Other-regarding and insurance motives in demand for redistribution: an empirical analysis

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Abstract

What drives demand for redistribution? In this paper we empirically test for the presence of altruistic 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 from Spain, 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 significant a risk 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

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"No one has a right to something whose realization requires certain uses of things and activities that other people have rights and entitlements over."

Anarchy, State, and Utopia (1974)

Robert Nozick

"We surely take into consideration the happiness and misery of others, in weighing the several motives of action, and incline to the former, where no private regards draw us to seek our own promotion or advantage by the injury of our fellow-creature."

An Enquiry Concerning the Principles of Morals (1777)

David Hume

1 Introduction

We consider the question of how demand for the redistribution of income responds to exogenous changes in the income distribution. The redistribution of income is one of the primary activities of modern governments. Nearly every OECD country has a degree of progressiveness in the 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. While Rawls (1971) makes a compelling case for redistribution being a moral imperative, Nozick (1974) makes a similarly compelling case that, in the absence of active assent by contributing individuals, the redistribution of wealth is immoral. In effect, the redistribution of wealth is theft. Nevertheless, redistributive tax systems persist. We are interested in the structure of the preferences underlying the demand for redistribution.

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. The response of net contributors to a redistributive system remains, however, an open question and it is their behavior that is the primary focus of this paper.

We contend that demand for redistribution by net contributors will be driven by either risk-aversion or by some form of other regarding preferences (see, for example, Alesina and Giuliano, 2009, for a recent review). Given an exogenous increase in inequality, greater demand for redistribution may simply reflect the desire of risk-averse individuals to insure themselves against income fluctuations that are more likely to affect themselves (Buchanan and Tullock, 1962; Varian, 1980). Such behavior is consistent with the conventional conception of the self-interested Homo Oeconomicus.

Alternatively, the demand for redistribution by net contributors may reflect a concern for the net recipients via some form of 'other-regarding', or pseudo-altruistic, preferences (Cooper and Kagel, 2009). Such concern may be purely altruistic, as described in the David Hume quote above (see also Kolm, 2006, for a detailed classification of altruism). That is, despite not being affected by a negative shock, net contributors may demand greater redistribution, as they are inclined toward the greater happiness of others. 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. Thus, the presence of 'other-regarding' preferences may be consistent with the conventional conception of the self-interested Homo Oeconomicus.

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). We address this debate directly.

From an economic point of view, it is important to know whether individual preferences for redistribution via different instruments incorporate an 'other-regarding' component that ought to be incorporated in to economic models (Costa-Font and Cowell, 2012) and the absence of such a component has implications for the conception of redistribution as a public good (Thurow, 1971). In this paper, we will test, first, whether demand for redistribution depends on the current distribution. We will then try to disentangle the selfish and 'other-regarding' motivations underlying the demand for redistribution by the net contributors to the redistributive system.

In our analysis, we focus on one instrument of redistribution, unemployment benefits, for a number of reasons. First, Kuzienko, Norton, Saez and Stantcheva (2013) argue that demand for redistribution might not be too intense because people are generally unaware of the level of inequality. In our case, the shock (increase in local unemployment) that might increase the demand for more spending on unemployment benefits is clearly visible. Second, 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, demand for unemployment benefits may be driven either by insurance or selfish concerns or by some form of 'other-regarding', or pseudo-altruistic, concerns (Cowell and Schokkaert, 2001; Cusack, Iversen and Rehm, 2006). Third, partly related to the first reason, 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.

Unemployment benefits in Spain are calculated in such a way that they mix redistribution and self-insurance components. The net replacement rate – i.e., amount of transfer minus taxes when unemployed with respect to net income when employed – in Spain is around 0.7 (see, for example, van Vliet and Caminada, 2012), which is quite similar to that of other EU(17) countries like Austria, France, Germany or Italy. 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).

