Senior Acitivity Rate, Retirement Incentives, and Labor Relations

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Abstract In order to face the aging of their populations governments of developed countries reformed their retirement systems during the last two decades, by discouraging early retirement and increasing incentives to work for older workers. Senior participation rates to the labor force not only differ strikingly in level from one country to another, they also differ in their reaction to retirement incentives set by governments. This paper highlights how disutility to work can influence the effectiveness of such reforms. The authors build a highly stylized model according to which the reaction of senior activity rate to monetary incentives to work depends on the properties of the specific distribution of working conditions in the country. Second, taking the quality of labor relations as a proxy for working conditions, the authors show empirically that aggregate reactions to retirement incentives depend on the distribution of labor relations at country level. They use panel data for nineteen OECD countries from 1980 to 2004. They show that the elasticity of senior male labor force participation rate to retirement incentives is stronger in countries with better and more homogeneously distributed labor relations.

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1   Introduction

The issue of the efficiency of economic reforms is central in public policy agenda. Once a reform has been shown desirable by economic theory or empirical test, its implementation does not always reach the objectives. This question as been addressed by Acemoglu et al. (2008) who point out that setting an independent central bank is effective at fighting inflation only if the rules controlling the executive power are restrictive enough. In this paper, we are interested in the effect of changes in retirement incentives on senior activity rate. We conclude that their efficiency is conditioned by the distribution of the quality of labor relations in the country.

Senior employment and activity rates are crucial economic issues, both for the sustainability of pension system, and for the raw creation of wealth. Facing the aging of their population, most developed countries have been adjusting pension systems during the last decades. Beside the political economy of social security (see Galasso and Profeta (2002) for a review), any pension reform or adjustment has two objectives. First, a change in retirement schemes aims to improve the balance between expenditure and resources of the pension system. Second, it aim to modify senior activity rate. The second objective can of course be a major determinant of the former given the large fraction of seniors in developed societies.

A growing literature seeks to understand the heterogeneity of employment or activity rates across countries and across time. Differences in culture and institutions are two obvious candidates to explain part of the observed heterogeneity. Culture falls short in explaining evolutions across time given its intrinsic slow moving nature. Similarly, labor market institutions only explain part of the heterogeneity across space and time. In this paper, we combine these two approaches. We focus on the effect of changes in retirement incentives on senior activity rate and argue that the quality of working conditions in a country is likely to alter the response of senior activity rate to changes in retirement incentives. We first present a highly stylized model where senior workers choose between work and retirement. Their choice is affected by their disutility of labor and by the generosity of the pension system. At the aggregate level, the response of senior labor force participation rate to a change in retirement incentives depends on the distribution of the disutility of labor in the society. Then, turning to empirical evidence,

we use aggregate panel data of OECD countries to show that the distribution of the disutility of labor, approximated by the quality of labor relations, determines the elasticity of senior male participation rate with respect to the implicit tax on continued work, which is the cost of staying at work compared with retiring.

Instruments to increase senior employment rate can be the postponing of the standard retirement age or the decreasing of retirement incentives which involve changes in pension and contribution rates. The importance of this parameter has been stressed by Duval (2003). He showed that a decrease of the incentive to retire may reduce the fall of employment between two five-years age groups. In a dynamic approach, Blau and Goodstein (2010) investigated to what extent changes in social security rules explain changes in labor force participation of seniors in the United States. Liebman et al. (2009) also examined the response of labor supply by older workers to social security benefits in the United States.

The intuition behind the results of this paper is fairly simple: monetary incentives can play a role in the retirement decision only if workers sufficiently enjoy going to work. In the opposite case, any decrease in retirement incentives would not have any effect on the seniors' decision since they suffer a large disutility at work. This idea that some factors may interfere with the retirement decision has been investigated by Blau and Shvydko (2007) who focused on the characteristics of firms and contracts. By an empirical study, they showed that seniors' choice of retirement also depends on the rigidities of technologies. Similarly, according to Cheron et al. (2004), trying to increase senior employment by a change of pension scheme is useless if wages are rigid and above their walrasian level.

At the country level, our proxy for the disutility at work is the quality of labor relations both between workmates and between employers and employees. Such idea on the influence of labor relations on macroeconomic outputs was studied by Blanchard and Phillipon (2004). Considering the number of social conflicts as a proxy for bad labor relations, they showed that bad relations strengthen the negative effect of asymmetric information on the job market. Understanding labor relations as a component of a country's cultural trait, this paper is also linked to the the literature on economic outcomes of culture. Interactions between labor markets outcomes and culture has been investigated by Aghion, Algan and Cahuc (2011). They show that policy can affect cooperation on the labor market depending on individual expectations regarding the organization of collective relations.

The way culture and beliefs can affect activity rates has been underlined by Giavazzi, Schiantarelli and Serafinelli (2010). They show that culture matters for youth and female employment rates.

The structure of the paper is as follows. In Section 2, we document the evolutions of senior activity rates and retirement incentives between 1990 and 2000. In Section 3, we present the model and derive its implications. We describe the data used in the macroeconomic empirical part and present corresponding results in Section 4. Finally, Section 5 concludes.

2 Recent Evolutions of Retirement Incentives and Senior Activity Rates

As stressed in the introduction, governments can play on two parameters in order to influence senior activity rates : the standard retirement age, i.e. the standard age of eligibility to old-age pension benefits, and the extent of monetary retirement incentives. In this section, we briefly document the evolution of senior activity rates and retirement incentives between 1980 and 2000.

Table 1 presents changes in the implicit taxes on continued work, in the standard retirement age, and in senior activity rates over the periods 1980–2000 for 14 OECD countries. The implicit tax on continued work was computed by Duval (2003). It takes into account expected pension wealth and both employers and employees rates of contribution to the pension system.[1] When the implicit tax on continued work increases, a worker has weaker incentives to continue working. Senior activity rates are from the OECD database.

Over the period surveyed in Table 1, standard retirement ages have not change much. Only three countries experienced changes of this parameter. France decreased it of five years between 1981 and 1983. Italy increased it progressively from 60 to 65 between 1994 and 2000. The government of New Zealand conducted the same reform between the late 1980s and the year 2000.

