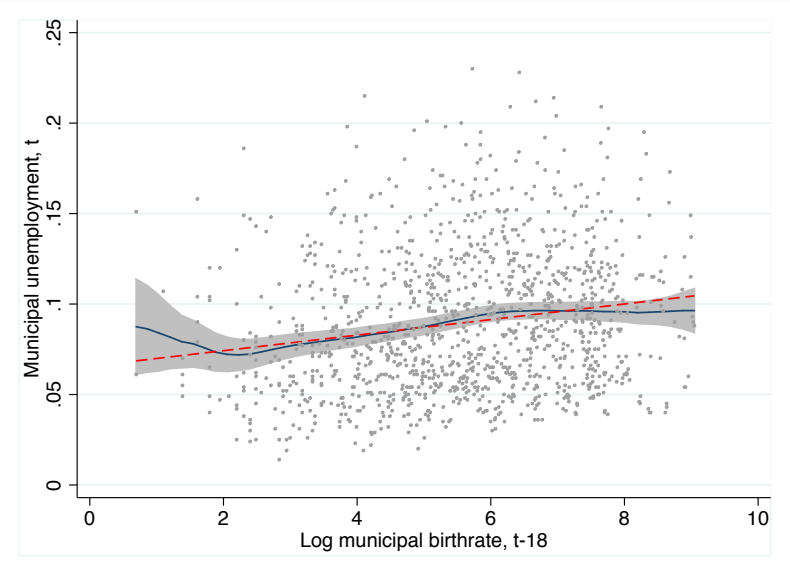
[13] There are some regionally and sector specific benefits for agricultural workers in Andalusia and Extremadura (Bover, Arellano and Bentolila, 2002; Jofre-Monseny, 2012). We test the sensitivity of our results to the exclusion of these special cases. Given cost of living differences there may also be variation in the real value of the benefit though we believe these differences to be small.

(Angrist and Pischke, 2009).

To use 2SLS correctly we need an instrument which is both relevant (correlated with the local unemployment rate) and valid (uncorrelated with e_{ijt}). To this end we use the log number of births in each municipality lagged 18 years. The intuition is that, given the relatively low rate of mobility in Spain, a high number of births in municipality j in period t-18 will result in a increase in the local labour force in t. As these will be inexperienced and low educated workers entering the labour market, i.e. workers with a lower value of β, the unemployment rate will rise given the larger number of people seeking work though less likely to find it.

Figure 5 plots the relationship between the municipal unemployment rate in period t and the log municipal birth rate in period $t-18$. The solid line is a local polynomial smoother, with an 'optimal' bandwidth from Silverman (1986), the grey area is the relevant 95% confidence interval, the dashed line is a linear fit to the data and the dots are a scatter plot of the data.

Figure 5: Lagged birthrates and unemployment at the municipal level



Note: This figure shows the relationship between unemployment rate in municipality k in period t and the log of births in that municipality in period $t-18$ plotted with a local polynomial smoother with an 'optimal' bandwidth from Silverman (1986) (the solid line) and a linear fit (the dashed line) using all respondents. The grey area is the 95 percent confidence interval around the smoother. Along the $x-$axis is the log number of births in period $t-18$ and along the $y-$axis is the municipal unemployment rate in period t.

There is evidence of a positive relationship between the lagged birth rate (lagged 18 years) and the current unemployment and this relationship can be approximated by a linear functional form. The relationship is positive and the correlation (0.159) statistically significant at the 0.01 percent level.

We can express the first stage equation as

$$U_{jt} = x_{ijt}^{'}\alpha_1 + m_{jt}^{'}\alpha_2 + \alpha_3 BIRTH\ RATE_{jt-18} + u_{ijt} \tag{11}$$

and then re-express the structural equation (Eq. 10) as

$$d_{ijt} = x_{ijt}^{'}\tilde{\gamma}_1 + m_{jt}^{'}\tilde{\gamma}_2 + \tilde{\gamma}_3\hat{U}_{jt} + e_{ijt} \tag{12}$$

where x_{ijt} is a vector of the municipal-year means of the individual characteristics, $BIRTH\ RATE_{jt-18}$ is the birth rate in the municipality in $t-18$, $\hat{U}_{jt}$ are the predicted unemployment rates from the first stage and $\tilde{\gamma}$ is the 2SLS estimate of γ.

4 How is demand for UB affected by changes in the labour market?: estimating $^{dt^*}/_{du}$

4.1 Baseline results

We present our baseline results in Table 2, estimating the model using only employed individuals. In column (1) we estimate the model using OLS and do not include any fixed effects. In columns (2a) and (2b) we estimate the model using 2SLS, again without fixed effects. In column (3) we use OLS and include both year andAC fixed effects. Finally in columns (4a) and (4b) we use 2SLS, again including year and AC fixed effects.