As we will explain in detail in Section 3, we use data based on surveys where respondents are asked whether they would increase UB even if such an increase would result in higher taxes. Then, we relate this answer to the substantial increase in the unemployment rate in Spain occurred during our period of analysis. From the empirical analysis, we obtain a clear result: employed people demand more UB when the level of unemployment in their municipality of residence increases. Our attempt to disentangle the self-interested insurance motive from any pseudo-altruistic motive suggests that the effect is driven by demand for insurance.

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 conclusion drawn in Section 5.

2 Theoretical Framework: Redistribution through Unemployment Benefits

The main aim of our empirical analysis is ascertaining the nature of demand 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, in the spirit 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 suppose 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. 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. However, she is not fully compensated according to her past contributions to the UB system, but according to a percentage, λ, such that $1 \geq \lambda > 0$[1]. We assume that $C_n < C_e$, which holds provided $\lambda < \frac{w}{\widetilde{w}}(1-t)$. The intertemporal budget constraint of the UB system must be balanced such that[2]:

$$(1-u)tw = u\lambda\widetilde{w} \tag{3}$$

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

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

We assume employed individuals carry some risk of transitioning from employment to unemployment with probability α. Similarly, the transition from unemployment to employment occurs with probability β. Both α and β vary across individuals and are functions of that individual's socio-economic characteristics as well as the 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

[1] The Spanish UB system could be classified as a Bismarckian system in contrast to a Beveridgian system (see, for example, Conde-Ruiz and Profeta, 2003). That is, UB are funded basically from social security contributions (pay-roll taxes) and UB follows an earning related rule. Hence, our theoretical framework is coherent with the institutional framework of our empirical analysis.

[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. 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. This has occurred in Spain for those suffering from long-term unemployment (See http://www.fedeablogs.net/economia/?p=23617 for a description and analysis of these measures).

'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 assume agents are potentially 'other-regarding'; that they may derive utility from the consumption of others. The degree to which preferecnes 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:

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

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

where r is a common discount rate. Equation (5) describes the life-time utility of an employed individual. Should an employed individual 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 otherwise the qualitative results would not change. 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:

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

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. The first summand is the marginal utility from regarding others (the increase in the consumption of the unemployed) and the second summand is the discounted marginal utility from an increase in one's own consumption when unemployed. This latter term is increasing (decreasing) in α (β). We further restrict θ such that $0 \leq \theta < \frac{\alpha}{r+\beta+\alpha}$, ensuring that individuals derive more utility from their own consumption when unemployed than from that of others.

Our primary interest is in $\partial t^*/\partial u$; so we take the derivative of Equation (8) with respect to u and substitute in the first order condition to obtain:

$$\frac{\partial\Phi}{\partial u} = \frac{\widetilde{w}}{u^2}U'(C_n)\left\{\alpha\frac{(1-u)(1+\theta)}{r+\beta+\alpha}\left(\varepsilon_{\alpha,u} - \frac{\beta}{r+\beta}\varepsilon_{\beta,u}\right) + \theta\left[RA(C_n) - 1\right]\left[(r+\beta+\alpha)+\alpha\right]\right\} \geq 0 \tag{9}$$

where $RA(C_n)$ is the coefficient of relative risk aversion which we assume is strictly greater than 1 (Meyer and Meyer, 2005). Equation (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: 'other-regarding' $\left(\alpha\frac{(1-u)(1+\theta)}{r+\beta+\alpha}\left(\varepsilon_{\alpha,u} - \frac{\beta}{r+\beta}\varepsilon_{\beta,u}\right)\right)$ and insurance $\left(\theta\left[RA(C_n) - 1\right]\left[(r+\beta+\alpha)+\alpha\right]\right)$. To disentangle these two affects empirically it is necessary to control for one of them. While the degree to which others are regarded is unobservable, the risk of unemployment, α, is, in some cases, arguably observable given the institutional framework in Spain. In general, we are interested in two special cases:

[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).