On the contrary, changes in the implicit taxes on continued work are far more frequent. We clearly see that nor the populations treated (age group 55–59 or age

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[1] See Section 4 for a detailed description of the implicit tax on continued work.

Table 1: Evolutions of Senior Activity Rates and Retirement Incentives between 1980 and 2000

	Increase of standard retirement age ?	Age group 55-59		Age group 60-64	
		Change in activity rate	Change in implicit tax	Change in activity rate	Change in implicit tax
Australia	-	-0.7	-5.7	1.3	22.5
Canada	-	-0.1	4.8	2.4	4.1
Finland	-	7.2	-7.1	2.9	7.6
France	-	-4.0	5.2	-7.7	-43.5
Germany	Yes	-1.9	2.5	2.4	-8.3
Italy	Yes	-12.5	-75.6	-5.6	-78.0
Netherlands	-	10.5	-2.1	8.6	-57.3
New Zealand	Yes	6.8	-0.5	34.0	-27.0
Norway	-	-0.3	-2.3	0.1	5.8
Portugal	-	-2.4	4.2	-5.5	-1.1
Spain	-	-1.7	-10.4	1.0	21.3
Sweden	-	-3.1	-10.2	2.3	28.3
United Kingdom	-	-3.9	6.7	1.4	7.7
United States	Yes	-2.3	-0.2	1.5	6.4

Activity rates are in percentage of total population of reported age. Changes are in percentage points. Implicit tax corresponds to the implicit tax on continued work, including early retirement route, for reported age group.

group 60–64), nor reactions to these are homogeneous. Over the period 1980–1990, implicit tax on continued work for age group 55–59 and the activity rate of this age group have moved in opposite directions in countries like Canada, Finland, France, Germany, Netherlands, New Zealand, Portugal, and the United Kingdom. In other countries, both variables exhibited changes in the same direction. Similar remarks easily apply to age group 60–64. It is clear that the reaction of senior activity rate to changes in incentives is far from homogeneous.

Focusing on Finland and Italy can give us an idea of these striking differences. Figure 1 presents the evolutions of senior activity rate and implicit tax on continued work for age group 60–64 for these countries. In the case of Finland, we notice a perfect symmetric movement of incentives to retire and senior activity rate. The standard retirement age in Finland did not change over this period, remaining at 65. On the contrary, if we look at Italy, the senior activity rate continued its decreasing trend when the Italian government strongly decreased the incentive to retire

Figure 1: Implicit Tax on Continued Work and Senior Activity Rate in Finland and Italy, 1980-2004
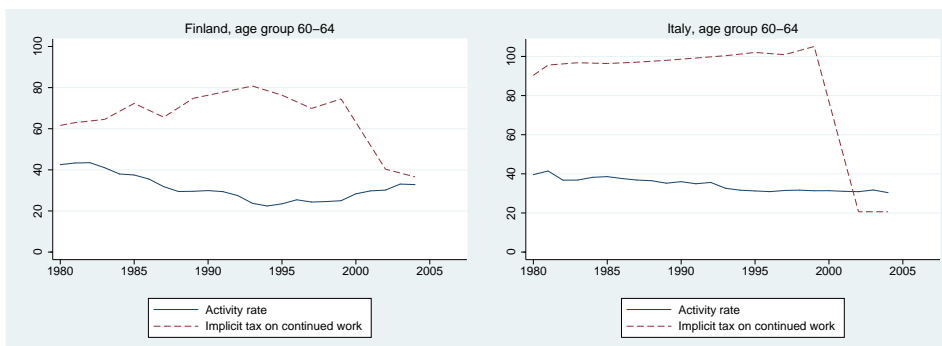
Source: OECD. The implicit tax on continued work includes early retirement route.

at the end of the 1990s. Italian seniors do not seem to have reacted to incentives set by the government. It is even more striking if we consider that this decrease in monetary incentive went alongside an increase of the standard retirement age from 60 in 1993 to 65 in 2002.

This raw overview of the evolutions of retirement incentives and senior activity rates in a selection of OECD countries give credence to the view that the relation between both variables is ambiguous.

3 Theoretical Framework

In this section, we present a very simple model that can partly explain the differences mentioned above. The objective of this model is not to represent the whole process of the retirement decision. This would involve taking into account that individuals may optimize over longer time horizons, or modeling the retirement decision using an option value approach. The model is highly stylized, and aims at capturing a partial mechanism at the individual level and its aggregate consequences.

All senior individuals face a trade-off between work and retirement. This model shows how their choice depends on the disutility of labor and how the

distribution of that later parameter alters the link between retirement incentives and labor force participation rate at the macroeconomic level.

3.1 Individual Trade-off

Let us consider two periods. In the first period, an individual can choose to continue working or to retire. In the latter case, she gets a truncated pension αp, where $0 < \alpha < 1$, and p is the full pension benefit. If she chooses to continue working, she receives a wage w and suffers a disutility from labor.

Let δ_i be the disutility of labor for individual i. Assuming a linear utility function, utility of individual i in period 1 is either $w - \delta_i$ is she chooses to work, or αp if she chooses to retire. In second period, all individuals have to retire. If the individual chose to work in the first period, she gets pension p. If she chose to retire, she gets pension αp. If β is the discount factor, the utility of early retirement can be written as

$$U^R = \alpha p + \beta (\alpha p) = (1 + \beta) \alpha p,$$

and the utility of standard retirement as

$$U^W = w - \delta_i + \beta p.$$

As a consequence, individual i chooses to retire early if and only if

$$
\begin{aligned}
U^R &> U^W \\
\Longleftrightarrow (1 + \beta) \alpha p &> w - \delta_i + \beta p \\
\Longleftrightarrow \delta_i &> w + \beta p - (1 + \beta) \alpha p.
\end{aligned}
$$

This result only implies that a worker stops to work in the first period if her disutility of labor exceeds the net gain of work during one more period. It is straightforward to see that individual i will have less incentives to retire if the right-hand term increases, i.e. if the gain of work during one more period becomes larger than the disutility of labor. This result is not path-breaking and simply mirrors the basic mechanisms of all retirement decision models. However, it makes is possible to underline how the aggregate effect of changes in retirement incentives on senior activity rate depends on the distribution of the disutility of labor.