Table 2: Baseline results

	(1)	(2a)	(2b)	(3)	(4a)	(4b)
	No fixed effects			AC and year fixed effects		
Estimator	OLS	2SLS		OLS	2SLS	
		1^{st} stage	2^{nd} stage		1^{st} stage	2^{nd} stage
Log population	0.023***	-0.011***	0.024***	0.013*	-0.010***	0.013
	(0.007)	(0.003)	(0.008)	(0.007)	(0.003)	(0.008)
Area (km^2)	-0.020***	-0.003**	-0.021**	-0.004	-0.003***	-0.004
	(0.007)	(0.001)	(0.009)	(0.008)	(0.001)	(0.010)
Log VC per parcel	-0.013*	0.002*	-0.013*	-0.001	-0.001	-0.001
	(0.008)	(0.001)	(0.008)	(0.008)	(0.001)	(0.008)
Log foreign residents	0.009	-0.000	0.009	0.008	0.001	0.008
	(0.006)	(0.001)	(0.006)	(0.006)	(0.001)	(0.006)
Log crimes	-0.007	0.001	-0.007	0.001	0.001**	0.001
	(0.005)	(0.001)	(0.005)	(0.007)	(0.001)	(0.007)
Net paying AC	0.037*	-0.030***	0.037	0.014	-0.039***	-0.128
	(0.019)	(0.003)	(0.070)	(0.080)	(0.005)	(0.081)
Household head	-0.006	0.001	-0.006	-0.010	-0.000	-0.011
	(0.013)	(0.001)	(0.013)	(0.013)	(0.001)	(0.013)
Bachillerato	-0.019	-0.000	-0.021	-0.017	-0.001**	-0.019
	(0.015)	(0.001)	(0.015)	(0.015)	(0.001)	(0.015)
Post-bachillerato	-0.119***	-0.003*	-0.120***	-0.122***	-0.003***	-0.124***
	(0.018)	(0.001)	(0.019)	(0.018)	(0.001)	(0.019)
Catholic	-0.009	0.000	-0.007	-0.006	0.001*	-0.004
	(0.015)	(0.001)	(0.015)	(0.014)	(0.001)	(0.015)
Religious	-0.013	-0.003***	-0.012	-0.011	-0.000	-0.011
	(0.016)	(0.001)	(0.017)	(0.015)	(0.001)	(0.015)
Married	-0.038***	0.000	-0.039***	-0.041***	-0.000	-0.041***
	(0.013)	(0.001)	(0.013)	(0.013)	(0.001)	(0.013)
Children under 18	0.015	-0.002*	0.015	0.019	0.001	0.019
	(0.013)	(0.001)	(0.014)	(0.013)	(0.001)	(0.013)
Log age	-0.068***	0.003*	-0.068***	-0.072***	-0.001	-0.072***
	(0.022)	(0.002)	(0.023)	(0.022)	(0.001)	(0.022)
Male	-0.030**	-0.001	-0.032**	-0.029**	0.001	-0.031**
	(0.014)	(0.001)	(0.014)	(0.014)	(0.000)	(0.014)
Private sector	0.043**	-0.004**	0.046**	0.037*	-0.002**	0.039*
	(0.021)	(0.001)	(0.023)	(0.021)	(0.001)	(0.021)
Municipal Unemployment	1.091***		1.108	0.667**		0.578
	(0.219)		(0.1959)	(0.335)		(1.717)
Log births t-18		0.011***			0.012***	
		(0.003)			(0.002)	
Observations	7051	7015	7015	7051	7015	7015
R^2	0.040	0.269	0.041	0.054	0.720	0.055
Year FE	No	No	No	Yes	Yes	Yes
AC FE	No	No	No	Yes	Yes	Yes
Instrumental variable diagnostics						
1st stage F-test			17.69			25.72
			(0.001)			(0.000)
Durbin-Wu-Hausman			0.000			0.003
			(0.918)			(0.955)

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. Dummies for occupation, industry of employment and politial support of the respondent are included in each model but not reported in the interest of space. In each model these dummies are jointly significant at the 0.001 percent level.

Standard errors are clustered at the municipal level to allow for arbitrary heteroskedasticity and serial correlation. All presented models also include a series of dummies controlling for the occupation, industry of employment and political party support of the respondent. Results for these additional controls are not presented in the interest of space but are available from the authors upon request. Marginal effects obtained from probit estimation were virtually identical to those reported here and the full probit results are available from the authors upon request.

In column (1) we estimate a positive and highly significant effect of the municipal unemployment rate on expressed demand for UB but the OLS estimate may be biased for reasons discussed above. We therefore use 2SLS estimation (columns (2a) and (2b)), which performs well. The first stage regression is presented in column (2a) where the instrument is significant at the 1 percent level. A first-stage F-test returns a test statistic of 17.69 (p-value=0.000) indicating that the instrument is relevant and we do not have a problem of weak instruments. While the 2SLS estimate of the impact of the municipal unemployment rate in column (2a) is statistically insignificant, the point estimate is virtually identical to the OLS estimate in column (1). We also test formally for the exogeneity of the municipal unemployment rate via a Durbin-Wu-Hausman (DWH) test (see: Davidson and MacKinnon (1993), pp 241-242). We fail to reject the null hypothesis (p-value=0.993) that any endogeneity in the regressors does not have a detrimental effect on the OLS estimator, i.e. OLS is consistent and unbiased. Such a failure to reject may be driven by the very large standard errors estimated in column (2b), though the likelihood of committing a Type II error here is small given just how similar the point estimates are to one another.[14]

In columns (3), (4a) and (4b), we introduce year and AC fixed effects and re-estimate the model using both OLS and 2SLS. The estimate obtained via OLS, column (3), is smaller than its analogue in column (1), though not significantly so at the 10 percent level (p-value=0.101). The 2SLS procedure performs well with the included fixed effects. The instrument is again relevant (first stage F-test: p-value=0.000). The point estimate in column (4b), obtained via 2SLS, is slightly smaller than its OLS counterpart (column (3)). However, we again fail to reject DWH test for exogeneity (p-value=0.955). Note also that while the estimated effect of the municipal unemployment rate from column (3) is smaller than its analogue in column (1), the difference is not statistically significant (p-value=0.271).