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, than a positive estimate of $\partial t^*/\partial u$ will be a combination of the insurance effect, B, 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: $\alpha = 0$, $\theta \geq 0$

There are other workers for which we know $\alpha_i = 0$. For example, civil servants in Spain effectively have permanent positions. Such workers have no insurance motivation. If the estimated value of $\partial t^*/\partial u > 0$ for such a group then it must be the case that $\theta > 0$, thus providing evidence that preferences for unemployment benefits include some altruistic component.

In the empirical analysis that follows below, we estimate $\partial t^*/\partial u$ for sub-populations of Spanish workers for which α differs *a priori*.

3 Data and methodology

We construct a new data set from survey and administrative data collected in Spain. The institutional, policy and labour market environment in Spain over our observed period (2005-2010) make it a very good setting for our study for a number of reasons. First, internal migration is known to be relatively low in Spain (Bentolila, 1998; Bentolila et al., 2012), limiting problems arising from Tiebout sorting of the labor force. Second, there was no change in the true value of t or in λ in Spain during the observed period. Third, the unemployment system is homogenous across the country (with some minor exceptions for seasonal agricultural workers in certain Autonomous Communities (ACs))[4]. Lastly, we observe a large, exogenous change in u over the period, which provides substantial temporal, in addition to the cross-sectional, variation in the local unemployment rates.

We use data from the 2005-2010 waves of the annual CIS survey. 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 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.[5] We obtain additional municipal-level data (population, *valor catastral*[6], number of foreign residents, physical area) from National Statistics Institute (INE) in Spain. Note that municipal units cover all of Spain.

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).

[4] 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.

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

[6] 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

	Workers		Non-workers	
Panel A: Individual characteristics	**Mean**	**SD**	**Mean**	**SD**
Prefers more UB	0.369	0.483	0.337	0.473
Household head	0.683	0.465	0.422	0.494
Bachillerato	0.339	0.473	0.207	0.405
Post-bachillerato	0.275	0.447	0.099	0.298
Catholic	0.691	0.462	0.823	0.382
Religious	0.239	0.427	0.444	0.497
Married	0.562	0.496	0.573	0.495
Young child	0.451	0.498	0.209	0.407
Age	39.233	11.49	53.652	20.221
Male	0.582	0.493	0.391	0.488
Unemployed	.	.	0.285	0.403
Public Sector	0.185	0.388	0.06	0.238
Private Sector	0.815	0.388	0.381	0.486
Observations	7051		6931	
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	1229.934	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 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[7]. 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. Respondents are reminded that greater expenditure is funded via taxation in the question about preferences for public sector expenditures.

In Spain, Social Security contributions are collected from earned income. This revenue must be used to fund unemployment benefits and unemployment benefits must be funded exclusively out of these contributions. We therefore assume that agents preferring an increase in unemployment benefits are aware that such an increase will require an increase in their Social Security contributions. This is fully in accordance with our theoretical framework. **CLARIFICATION OF THE UB SYSTEM IN SPAIN**

[7] 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.

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 of workers, 35.3 per cent of 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 40.6 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 the sample of workers, 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 respondent workers is 39 years and 58 percent are men. The respondents are asked to declare the sector in which they work and 19 percent are in the public sector (though not necessarily with civil servant status) and 82 percent are in the private sector. 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.[8]