3.2 Aggregate Consequences

The set of seniors choosing to stay at work in the first period is

$$\{i: \quad \delta_i < w + \beta p - (1 + \beta) \alpha p\}.$$

Assume that in a given country c disutility of labor is distributed among seniors according to the cumulative distribution function $F_c(.)$. Then, the proportion of seniors working in country c is simply given by

$$n^c = F_c(w + \beta p - (1 + \beta) \alpha p).$$

Since $F_c(.)$ is an increasing function, the fraction of seniors in the labor force is obviously increasing with the wage w and decreasing with the penalty on pension α. We can derive two additional properties from this simple model:

1. For a given set of the parameters α, p and w, the resulting labor force participation rate in country c depends on the distribution of the disutility of labor $F_c(.)$.

2. Let us write $T = w + \beta p - (1 + \beta) \alpha p$, the opportunity cost of early retirement. The derivative of n^c with respect to T is

$$\frac{\partial n^c}{\partial T} = F'_c(T).$$

   Since $F'_c(.) \geq 0$, we get $\partial n^c / \partial T \geq 0$. This implies that the stronger the incentive to stay at work, the larger the proportion of seniors who continue working. Individuals responds to incentives unless the density of variable δ is null. However, the size of the effect of a change in T on n^c depends on the characteristics of the distribution function $F_c(.)$.

   As a result, the effectiveness of early retirement incentives depends on the characteristics of the distribution function of the disutility of labor among workers.

4 Empirical Evidence

In this section, we test the two properties of our model using international aggregate data. Parameter T, the incentive to stay at work, is identified using the implicit tax on continued work. The distribution of disutility at work is approximated by the quality of labor relations. We first present the data. Then, we turn to empirical results using cross section and panel data. The models to be estimated will be presented on the fly.

4.1 Data

This sub-section describes data used in the empirical part of this paper. We use data from several sources. Our sample includes 19 OECD countries: Australia, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, South Korea, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

Senior activity rates   Senior activity rates are harmonized across countries and taken from the OECD database[2]. Data are available for males and females by age group from 1980 onwards. We selected data for males in age groups 55–59 and 60–64. We focus on senior male individuals for a very simple reason: data on retirement incentives are available only for male workers. However, this restriction offers the advantage to avoid all issues related to female employment, which are beyond the scope of this paper.

Retirement incentives   Pension system generosity is measured using the implicit tax on continued work developed by Duval (2003). The average implicit tax on continued work is computed each year for a given age on a five year horizon. It takes into account expected pension wealth and both employers and employees rates of contribution to the pension system. When the implicit tax on continued work increases, a worker has weaker incentives to continue working.

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[2] Raw data are from the International Labor Organization.

Let us recall the formula used by Duval (2003). Formally, the implicit tax on continued work in a specific year is the change in pension or social wealth from working five additional years (from R or $R + 5$):

$$T_R = [PWY_{R+5}] \left[S_{R+5} / (1+r)^5 \right] - PWY_R - \sum_{A=R}^{A=R+4} \left[\frac{S_A \frac{C_A}{Y}}{(1+r)^{A-R}} \right],$$

where PWY_k is the present value of expected pension payments at age k, S_k is the probability of being alive at age k, r is the real discount rate, and, finally, C_A/Y is the sum of employees and employers rates of contributions to the pension system. For a more detailed presentation of the methodology, see Duval (2003).

We use the measures for the 55–59 and 60–64 age groups. For each age group, the implicit tax is available with or without taking into account early retirement schemes. However, implicit tax including early retirement route is by construction less trustworthy since information about early retirement eligibility are hard to assemble. This is why we focus on the indicator without early retirement schemes.[3]

Working conditions The disutility of labor can be considered as a non-monetary negative payoff that workers get through their work. This includes the quality of relations at the workplace. We use the ISSP Work Orientations survey to build measures of the quality of working conditions. This survey has been conducted in 1989, 1997 and 2005 in 30 countries. Among the broad set of questions asked to workers, we selected two questions that reflect the human dimension of working conditions, namely:

- *rel management*: "In general, how would you describe relations at your workplace between management and employees ?"

- *rel workmates*: "In general, how would you describe relations at your workplace between work- mates/colleagues ?"

Answers to those questions are coded from 1 (very bad) to 5 (very good).

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[3] Estimations using the implicit tax on continued work including early retirement route are presented in the appendix.

For each of these questions, we construct two basic indicators that may reflect some aspects of the distribution of labor relations at the country level. The first and simplest indicator is the average answer. The other one is the coefficient of variation, i.e. the ratio of the standard deviation to the mean for each variable. This is a raw measure for the dispersion of the variable.

Unfortunately, these questions are only asked to workers. Since we are interested in working conditions perceived by all seniors, including those who are retired, the computed indicator may be biased upward if only seniors are selected. Seniors present in this database are all working. Hence, we used male workers aged between 35 and 54 as a proxy of the perception of labor relations experienced by seniors. Figures 3 and 4, presented in the appendix, plot the average values of *rel management* and *rel workmates* for seniors and prime-age male workers. The correlation is strong and positive. This shows a specificity of labor relations in each country. Furthermore, the average answer of seniors is most of the time above the 45 degrees line, which confirms the expected bias.

In panel data estimations, we assign working conditions for missing years using the following simple method: for years 1980–1989, we use the 1989 working conditions measure if available, for years 1990–1996 the 1997 measure and for years 1998 onwards the 2005 measure. If a country has been surveyed only once or twice, we replicate this method, but using only available data.

Other covariates Panel data regressions include wealth and economic activity indicators as control variables. Wealth is measured using the (log of) real GDP per capita provided by the Penn World Table. We take the OECD male unemployment rate as a proxy for economic activity at the country level. We also use the standard retirement age provided by Duval (2003).

4.2 Results

This sub-section presents empirical evidence. We first show that working conditions explain some of cross country differences in senior activity rates. Then, we use panel data estimates to show that senior activity rate reacts stronger to changes in retirement incentives in countries with better and more homogeneously distributed labor relations. By doing this, we extend and mitigate the analysis of

the effect of retirement incentives on the retirement decision using international data, as conducted by Blöndal and Scarpetta (1999), Johnson (2000) and Duval (2003) among others.