While the 2SLS performs well, it does not statistically nor economically alter our result and thus adds only noise to the estimation leading to larger standard errors. As the DWH tests fail to reject the exogeneity of the unemployment rate, the remainder of our analysis uses the more efficient OLS.

The primary variable of interest is the municipal unemployment rate. The estimated effect of the municipal unemployment rate in column (1) indicates that a 1 standard deviation increase in the unemployment rate leads to a 4.3 percentage point increase

[14] Under the null hypothesis that the municipal unemployment rate is exogenous OLS is consistent and unbiased, 2SLS is consistent and biased and 2SLS is less efficient than OLS. The lower the correlation between birthrates (Z) and u, the greater the difference between the 2SLS variance and the OLS variance. When both γ_{OLS} and γ_{2SLS} are consistent (i.e. unemployment rates are exogenous), then asymptotically the IV estimator variance and that of the OLS estimator have the following relationship: $plim\frac{\sigma^2_{2SLS}}{\sigma^2_{OLS}} = \frac{1}{\rho^2_{Zu}}$.

in the probability the respondent favors more spending on UB, on average and *ceteris paribus*. The effect is roughly the same magnitude as the effect of being married relative to not being married.

In each model, the dummies for occupation, industry of employment and political support are all jointly significant at the 0.001 percent level. Men, the married, the older and the higher educated are less likely to prefer more spending on UB, broadly consistent with results in Alesina and Giuliano (2009). Note that "Bachillerato" is roughly equivalent to an American high school degree and "Post Bachillerato" refers to any formal education or training after completion of high school. There is some evidence that those in more populous and physically smaller municipalities prefer more spending on UB (consistent with Ashworth, Heyndels and Smolders, 2002), perhaps as these increase ones awareness of the labour market conditions as individuals are more likely to interact with others in a more densely populated municipality. We find the presence of foreigners does not have an effect, though Dahlberg et al (2012) also find an insignificant effect without proper instrumentation (see their Table 2). The results here are robust to the exclusion of the foreigners variable. The other municipal characteristics do not have any consistently significant effect on expressed demand for UB.

Of particular interest is the effect of working in the private sector. The result in column (1) indicates that private sector workers are 4.3 percentage points more likely to prefer more spending on UB than those working in the public sector, on average and *ceteris paribus*. The size of this effect is largely robust to the inclusion of AC and year fixed effects. The significance of this coefficient suggests that those with an insurance motive are more likely to prefer more spending on UB, though it does not preclude the presence of the 'pseudo-altruistic' motive.

4.2 Sensitivity checks

While our result exhibits robustness to the addition of controls and to instrumentation, there remain a number of unavoidably *ad hoc* elements of the above model: the specification of the fixed effects, the definition of 'local' unemployment, the choice of estimator and the definition of the dependent variable. We test the sensitivity of our result to changes in these elements and consider some basic placebo tests below.

In Table 2 we introduce year and AC fixed effects as general controls in columns (1)-(4). In Table 3 we consider the impact of alternately including fixed effects at different levels (year, municipal, provincial and AC).

Table 3: Including different fixed effects

	(1)	(2)	(3)	(4)	(5)
Municipal Unemployment	0.842***	0.912***	0.788***	1.222**	1.066
	(0.306)	(0.234)	(0.243)	(0.499)	(1.192)
Observations	7051	7051	7051	7051	7051
R^2	0.043	0.180	0.060	0.053	0.187
Year FE	Yes	No	No	No	Yes
Municipal FE	No	Yes	No	No	Yes
Provincial FE	No	No	Yes	No	No
AC FE	No	No	No	Yes	No
H_0: $\beta = \beta_{baseline}$	0.422	0.619	0.134	0.302	0.964

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space. In each model these dummies are jointly significant at the 0.010 percent level.

In column (1) we estimate the impact of unemployment by controlling only year fixed effects. We include AC fixed effects, provincial fixed effects and municipal fixed effects sequentially in columns (2)-(4), respectively. In column (5) we include municipal and year fixed effects. Here the coefficient becomes insignificant though the point estimate is essentially unchanged. The magnitude and significance of the estimated coefficient is very stable across these different specifications. None of the point estimates in Table 3 are statistically different from any other at the conventional levels and none differ (see the bottom row of Table 3) from our baseline result (Table 2, Column (1)) either.