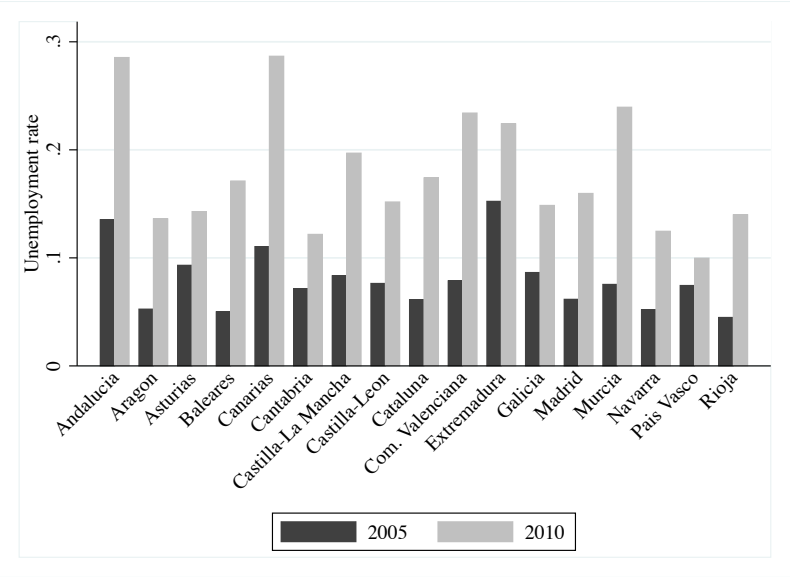
In Panel B we present summary statistics for the municipal level data. Note that the crime variable refers to provincial level data, not municipal as no municipal level crime data is available for Spain. The 'net payer' dummy takes a value of 1 for those municipalities in ACs which are net contributors 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.

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

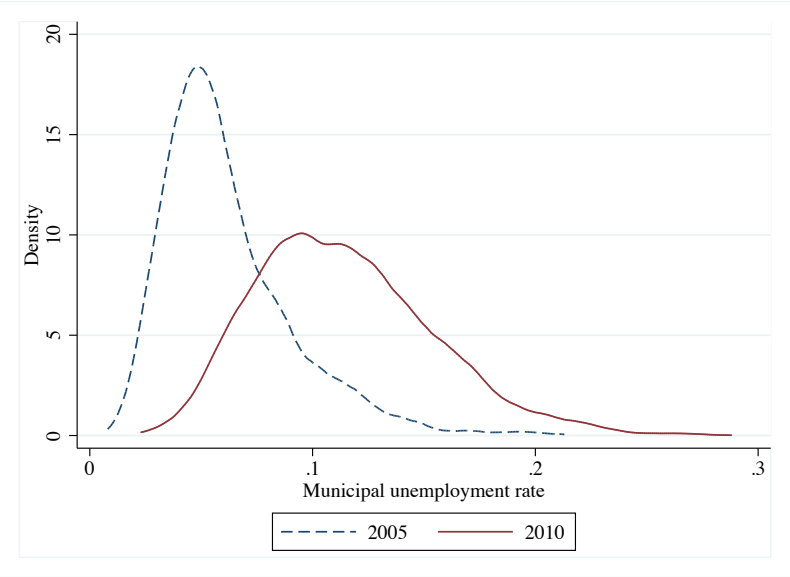
Figure 1: Unemployment in Autonomous Communities, 2005 & 2010