Cross Section Evidence

Figure 2 shows the positive relationship between labor force participation rate of seniors aged 60–64 and the variable *rel management* in 2005. Differences in the quality of labor relations explain up to 20% of differences in senior activity rate across countries. Figures 5, 6 and 7 in the appendix describe the same relationship for the variable *rel workmates* and for age group 55–59. Again, differences in the quality of relations at the wokplace explain between 10% and 15% of differences in senior activity rate.

We pooled all available observations in order to investigate more precisely the cross-country relationship between the quality of labor relations and senior activity rates. Table 2 presents the estimated coefficients for different specifications. The activity rate of age group 55–59 is the dependent variable in the upper part of the table, whereas the activity rate of age group 60–64 is the dependent variable in the bottom part.[4]

In column 1, we merely regress senior males activity rate on the average quality of labor relations between management and employees. The estimated coefficient is positive and significant at the 10% level. In column 2, we include a dummy variable for European countries to ensure that this relationship is not driven only by the opposition between Europe and the rest of the world. Indeed, Alesina et al. (2001) pointed out the specificity of the European welfare states that could explain part of the differences in senior activity rates. The estimated coefficient on *rel management* increases and becomes significant at the 5% level. The dummy variable for European countries is negative and significant. This implies that senior labor force participation rates are weaker in Europe than in the rest of the world. In column 3, we control by the implicit tax on continued work for age group 55–59. This variable is not significant whereas the quality of the relations between management and employees remains significant at the 10% level and has

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[4] Regressions presented in Table 2 rely on 37 observations for the 19 countries. Indeed, some countries have been surveyed only once or twice for the ISSP Work Orientations.

Figure 2: Activity Rate of Age Group 60–64 and Relations between Management and Employees in 2005
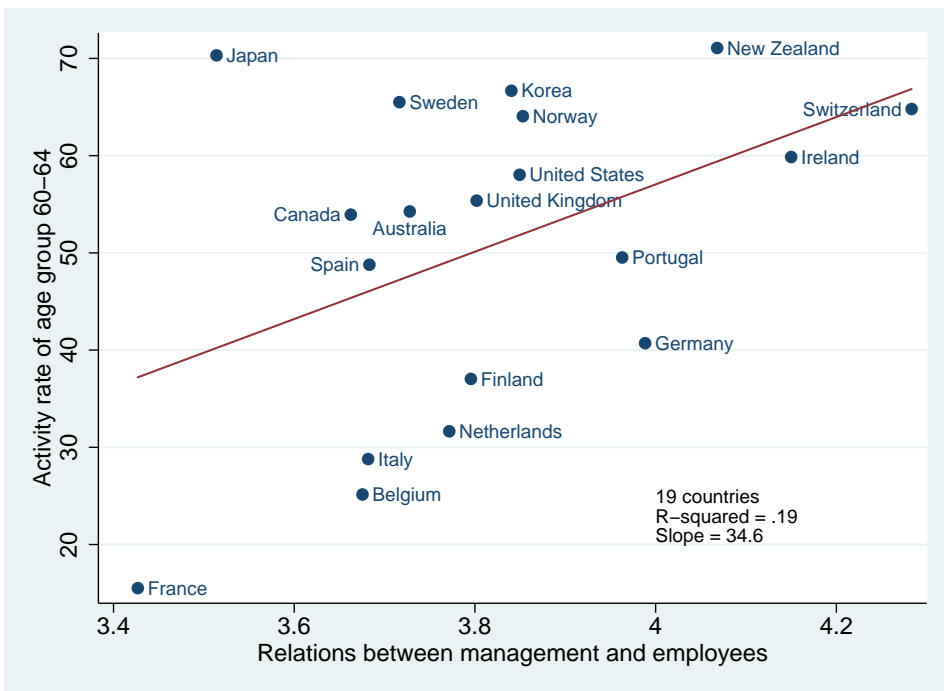
Source: OECD ans ISSP Work Orientations 2005 for all countries, except Italy and Netherlands (1997). _Relations between management and employees_ is the average by country of answers by prime-age workers to the following question of ISSP: _"In general, how would you describe the relations at your workplace between management and employees?"_. Answers range from 1, _"very bad"_, to 5, _"very good"_.

the same order of magnitude as in former specifications. In column 4, we add real GDP per capita and standard retirement age as additional explanatory variables, which lowers the significance of the coefficient on *rel management*. In columns 5 to 8 we repeat the same exercise with the other measure of working conditions. The effect of *rel workmates* is robust to the introduction of all co-variates.[5]

As shown in the bottom part of the table, the results are very similar when using data for age group 60–64. When significant, the coefficient of the implicit tax variable is negative. This result is consistent with our prediction that controlling for working conditions, generosity of the pension system has a negative impact on senior activity rate.

Summary statistics of variables used in Table 2 are displayed in Table 6 presented in the appendix. According to theses figures and to the estimated coefficient presented in column 8, one standard deviation change of the variable *rel workmates* is associated with a 4.8 points of percentage change oh senior activity rate. This represents around 50% of the standard deviation of senior activity ratte.

These results show that, in a cross section of countries, better working conditions, represented by labor relations, are associated with larger labor force participation rate of senior males.

Panel Data Evidence

In this sub-section, we test the following conclusion of the model: at the aggregate level, the effect of a change in retirement incentives on senior activity rate depends on the characteristics of the distribution function of working conditions. From now on, senior activity rates and implicit taxes are always taken in log. Thus, estimated coefficients reflect elasticities of labor market participation to retirement incentives.

Benchmark estimations   We first estimate the average effect of the implicit taxes on senior activity rate. Table 3 displays estimated coefficients. The model estimated in this table is a standard within OLS regression with country fixed effects.

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[5] The number of observations is lower in columns 3, 4, 7, and 8 is lower beacause implicit tax data are missing for age group 55–59 for France.