Testing 'localness'

In the above regressions we define 'local' according to administrative boundaries. This, however, may be overly restrictive as some workers will not live in the municipality in which they work. Unemployment rates are calculated for municipal residents so a labour market shock in one municipality can directly affect the level of unemployment in another municipality if respondents commute from one municipality to another. Moreover, individuals may be concerned with the labour market where they work, rather than where they live. It may also be the case that the labour markets considered by individuals transcend municipal administrative boundaries. We test for the appropriateness of our definition of 'local' by employing spatial lags of the unemployment rate; i.e. the unemployment rate in the area around, but excluding, municipality j .[15]

In Table 4 we report the results from a spatial lag model in which the spatially lagged unemployment rate is included as an additional regressor. We include spatial lags of different 'depths', different great circle distances from municipality j. That is, in addition to the unemployment rate in municipality j we include the constructed unem-

[15] Spatial lags wee constructed using Stata's *spmat* syntax.

ployment rate in all non-j municipalities (column (1)), in all municipalities more than 50km from j (column (2)), in all municipalities more than 100km from j (column (3)), in all municipalities more than 150km from j (column (4)) and in all municipalities more than 200km from j (column (5)). These spatial unemployment rates are constructed as the mean unemployment rate of surrounding municipalities weighted by the population of each municipality and, inversely, its distance from municipality j.

Table 4: Spatial lags of varying depths

	(1)	(2)	(3)	(4)	(5)
Muncipal unemployment	0.618*	0.641*	0.657*	0.664**	0.667**
	(0.342)	(0.335)	(0.335)	(0.335)	(0.335)
Unemployment in...					
all non-j municipalities	0.544				
	(0.763)				
municipalities beyond 50km		0.837			
		(0.819)			
municipalities beyond 100km			0.625		
			(0.796)		
municipalities beyond 150km				0.461	
				(0.750)	
municipalities beyond 200km					0.312
					(0.722)
Observations	7051	7051	7051	7051	7051
R^2	0.055	0.055	0.055	0.055	0.054
Year FE	Yes	Yes	Yes	Yes	Yes
AC FE	Yes	Yes	Yes	Yes	Yes
H_0: $\beta = \beta_{baseline}$	0.862	0.895	0.922	0.992	0.999

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space. In each model these dummies are jointly significant at the 0.001 percent level. As the spatial lags are essentially annual observations (very little cross sectional variation) the inclusion of year and AC fixed effects makes identification difficult. We therefore exclude fixed effects from these particular models meaning the coefficient on municipal unemployment in this table can be compared to that in Table 1, column (1).

There is a statistically significant correlation between the municipal unemployment rate and the spatial lags, though this correlation falls from 0.687 to 0.529 with the increasing depth of the lag. The results in Table 4 indicate that it is the unemployment rate in i's municipality that affects i's demand for UB and that unemployment elsewhere is not relevant, conditional on unemployment in i's municipality. The coefficient on the 'local' unemployment rate (in i 's municipality) is very stable and unchanged from the relevant baseline result (Table 2, column (1)). None of the spatial lags are significant at

the conventional levels and the magnitude of the point estimates generally falls with the 'depth' of the lag suggesting that the location of the unemployment relative to i matters and that unemployment further away from i is increasingly less important. These results are similar to those found in Patacchini and Zenou (2007) and support our definition of 'local'.

Different sub-samples

Our dependent variable is binary though it is based on a survey question for which there are multiple responses that individuals can give. We might estimate a multinomial logit[16], though the assumptions required are much stronger than for OLS. We therefore keep the estimation simple but test our results to different definitions of the dependent variable and to the exclusion of different sub-samples and present the results in Table 5.

Above we have defined our dependent variable that equals 1 if the respondent believes 'too little' is spent on unemployment benefits and 0 otherwise. In column (1) we exclude individuals who answer 'do not know'. In column (2) we exclude those who declare 'too much' is spent of unemployment benefits as well as those who don't know how to answer and those who refuse to answer. In column (3) we exclude only those who declare that 'just the right amount' is spent. In column (4) we exclude Andalusia and Extremadura, regions where there is a particular benefit paid to workers in the agricultural sector.

Table 5: Different sub-samples

	(1)	(2)	(3)	(4)
Municipal Unemp	0.722*	0.678*	0.725*	0.831**
	(0.370)	(0.383)	(0.435)	(0.336)
Observations	6190	5722	3932	5792
R^2	0.060	0.060	0.081	0.048
Year FE	Yes	Yes	Yes	Yes
AC FE	Yes	Yes	Yes	Yes
H_0: $\beta = \beta_{baseline}$	0.557	0.895	0.819	0.598

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space. In each model these dummies are jointly significant at the 0.001 percent level.

The last row of Table 5 show the p-value from a t-test of the equality of the estimated coefficient to our baseline results (column (2), Table 2). The result is robust in terms of magnitude and significance to the use of various sub-samples.

[16] The results from a multinomial logit are substantively consistent with our baseline results in terms of size and significance of the effect. The full results are available upon request.

Placebo tests

We now consider the possibility that in times of recession, and thus higher unemployment, individuals prefer more public spending on all public services. We generate a series of dummies which take a value of one if the respondent thinks 'too little' is spent on four other publicly provided goods/services: justice, education, health and infrastructure. We then replace our primary dependent variable with these dummies and re-estimate the model controlling for all the municipal and individual characteristics as well as AC and year fixed effects. Results are presented in Table 6.