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

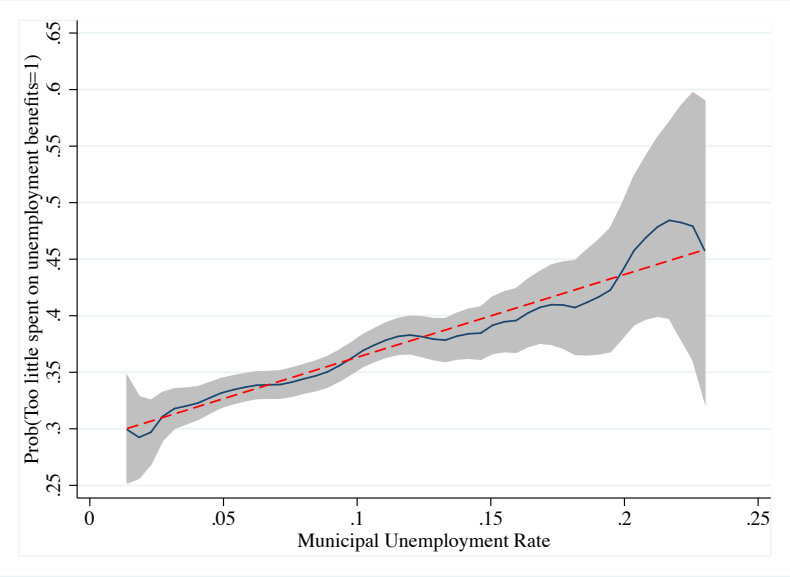


Note: This figure shows the kernel densities of the unemployment rates across Spanish municipalities in 2005 and 2010. The data on municipal unemployment rate were obtained from La Caixa (http://www.lacaixa.comunicacions.com/se/pbae.php?idioma=esp)).

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

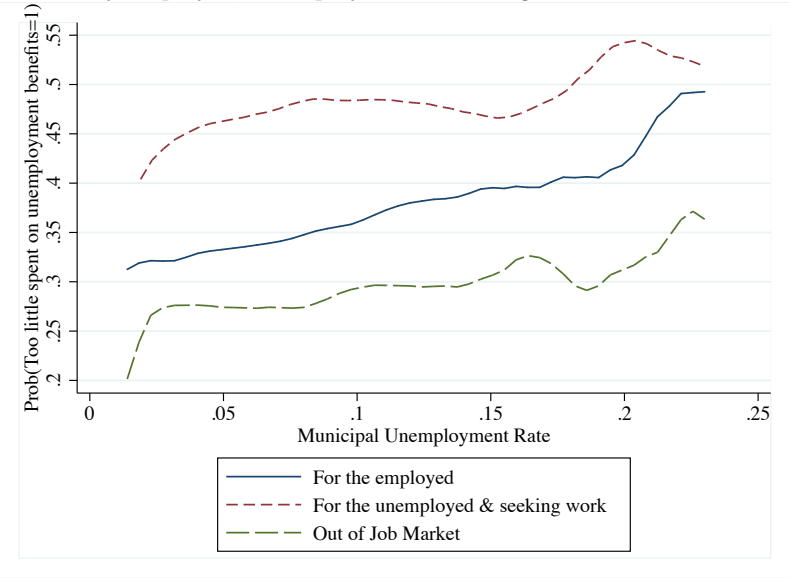


Note: This figure shows the relationship between unemployment and the expressed demand for unemployment benefits plotted with a local polynomial smoother with an 'optimal' bandwidth from Silverman (1986) (the solid line) and a linear fit (the dashed line) using all respondents. The grey area is the 95 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.

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 correspoinding 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.

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[9], log VC per parcel, the log number of foreign residents, dummy if municipality is in a AC which is a net contributer 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. We address the presence of fixed effects, at the regional, municipal and year level, simply by including 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 (Stamboel, 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 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.[10] 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 (Angrist and Pischke, 2009).

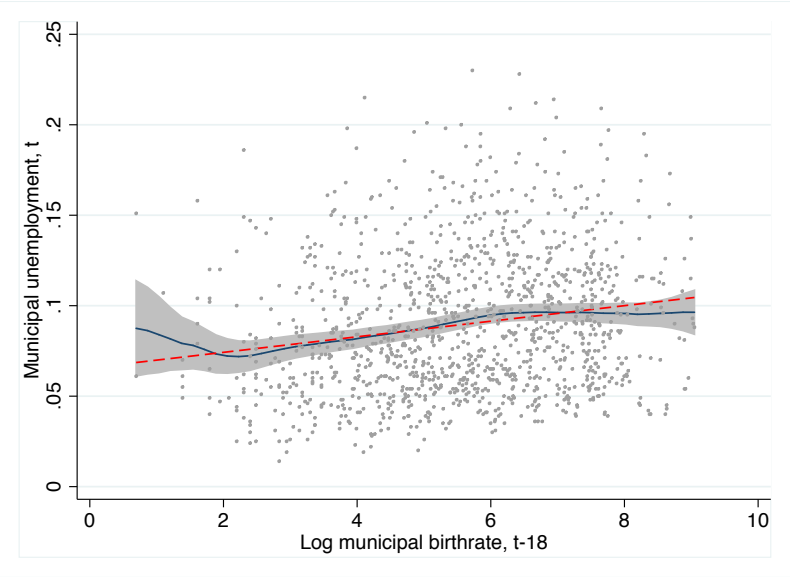
To use 2SLS correctly we need an instrument which is both relevant (correlated with the local unemployment rate) and valid (uncorrelated with e_{ijt}). To this end we use the log number of births in each municipality lagged 18 years. The intuition is that, given the relatively low rate of mobility in 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.