Table 2: Relationship between Senior Activity Rate and Average Quality of Labor Relations, Pooled Cross Sections

Dependent variable is activity rate of reported age group

	Age group 55-59							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
rel management	17.94*	20.50**	19.19*	17.30				
	(9.10)	(7.76)	(10.65)	(11.13)				
rel workmates					16.63	26.35***	27.78**	24.12**
					(11.08)	(9.31)	(11.49)	(11.51)
Europe		-7.45**	-8.02**	-9.65**		-9.69***	-11.03***	-12.19***
		(2.93)	(3.71)	(4.22)		(3.01)	(3.83)	(3.95)
Implicit tax			0.04	0.20			0.09	0.23
			(0.16)	(0.19)			(0.15)	(0.16)
Real GDP per capita				-0.24				-2.99
				(7.11)				(6.15)
Standard retirement age				2.98*				2.86**
				(1.61)				(1.34)
Observations	37	37	34	34	37	37	34	34
R-squared	0.124	0.261	0.212	0.310	0.091	0.296	0.279	0.350

	Age group 60-64							
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
rel management	33.19**	38.68***	23.79	16.11				
	(15.78)	(12.42)	(14.31)	(15.25)				
rel workmates					31.56*	52.05***	34.43**	25.57
					(17.50)	(14.38)	(15.68)	(15.92)
Europe		-15.90***	-12.32**	-11.93**		-20.43***	-15.89***	-14.85***
		(4.46)	(5.27)	(4.95)		(4.93)	(5.74)	(5.29)
Implicit tax			-0.22***	-0.17*			-0.18**	-0.13
			(0.07)	(0.10)			(0.08)	(0.11)
Real GDP per capita				3.68				0.29
				(9.56)				(9.03)
Standard retirement age				2.29				2.41
				(1.98)				(1.89)
Observations	37	37	37	37	37	37	37	37
R-squared	0.154	0.345	0.445	0.486	0.123	0.403	0.463	0.501

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses. OLS regressions. All regressions include time fixed effects and a constant term. Countries are observed in 1989, 1997, and/or 2004. Implicit tax on continued work is defined for reported age group. Variable *rel management* is the average by country and year of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between management and employees?"*. Variable *rel workmates* is the average by country and year of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between workmates / colleagues?"*. For both questions, answers range from 1, *"very bad"*, to 5, *"very good"*. Real GDP per capita is the log of real GDP per capita.

Table 3: Relationship between Senior Activity Rate and Implicit Tax on Continued Work, panel data

Dependent variable is activity rate of reported age group

	Age group 55-59			Age group 60-64		
	(1)	(2)	(3)	(4)	(5)	(6)
Implicit tax	-0.003	0.002	-0.012	-0.070**	-0.067**	-0.031
	(0.013)	(0.015)	(0.012)	(0.033)	(0.029)	(0.026)
Unemployment rate	-0.006***	0.001	-0.000	-0.023***	-0.014***	-0.012***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.005)	(0.004)
Real GDP per capita	-0.105***	0.112*	0.033	-0.279***	0.064	0.165
	(0.021)	(0.066)	(0.063)	(0.057)	(0.154)	(0.149)
Standard rettirement age			-0.023***			0.050**
			(0.008)			(0.019)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	272	272	272	277	277	277
Number of countries	18	18	18	19	19	19
R-squared (within)	0.140	0.372	0.447	0.247	0.396	0.443

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses. OLS regressions with country fixed effects. Unbalanced panel of countries observed between 1980 and 2004. All regressions include a constant term. Implicit tax on continued work is defined for reported age group.

When significant, the estimated effect of the implicit tax on continued work on senior activity rate is negative. However, the coefficient is never significant for age group 55–59.[6] This suggests that this variable has no effect by itself on activity rate for this group. For age group 60-64, the estimated elasticity equals $−0,07$. However, it is null when including the standard retirement age as explanatory variable in column 6.

Wealth, measured as the real GDP per capita, and economic activity, measured as male unemployment rate, both have a negative effect on the labor force partici-

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[6] Note that there are only 18 countries in estimations for age group 55–59. Indeed, implicit tax data for this age group are missing for France. However, data on implicit tax including early retirement route are available. Results of estimations using these data and including France are presented in the appendix (Tables 7, 8, and 9), and are consistent with the results presented in the body of the paper.

pation rate of seniors. The effect of wealth on the dependent variable suggests that non-participation to the labor market increases as the economy grows. However, when including time fixed effect in order to control for the evolution of senior activity rate common to all countries, the effect of real GDP per capita vanishes. This suggests that labor force participation rate of seniors depends more on broad global economic development than on specific national wealth effects.

Interaction between implicit tax and average working conditions   We now allow the effect of implicit tax on continued work to vary with the distribution of working conditions. Hence, the estimated equation is now:

$$n_{it} = \delta_1 T_{it} + \delta_2 W_i T_{it} + \delta_3 X_{it} + C_i + \delta_4 + \varepsilon_{it}, \tag{1}$$

where n_{it} denotes labor force participation rate of senior males in country i at time t, T_{it} the implicit tax on continued work, W_i working conditions and X_{it} a vector of control variables (wealth, unemployment and standard retirement age). The variable C_i is the country fixed effect, δ_4 the constant, and e_{it} the error term. More complete specifications include year fixed effects Y_t not reported in equation (1). Since country fixed effects are included and given the structure of available data for labor relations (see above), variable W_i does not vary across time within country, and its coefficient will not be reported. Its effect is included in the country fixed effect. Country fixed effects also take into account of systematic differences in transition patterns from work to retirement across countries. The estimated elasticity may now vary with working conditions:

$$\frac{\partial n_{it}}{\partial T_{it}} = \hat{\delta}_1 + \hat{\delta}_2 W_i.$$

Table 4 presents the estimated coefficients of equation (1). The measure of working conditions is the average value of either *rel management* or *rel work-mates* at the country level. In the case of age group 55–59, the interaction term is always negative and significant, even when adding time fixed effects and standard retirement age as explanatory variables. This implies that countries with better average labor relations react stronger to changes in incentives than others. Lines indexed by [min] and [max] present the values of elasticities for the countries with

lower and higher quality if labor relations. For example, Japan is the country with the worst quality of labor relations measured either with *rel workmates* or *rel management*. The estimated elasticity for this country is thus equal to 0 (the marginal effect is not significantly different from 0). Ireland is the country with the higher score for *rel workmates*. In this case, the estimated elasticity equals −0.03 and is significantly different from 0. Thus, the previously null estimated average effect ranges in fact from 0 to −0.03, depending on the quality of labor relations.