Table 6: Placebo tests

	(1)	(2)	(3)	(4)
	Justice	Education	Health	Infrastructure
Municipal Unemp	-0.135	-0.071	0.022	0.288
	(0.360)	(0.339)	(0.390)	(0.210)
Observations	7051	7051	7051	7051
R^2	0.064	0.051	0.059	0.036
Year FE	Yes	Yes	Yes	Yes
AC FE	Yes	Yes	Yes	Yes
H_0: $\beta = \beta_{baseline}$	0.062	0.117	0.172	0.306

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on each publicly provided good/service, in turn, and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space.

The impact of the unemployment rate on demand for the public provision of these other goods/services is insignificant in each case. These results suggest that we are measuring a particular relationship between the unemployment rate and demand for unemployment benefits and not a more general relationship between the state of the economy and demand for public expenditure. In the bottom row of Table 6 we report the p-values from tests of the equality of the reported effects and the analogous effect of unemployment on demand for UB (Table 2, column (3)).

Given the robustness of our results, we turn now to identifying the motivations underlying the relationship between the unemployment rate and demand for unemployment benefits.

5 Insurance or other? Estimating dt^*/du for different α

To test for the two components of preferences underlying demand for redistribution we need to be able to hold one of them constant. The degree of other-regarding is, for all intents and purposes, unobservable so we cannot control for θ. Instead, we consider related sub-samples across which the value of α is known to differ independently of the unemployment rate. By doing so we eliminate the insurance motive for sub-samples

in which $\alpha = 0$ and can thus test for $\theta = 0$. Our aim is to decompose the impact of unemployment on demand for UB in such a way that we implicitly identify the existence or absence of altruistic and selfish motives.

5.1 Retired ($\alpha = 0$, $\theta \geq 0$) versus employed ($\alpha > 0$, $\theta \geq 0$) individuals

We begin with the case of employed workers and the retired, which we define as those individuals who declare themselves as pensioners or who are at least 65 years old and out of the job market. While our theoretical framework focuses on the employed, the intuition for the retired is the same. For the retired there is by definition no possibility of becoming unemployed and collecting UB, $\alpha = 0$. Therefore, should the unemployment rate affect their demand for unemployment benefits the effect must be driven by some form of other-regarding preferences, as there is no insurance motivation for the retired. We estimate two specifications (with no fixed effects or with AC and year fixed effects) of our model for retired people and present the results in Table 7. Note that the results for retired people in columns (1) and (2) of Table 7 are comparable to the results for employed people in columns (1) and (3) of Table 2, respectively.

Table 7: Retired individuals

	(1)	(2)
Municipal Unemp	0.357	-0.679
	(0.332)	(0.534)
Observations	1656	1656
R^2	0.093	0.124
AC FE?	No	Yes
Year FE?	No	Yes
Municipal FE?	No	No
$H_0 : Controls = 0$	0.000	0.000
Municipal Unemp		
$H_0 : \beta_{Ret} = \beta_{Emp}$	0.029	0.016

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. The formal tests for the equivalency of the βs reported in columns (1) and (2) of Table 7 are done with respect to columns (1) and (3) of Table 2, respectively. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space.

We include all the individual and municipal controls as above and test for their joint significance. We fail to find a significant effect of the local unemployed rate on expressed demand for unemployment benefits by the retired. As already noted, this effect is positive and significant for employed individuals (Table 2). We reject the equality of the effect between the two sub-samples at the 5 percent level for column (1) (no fixed effects) and for column (2) (AC and year fixed effects).

Within our theoretical framework, the absence of an effect for the retired combined with a significant effect for the employed is consistent with an absence of other-regarding preferences, so long as the employed are not (after controlling for all the individual and municipal characteristics), more altruistic than the retired. If it is the case that the employed are, on average, more pseudo-altruistic than the retired, then the above results may simply reflect that fact.

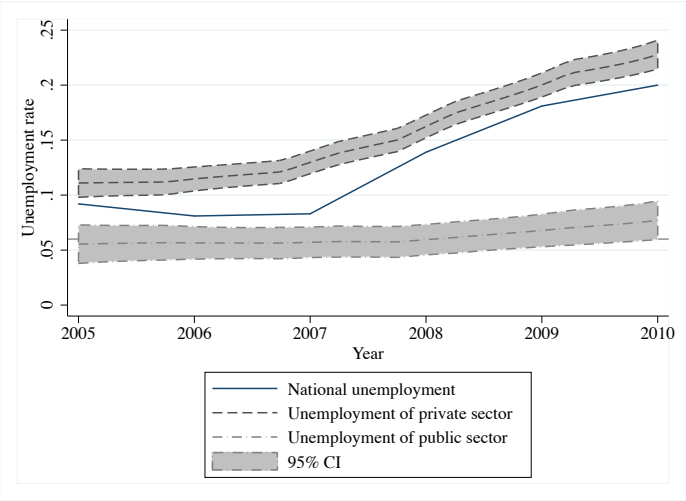
To address this possibility we exploit another survey question in which respondents are asked what they feel the main role of taxation is. Respondents can agree that 'taxes are a tool to redistribute wealth','taxes are necessary to pay for services' or 'taxes are something we are obliged to pay with understanding clearly for what they are used'.[17] We consider the response 'taxes are a tool to redistribute wealth' to be a proxy measure, albeit imperfect, for other-regarding. We take it to be an indication of other-regarding preferences if respondents see taxation primarily as a tool of redistribution. We find that the difference between the share of retired respondents replying that 'taxes are a tool to redistribute wealth' (11.4 percent) and the share of employed respondents replying thus (11.6 percent) is statistically insignificant (p-value=0.805) suggesting that the retired are indeed at least as altruistic, by our proxy measure, as the employed meaning the above result is not driven by the employed simply being more likely to be other-regarding in their preferences.