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

[10] There are some regionally and sector specific benefits for agricultural workers in Andalusia and Extremadura (Bover et al., 2002; Jofre, 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.

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 $\partial t^*/\partial u$

4.1 Baseline results

We present our baseline results in Table 2, estimating the model using 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)
High School	-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-HS	-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)		(1.959)	(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 believe '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 if 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 (3b), though the likelihood of committing a Type II error here is small given just how similar the point estimates are to one another. [11]

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 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). There is some evidence that those in more populous and physically smaller municipalities prefer more spending on UB (consistent with Ashworth et al., 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

[11] 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: $plim \frac{\sigma^2_{2SLS}}{\sigma^2_{OLS}} = \frac{1}{\rho^2_{Zu}}$.

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 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 Unemploy t	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 .[12]

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 unemployment 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.

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

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	

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 (i, 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 maybe 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[13], though the assumptions required are much stronger than for OLS. We therefore keep the estimation

[13] 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.

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.

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.

4.3 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.

4.3.1 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 subsamples at the 5 percent level for column (1) (no fixed effects) and for column (2) (AC and year fixed effects). Although the retired have no insurance motive to demand UB, the absence of an effect is somewhat surprising as the retired do not bare any cost of increasing UB (i.e. they pay nothing into the UB scheme). If there were a other-regarding component to demand for UB, we would anticipate a significant effect as they would benefit from more generous UB but not pay for it.

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.

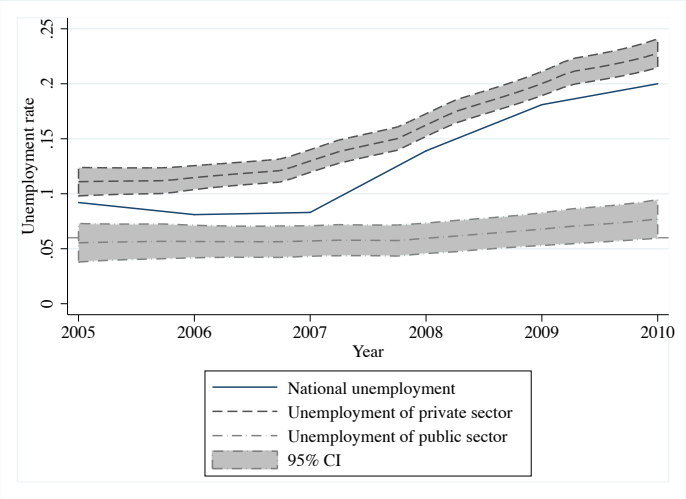
To address this possibility we exploit another survey question in which respondents are asked what they feel is the main role of taxation. Respondents can agree that 'taxes are a tool to redistribute wealth','taxes are necessary to pay for services' or 'taxes are something we are obliged to pay with understanding clearly for what they are used'.[14] 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 altruistic.

[14] 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.

4.3.2 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.

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), 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 et al., 2011) and, following Houston (2000), 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.

4.3.3 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).

5 Discussion and conclusions

The redistribution of income is one of the primary activities of the public sector, controversial though it may be. The services provided by the state are rarely apportioned according to the amount of tax paid by an individual. The reasons why people demand such redistribution even when they are net payers into the system is 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, and explore the extent to which such redistribution is a public good. 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.