The bottom part of Table 4 presents the estimated coefficients in the case of age group 60–64. In columns 10 to 12, the interaction variable is the quality of relations between management and employees. In this case, the interaction term is not significant. However, it is significant and negative in the left part of the table, i.e. when the quality of relation between workmates is used as interaction variable. In the most demanding specification, the estimated effect ranges from 0 to −0.07.

These results suggest first that labor participation rate of senior reacts stronger to changes in retirement incentives in countries with better average quality of labor relations; but also that the situation is different for different age groups. In the case of "young" seniors, i.e. for age group 55–59, both the quality of the relation with employers and between workmates matters. However the effect of retirement incentives on the retirement decision is weak. On the contrary, for "old" seniors, i.e. for age group 60–64, only the quality of the relations between workmates plays a role. This shows a strong conditional effect of retirement incentives.

Interaction between implicit tax and the dispersion of working conditions
We now use the coefficient of variation of working conditions as an alternative characteristic of the distribution of the quality of labor relations in each country. Table 5 presents the estimated coefficients of equation (1).

For age group 55–59, the interaction term between implicit tax and the coefficient of variation is positive and significant in all specifications. The coefficient is positive, which suggests that countries with a more homogeneous distribution of working conditions, i.e. a weaker coefficient of variation, react stronger to changes in incentives than countries with higher dispersion of working conditions. In the two bottom lines, the reading order is opposite to the one in Table 4. The

Table 4: Relationship between Senior Activity Rate and Implicit Tax on Continued Work Interacted with the Average Quality of Labor Relations, panel data.

Dependent variable is activity rate of reported age group

| | | Age group 55-59 | | | | |
| Quality of labor relations: | rel workmates | | | rel management | | |
	(1)	(2)	(3)	(4)	(5)	(6)
Implicit tax	0.263***	0.221***	0.147**	0.218***	0.202***	0.135**
	(0.072)	(0.077)	(0.065)	(0.072)	(0.077)	(0.065)
Interaction term	-0.065***	-0.054***	-0.038**	-0.059***	-0.053***	-0.039**
	(0.017)	(0.018)	(0.015)	(0.018)	(0.019)	(0.016)
Unemployment rate	-0.006***	0.001	-0.000	-0.006***	0.000	-0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Real GDP per capita	-0.107***	0.092	0.027	-0.108***	0.087	0.023
	(0.020)	(0.057)	(0.057)	(0.021)	(0.059)	(0.059)
Standard retirement age			-0.020**			-0.020**
			(0.008)			(0.008)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	Japan	Japan	Japan	Japan	Japan	Japan
[min] Labor relations	3.9	3.9	3.9	3.5	3.5	3.5
[min] Effect	0.011	0.013	-0.002	0.011	0.014	-0.001
[max] Country	Ireland	Ireland	Ireland	Switzerland	Switzerland	Switzerland
[max] Labor relations	4.6	4.6	4.6	4.3	4.3	4.3
[max] Effect	-0.033***	-0.024*	-0.028**	-0.034***	-0.027**	-0.031**
Observations	272	272	272	272	272	272
Number of countries	18	18	18	18	18	18
R-squared (within)	0.193	0.407	0.464	0.184	0.407	0.464

| | | Age group 60-64 | | | | |
| Quality of labor relations: | rel workmates | | | rel management | | |
	(7)	(8)	(9)	(10)	(11)	(12)
Implicit tax	0.234*	0.135	0.288**	-0.056	-0.142	0.042
	(0.123)	(0.132)	(0.136)	(0.133)	(0.140)	(0.128)
Interaction term	-0.074**	-0.050	-0.078**	-0.004	0.020	-0.019
	(0.031)	(0.033)	(0.032)	(0.036)	(0.037)	(0.033)
Unemployment rate	-0.022***	-0.013***	-0.012***	-0.023***	-0.014***	-0.012***
	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)
Real GDP per capita	-0.277***	0.054	0.157	-0.279***	0.066	0.167
	(0.055)	(0.149)	(0.139)	(0.057)	(0.156)	(0.148)
Standard retirement age			0.053***			0.051***
			(0.019)			(0.019)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	Japan	-	Japan	-	-	-
[min] Labor relations	3.9	-	3.9	-	-	-
[min] Effect	-0.055*	-	-0.013	-	-	-
[max] Country	Ireland	-	Ireland	-	-	-
[max] Labor relations	4.6	-	4.6	-	-	-
[max] Effect	-0.106***	-	-0.066**	-	-	-
Observations	277	277	277	277	277	277
Number of countries	19	19	19	19	19	19
R-squared (within)	0.256	0.400	0.453	0.247	0.397	0.443

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions with country fixed effects. Unbalanced panel of countries observed between 1980 and 2004. All regressions include a constant term. Implicit tax on continued work is defined for reported age group. See table 2 for *rel management* and *rel workmates*. The interaction term is the interaction between the implicit tax on continued work and the average quality of labor relations. The [min] and [max] lines of each part of the table report the countries with the lowest and the highest quality of labor relations and the implied marginal effects of a change in implicit tax on continued work. Nothing is reported if the interaction term is not significant.

maximum (minimum) effect is the elasticity associated with the country with the higher (lower) dispersion of working conditions. For example, Portugal is the country with the most homogeneously distributed labor relations. On the contrary, Italy has the most heterogeneous distribution of labor relations. The estimated elasticity is null for this country, whereas it is equal to -0.03 for Portugal. Thus, the estimated effect ranges from 0 to -0.03, depending on the dispersion of the quality of labor relations in the country. These estimations are very similar to the former.

Results for age group 60–64 are presented in the bottom part of Table 5. They mirror those found in Table 4. Indeed, we find no effect of the interaction with the dispersion of the relations with employers. On the contrary, relation with workmates play once again a role in the reaction of activity rate to changes in retirement in the implicit tax on continued work.

These results suggest that labor participation rate of seniors reacts stronger to changes in retirement incentives in countries with more homogeneously distributed labor relations. Intuitively, this may be explained by the fact that in a country where people are similar in their disutility to work, more people will react to small changes (unless we are situated in the queue of the distribution).