5.2 Public ($\alpha \approx 0$, $\theta \geq 0$) versus private sector workers ($\alpha > 0$, $\theta \geq 0$)

We next test for other-regarding/insurance effects by considering how changes in the unemployment rate affect the demand for unemployment benefits by the employed in different sectors of the economy, namely the private and public sector. Public sector workers in Spain have a very high degree of job security relative to private sector workers. We therefore anticipate that, in this particular institutional setting, the insurance motive to be positive for private sector workers and null for public sector workers. We provide evidence that α varies by sector in Figure 6. Here we plot the national unemployment rate, obtained from the INE, as well as a constructed, sector specific 'unemployment rate'. In the CIS, respondents give their sector of employment for their current job, if employed, or previous job, if unemployed. The 'unemployment rate' for sector s is defined as the number of unemployed respondents declaring that their previous job was in sector s divided by the total number of respondents (employed or unemployed) associating with sector s. This provides a measure of how likely an individual working in either sector is to become unemployed.

[17] We estimated the model with our other-regarding, or pseudo altruism, proxy included as a control. The estimated coefficients are always insignificant and the impact of the local unemployment rate is unchanged.

Figure 6: Unemployment rates by sector



Note: This figure shows the evolution of unemployment over time. We show three different unemployment rates: the over all national unemployment rate, obtained from the INE (the solid line), the 'unemployment rate' in the private sector (the dashed line) and the 'unemployment rate' in the public sector (dashes and dots). The later two are constructed from our data and are based on the identification of those respondents currently unemployed and seeking work who were previously employed in the private or public sectors, respectively. We calculated these figures annually and the grey areas are the 95 percent confidence interval around each plot. Along the $x-$axis is the year and along the $y-$axis is the municipal unemployment rate.

The 'unemployment rate' in the public sector is lower and more stable over time than the 'unemployment rate' in the private sector. At the 1 percent level, the public sector 'unemployment rate' never differs from 6 percent, though it appears to tick up slightly after 2008. The private sector 'unemployment rate' doubles over the same period and is always significantly higher than the public sector rate. In Table 2 we estimate the intercept shift for private sector workers relative to those in the public sector and find evidence that, *ceteris paribus*, private sector workers are more likely to prefer more spending on unemployment benefits.

We re-estimate our model for the private and public sector workers separately and present the results in Table 8.

Table 8: Public and private sector, all workers

	(1)	(2)	(3)	(4)
	Public		Private	
Municipal Unemp	0.261	-0.365	1.305***	0.964***
	(0.435)	(0.631)	(0.232)	(0.369)
Observations	1301	1301	5750	5750
R^2	0.069	0.113	0.043	0.056
AC FE?	No	Yes	No	Yes
Year FE?	No	Yes	No	Yes
$H_0 : Controls = 0$	0.000	0.000	0.000	0.000
Municipal Unemp				
$H_0 : \beta_{Pub} = \beta_{Pri}$	.	.	0.021	0.055

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space.

Columns (1) and (2) present the results for those in the public sector, without FE and with AC and year fixed effects, respectively. Columns (3) and (4) present the same for the private sector.

We find that changes in the local unemployment rate do not affect the expressed demand for unemployment benefits by public sector workers. The effect is, however, positive and well defined for private sector workers. We reject the equality of the effect across the two sectors at the 5 percent level when no fixed effects are included (p-value=0.021) and at the 10 percent level when AC and year FE are included (p-value=0.055).

Once again, within our theoretical framework, these results are consistent with the story that it is fear of potential unemployment, and thus demand for insurance, that is driving demand for unemployment benefits. This conclusion is, however, conditional on public sector workers being at least as pseudo-altruistic as private sector workers.

There is empirical evidence about the selfless motivations of public sector workers (Houston, 2000; Dur and Zoutenbier, 2013), suggesting this group would have a larger θ, i.e. be more altruistic, than the private sector workers. As we find no evidence of a pseudo-altruistic motive for the public sector, the ostensibly more altruistic group, we are inclined to infer its absence among private sector workers as well. We again find that the difference in our other-regarding proxy, as defined at the end of Section 5.1, between these two groups (11.8 percent for public sector workers and 11.5 percent for private sector workers) is insignificant (p-value=0.728), consistent with the public sector workers being at least as altruistic as the private sector workers. We conclude, therefore, that the results are not driven by the private sector workers being more altruistic.

Another concern with the results in Table 8 is that we are using selected samples, as workers will self-select into the different sectors, and thus our estimates may be biased.