We have shown that changes in the local rate of unemployment have a 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 wealth are a function of the actual wealth distribution. We then go one step further by testing for the presence of other-regarding in workers preferences. We outline a theoretical framework in which demand for redistribution is driven by two separate motives. Workers may demand more generous unemployment benefits as a form of insurance against their own unemployment. Workers may also demand more generous unemployment benefits due to altruistic concerns where workers derive utility from the welfare of others. The existence of this second motivation is particularly important as it reveals information about how redistribution as a good is consumed by individuals. If net contributors to a redistributive system do not derive utility from the welfare of the net recipients, it becomes difficult to argue that redistribution is, in fact, a public good.

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. 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 a pseudo-altruistic 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 (food stamps, progressive income tax, social housing) and future work may consider testing the generality of the results presented here.

Appendix A

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

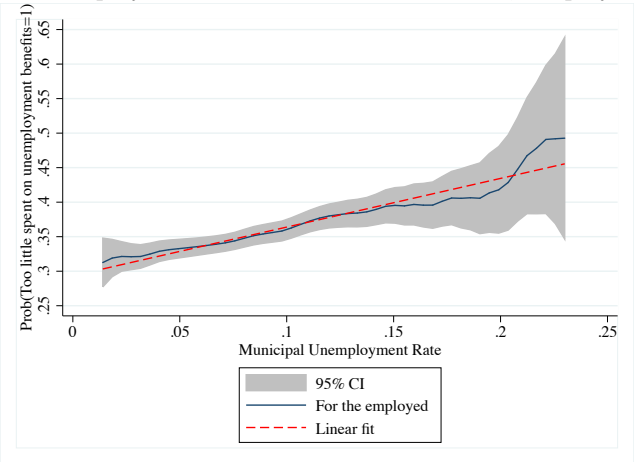


Figure 2: Unemployment rates and demand for UB, Retired people

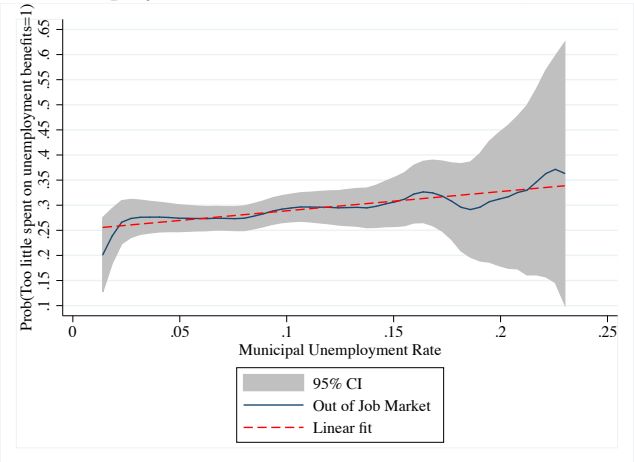
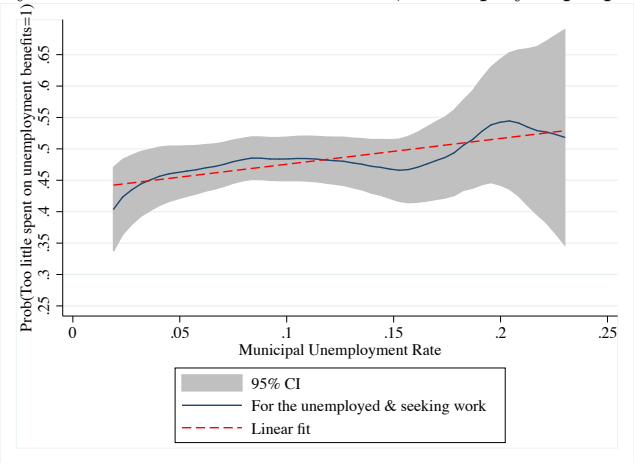


Figure 3: Unemployment rates and demand for UB, Unemployed people looking for work



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