5   Conclusion

In this paper, we identified one of the causes of different reactions of the senior populations to monetary incentives between countries. We first showed that one of the determinants of how seniors react to policies is their disutility at work. This has aggregate consequences: senior activity rate reacts differently to changes in retirement incentives, depending on the characteristics of the distribution function of disutility at work.

We then used aggregate panel data and average opinions about working conditions from the ISSP in 19 OECD countries to investigate the interplay between working conditions and retirement incentives at the aggregate level. We approximated the distribution of disutility at work using the distrbution of labor relations in each country. We found that if the average opinion about labor relations is high in a country, then senior employment will be more sensitive to changes in

Table 5: Relationship between Senior Activity Rate and Implicit Tax on Continued Work Interacted with the Dispersion of Labor Relations, panel data

Dependent variable is activity rate of reported age group

	Age group 55-59					
Dispersion of labor relations:	rel workmates			rel management		
	(1)	(2)	(3)	(4)	(5)	(6)
Implicit tax	-0.048***	-0.040**	-0.040***	-0.048***	-0.053***	-0.051***
	(0.016)	(0.016)	(0.013)	(0.018)	(0.016)	(0.014)
Interaction term	0.309***	0.291***	0.218***	0.198***	0.241***	0.189***
	(0.079)	(0.079)	(0.062)	(0.066)	(0.058)	(0.046)
Unemployment rate	-0.005***	0.002	0.001	-0.005***	0.002	0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Real GDP per capita	-0.097***	0.132**	0.066	-0.098***	0.153**	0.083
	(0.020)	(0.059)	(0.059)	(0.020)	(0.060)	(0.061)
Standard retirement age			-0.017**			-0.017**
			(0.008)			(0.008)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	Ireland	Ireland	Ireland	Portugal	Portugal	Portugal
[min] Labor relations	0.1	0.1	0.1	0.1	0.1	0.1
[min] Effect	-0.023*	-0.017	-0.022**	-0.026*	-0.026**	-0.030***
[max] Country	Italy	Italy	Italy	Italy	Italy	Italy
[max] Labor relations	0.2	0.2	0.2	0.3	0.3	0.3
[max] Effect	0.015	0.019	0.005	0.012	0.022	0.007
Observations	272	272	272	272	272	272
Number of countries	18	18	18	18	18	18
R-squared (within)	0.223	0.442	0.482	0.195	0.451	0.491

	Age group 60-64					
Dispersion of labor relations:	rel workmates			rel management		
	(7)	(8)	(9)	(10)	(11)	(12)
Implicit tax	-0.092**	-0.082**	-0.066**	-0.029	-0.025	-0.026
	(0.042)	(0.036)	(0.030)	(0.046)	(0.044)	(0.039)
Interaction term	0.159	0.109	0.288*	-0.159	-0.167	-0.023
	(0.118)	(0.126)	(0.146)	(0.116)	(0.127)	(0.114)
Unemployment rate	-0.022***	-0.013***	-0.010**	-0.023***	-0.015***	-0.013***
	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)
Real GDP per capita	-0.269***	0.079	0.219	-0.290***	0.014	0.156
	(0.057)	(0.154)	(0.148)	(0.059)	(0.157)	(0.149)
Standard retirement age			0.057***			0.049***
			(0.019)			(0.019)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	-	-	Ireland	-	-	-
[min] Labor relations	-	-	0.1	-	-	-
[min] Effect	-	-	-0.043*	-	-	-
[max] Country	-	-	Italy	-	-	-
[max] Labor relations	-	-	0.2	-	-	-
[max] Effect	-	-	-0.008	-	-	-
Observations	277	277	277	277	277	277
Number of countries	19	19	19	19	19	19
R-squared (within)	0.250	0.398	0.453	0.253	0.403	0.443

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions with country fixed effects. Unbalanced panel of countries observed between 1980 and 2004. All regressions include a constant term. Implicit tax on continued work is defined for reported age group. See table 2 for *rel management* and *rel workmates*. The interaction term is the interaction between the implicit tax on continued work and the dispersion of labor relations. The [min] and [max] lines of each part of the table report the country with the lowest and the highest dispersion of labor relations and the implied marginal effects of a change in implicit tax on continued work. Nothing is reported if the interaction term is not significant.

retirement incentives. We also shown that reactions to policies are stronger when opinions are homogeneous.

A side result of this paper is that all type of labor relations do not play the same role in the retirement decision. Namely, we found that the quality of labor relations between colleagues interfere with retirement incentives for all seniors, whereas the quality of relations between management and employees only plays a role for "young" seniors. This leaves room for future research on the subjective determinants of the retirement decision.

This paper stressed the key role of the quality of work conditions in the trade-off between work and retirement. Our results imply that changes in retirement incentives are a necessary condition to foster senior activity rate, but surely not a sufficient one. A policy that would only focus on financial incentives would miss one of its goal and would not have any effect on seniors' activity if these workers suffer from a large disutility at work.

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Appendices

Table 6: Summary Statistics for Table 2.

	Obs	Mean	Std. Dev.	Min	Max
Activity rate of age group 55-59	37	76.7	9.2	55.1	94.8
Activity rate of age group 60-64	37	48.9	16.5	15.1	74.5
rel management	37	3.8	0.2	3.4	4.3
rel workmates	37	4.1	0.2	3.9	4.6
Europe	37	0.7	0.5	0	1
Implicit tax for age group 55-59	34	13.9	13.3	0.7	68.6
Implicit tax for age group 64-64	37	29.9	27.7	0.0	100.9
Real GDP per capita	37	10.2	0.2	9.8	10.7
Standard retirement age	37	64.8	1.7	60	67

Countries are observed in 1989, 1997, and/or 2004. Variable *rel management* is the average by country and year of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between management and employees?"*. Variable *rel workmates* is the average by country and year of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between workmates / colleagues?"*. For both questions, answers range from 1, *"very bad"*, to 5, *"very good"*. Real GDP per capita is the log of real GDP per capita. Activity rates and implicit taxes are expressed in percentage points.