We contend that such selection should result in an upward bias in our estimate for the public sector and a downward bias for the private sector if the more other-regarding and more risk averse workers select into the public sector, that is, they choose the sector with greatest job security (Giordano, Depalo, Coutinho Pereira, Eugène, Papapetrou, Perez, Reiss and Roter, 2011) and, following Houston (2000) and Dur and Zoutenbier (2013), greater appeal to the altruistically, and thus other-regarding, inclined. Under this plausible assumption, the estimates would represent an upper bound for the public sector and a lower bound for the private sector, strengthening the case we are making.

5.3 Public and Private sector managers

While we control for occupation and industry of employment as well as age, gender and education, and the results are robust to the use of instrumentation, we are unable to explicitly control for income. The results in Table 8 might be driven by uncontrolled for income differences between the two groups as those with higher incomes have generally been found to be less supportive of redistribution. As public sector workers likely have higher average income (Giordano et al., 2011) and those with higher incomes are less likely to support redistributive policies, then the absence of an effect for public sector workers may just be an artifact of their higher, uncontrolled for, income. To address this we consider those employed in management positions in the private and in the public sectors. This subset of workers is more homogenous and the inequality of mean income may be reversed, with those in the private sector earning more on average. We re-estimate the model for these two groups and present the results in Table 9.

Table 9: Public and private sector, managers

	(1)	(2)	(3)	(4)
	Public		Private	
Municipal Unemp	0.033	-0.997	1.390***	1.428***
	(0.445)	(0.671)	(0.306)	(0.517)
Observations	1152	1152	3376	3376
R^2	0.074	0.121	0.047	0.061
AC FE?	No	Yes	No	Yes
Year FE?	No	Yes	No	Yes
$H_0 : Controls = 0$	0.015	0.001	0.000	0.000
Municipal Unemp				
$H_0 : \beta_{Pub} = \beta_{Pri}$	.	.	0.007	0.003

Note: The dependent variable is a dummy equal to 1 if the respondent believes 'too little' is spent on unemployent benefits and 0 otherwise. Standard errors are clustered at the municipal level. Stars indicate statistical significance according to the following schedule: *** 1%, ** 5% and * 10%. All individual and municipal controls as well as dummies for occupation, industry of employment and political support of the respondent are included in each model but not reported in the interest of space.

The pattern of results is the same as in Table 8 with a positive and well defined effect

for those in the private sector and a smaller and statistically insignificant effect for those in the public sector. The difference between the estimates for the public and private sector managers is significant at the 1 percent level for both specifications. Note that the difference in our other-regarding proxy between the two groups is again insignificant (p-value=0.595).

6 Discussion and Conclusions

The redistribution of income is one of the primary activities of the public sector, controversial though it may be. The reasons why people demand such redistribution even when they are net payers into the system are not fully understood. In this paper we have set out to test the motivations underlying individuals' expressed preferences for one form of redistribution, unemployment benefits. Using a newly constructed data set from Spain, we examine the relationship between the level of local unemployment and individuals' expressed demand for spending on unemployment benefits funded by taxation. Unemployment rates and demand for unemployment benefits provide a very good opportunity to study the relationship between distribution and demand for redistribution. Both unemployment and unemployment benefits are clearly defined and readily measurable. Moreover, the benefit (transfers to the unemployed) and the need (unemployment) are directly linked to one another. This is not necessarily the case for other forms of redistribution. Poverty reduction, for example, can be addressed via a number of policy instruments making it more difficult to draw a direct link between benefit and need.

In Section 4 we show that changes in the local rate of unemployment have a statistically significant and economically relevant effect on workers' expressed demand for unemployment benefits. This suggests the intuitively appealing, yet heretofore untested, hypothesis that individual preferences for redistribution of income are a function of the actual income distribution. The argument here is as follows. Assume there is an income distribution Γ and that individual i has a preferred distribution Γ_i[18]. If Γ is more unequal than Γ_i it follows that i would prefer more redistribution until $\Gamma = \Gamma_i$. For net recipients, the redistribution is costless. For net contributors, the redistribution is costly in terms of their own consumption. If these individuals demand redistribution until $\Gamma = \Gamma_i$, then they must derive utility from the fact that $\Gamma = \Gamma_i$. The underlying source of this utility is not immediately obvious.

We argue that demand for redistribution is driven by two separate motives: self-insurance and other-regarding. Workers may demand more generous unemployment benefits as a form of insurance against their own unemployment. In effect they are bounding the lower end of Γ_i for fear that they may end up there at some point. Workers may also demand more generous unemployment benefits due to other-regarding or pseudo-altruistic concerns where workers derive utility from the welfare of others for some reason. In effect they are bounding the lower end of Γ_i as they experience a disutility from the relatively lower income of others. The existence of this second motivation is particularly important as it reveals information about how redistribution as

[18] See CES (2013), pp. 128-130, for a detailed description of the relationship between unemployment and the distribution of income in Spain.

a good is consumed by individuals. If net contributors to a redistributive system do not derive utility from the welfare of the net recipients independently of their desire to insure against a change in their own position in Γ, it becomes difficult to argue that redistribution is, in fact, a public good.

If preferences are other-regarding, then the lower bound imposed on Γ by redistribution is a public good (non-rival and non-excludable) and the private market for redistribution would fail thus necessitating the state's intervention. If, however, demand for insurance is the sole motivation underlying demand for redistribution then a private insurance market, providing an optimal menu of policies could satisfy i's demand for redistribution as i's only concern is her own location in Γ. In this case the supply of and demand for redistribution could obtain an equilibrium and intervention by the state would be unnecessary, subject to moral hazard concerns (Grueber, 1997). It is therefore important to identify the motivations underlying demand form redistribution.

In Section 5, we attempt to disentangle these motivations by exploiting the relative security public sector workers have in their jobs. To isolate the altruistic motivation empirically we identify different groups for which the need for insurance varies insofar as the probability that they move from employment to unemployment, α, varies. Civil servants in Spain have, for all intents and purposes, a permanent job and thus face no risk of becoming unemployed (i.e. $\alpha \approx 0$). We find that the impact of the unemployment rate on expressed demand for unemployment benefits by the employed becomes statistically insignificant for those groups with little or no incentive to insure against their own unemployment. This evidence is consistent with the absence of an other-regarding motive underlying demand for unemployment benefits by the employed and suggests that preferences for redistribution via unemployment benefits is driven by insurance motives alone.

While the results are consistent with the dominance of the insurance motive in determining preferences for redistribution via unemployment benefits, we cannot readily generalise to all redistributive instruments. It may be true that individuals view unemployment benefits as a type of insurance with little or no public goods component. This does not mean that all forms of redistribution are viewed as equal and that pseudo-altruistic motivations do not drive demand for other forms of redistribution (e.g. food stamps, progressive income tax, social housing) and future work may consider testing the generalizability of our conclusions to other forms of redistribution.

Appendix A

Figure 1: Unemployment rates and demand for UB, Employed people

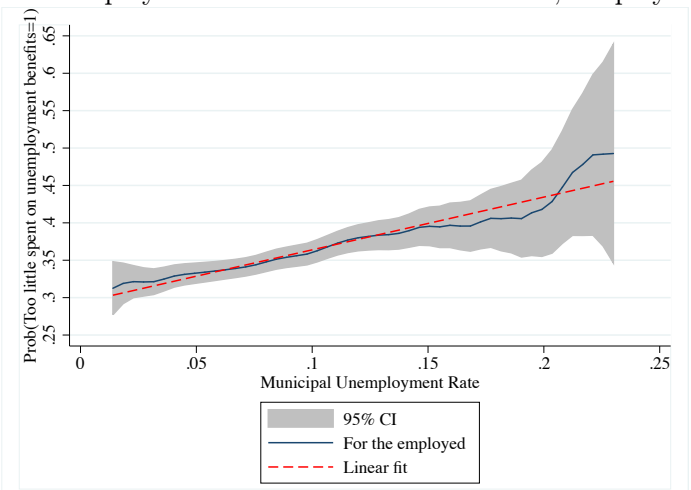


Figure 2: Unemployment rates and demand for UB, Retired people

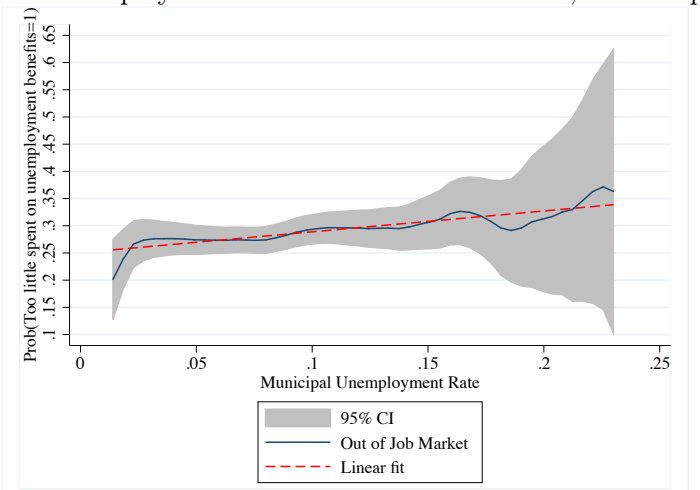
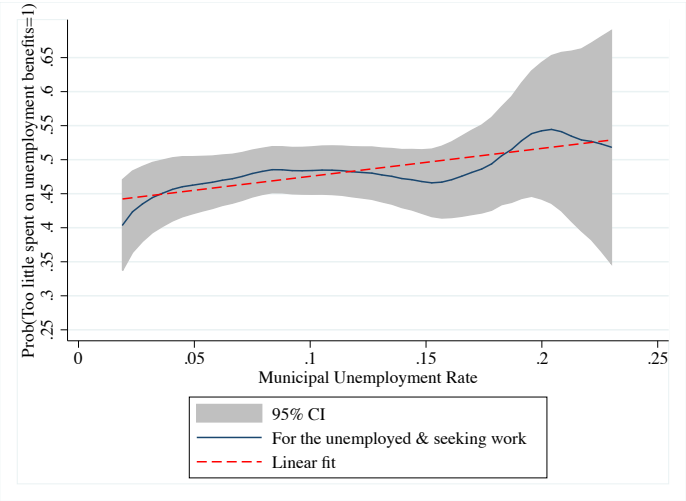


Figure 3: Unemployment rates and demand for UB, Unemployed people looking for work



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