Table 7: Relationship between Senior Activity Rate and Implicit Tax on Continued Work (including early retirement route), panel data

Dependent variable is activity rate of reported age group

| | Age group 55-59 | | | Age group 60-64 | | |
	(1)	(2)	(3)	(4)	(5)	(6)
Implicit tax	-0.023	-0.015	-0.022**	-0.072***	-0.060**	-0.037*
	(0.014)	(0.014)	(0.009)	(0.028)	(0.025)	(0.020)
Unemployment rate	-0.006***	0.000	-0.001	-0.022***	-0.013***	-0.010**
	(0.001)	(0.002)	(0.002)	(0.003)	(0.005)	(0.004)
Real GDP per capita	-0.124***	0.097*	0.048	-0.305***	0.042	0.158
	(0.019)	(0.050)	(0.049)	(0.054)	(0.154)	(0.145)
Standard rettirement age			-0.023***			0.047***
			(0.008)			(0.018)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	290	290	290	294	294	294
Number of countries	19	19	19	19	19	19
R-squared (within)	0.201	0.368	0.457	0.268	0.393	0.442

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses. OLS regressions with country fixed effects. Unbalanced panel of countries observed between 1980 and 2004. All regressions include a constant term. Implicit tax on continued work is defined for reported age group and includes early retirement route.

Table 8: Relationship between Senior Activity Rate and Implicit Tax on Continued Work (including Early Retirement Route) Interacted with the Average Quality of Labor Relations, panel data

Dependent variable is activity rate of reported age group

	Age group 55-59					
Quality of labor relations:	rel workmates			rel management		
	(1)	(2)	(3)	(4)	(5)	(6)
Implicit tax	0.229***	0.184***	0.120**	0.238***	0.181***	0.128***
	(0.068)	(0.067)	(0.049)	(0.061)	(0.063)	(0.048)
Interaction term	-0.061***	-0.048***	-0.035***	-0.070***	-0.053***	-0.040***
	(0.015)	(0.015)	(0.011)	(0.015)	(0.016)	(0.012)
Unemployment rate	-0.006***	0.000	-0.001	-0.007***	-0.000	-0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Real GDP per capita	-0.132***	0.078*	0.040	-0.131***	0.081*	0.040
	(0.018)	(0.044)	(0.044)	(0.017)	(0.046)	(0.046)
Standard retirement age			-0.021**			-0.021***
			(0.008)			(0.008)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	Japan	Japan	Japan	France	France	France
[min] Labor relations	3.9	3.9	3.9	3.4	3.4	3.4
[min] Effect	-0.009	-0.004	-0.014	-0.003	-0.001	-0.011
[max] Country	Ireland	Ireland	Ireland	Switzerland	Switzerland	Switzerland
[max] Labor relations	4.6	4.6	4.6	4.3	4.3	4.3
[max] Effect	-0.051***	-0.037***	-0.037***	-0.063***	-0.046***	-0.045***
Observations	290	290	290	290	290	290
Number of countries	19	19	19	19	19	19
R-squared (within)	0.270	0.410	0.477	0.278	0.410	0.480
	Age group 60-64					
Quality of labor relations:	rel workmates			rel management		
	(7)	(8)	(9)	(10)	(11)	(12)
Implicit tax	-0.011	-0.090	0.087	-0.107	-0.220*	-0.045
	(0.117)	(0.120)	(0.123)	(0.116)	(0.121)	(0.113)
Interaction term	-0.015	0.007	-0.030	0.009	0.042	0.002
	(0.025)	(0.027)	(0.028)	(0.028)	(0.031)	(0.028)
Unemployment rate	-0.022***	-0.013***	-0.010**	-0.022***	-0.012***	-0.010**
	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)
Real GDP per capita	-0.306***	0.045	0.151	-0.304***	0.061	0.158
	(0.054)	(0.154)	(0.141)	(0.054)	(0.156)	(0.146)
Standard retirement age			0.050***			0.047***
			(0.018)			(0.018)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	-	-	-	-	-	-
[min] Labor relations	-	-	-	-	-	-
[min] Effect	-	-	-	-	-	-
[max] Country	-	-	-	-	-	-
[max] Labor relations	-	-	-	-	-	-
[max] Effect	-	-	-	-	-	-
Observations	294	294	294	294	294	294
Number of countries	0.269	0.393	0.444	0.269	0.397	0.442
R-squared (within)	19	19	19	19	19	19

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Robust standard errors in parentheses. OLS regressions with country fixed effects. Unbalanced panel of countries observed between 1980 and 2004. All regressions include a constant term. Implicit tax on continued work is defined for reported age group and includes early retirement route. See table 2 for *rel management* and *rel workmates*. The interaction term as well as the [min] and [max] lines are presented in table 4.

Table 9: Relationship between Senior Activity Rate and Implicit Tax on Continued Work (including Early Retirement Route) Interacted with the Dispersion of Labor Relations, panel data

Dependent variable is activity rate of reported age group

	Age group 55-59					
Dispersion of labor relations:	rel workmates			rel management		
	(1)	(2)	(3)	(4)	(5)	(6)
Implicit tax	-0.054***	-0.046***	-0.043***	-0.055***	-0.051***	-0.048***
	(0.014)	(0.014)	(0.010)	(0.016)	(0.016)	(0.012)
Interaction term	0.235***	0.237***	0.167***	0.141**	0.160***	0.118***
	(0.079)	(0.077)	(0.057)	(0.059)	(0.056)	(0.043)
Unemployment rate	-0.005***	0.002	0.001	-0.006***	0.002	0.000
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Real GDP per capita	-0.116***	0.131***	0.080*	-0.116***	0.150***	0.094*
	(0.017)	(0.049)	(0.046)	(0.018)	(0.052)	(0.048)
Standard retirement age			-0.019**			-0.020**
			(0.008)			(0.008)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	Ireland	Ireland	Ireland	Portugal	Portugal	Portugal
[min] Labor relations	0.1	0.1	0.1	0.1	0.1	0.1
[min] Effect	-0.035***	-0.027**	-0.029***	-0.039***	-0.033***	-0.035***
[max] Country	Italy	Italy	Italy	Italy	Italy	Italy
[max] Labor relations	0.2	0.2	0.2	0.3	0.3	0.3
[max] Effect	-0.006	0.002	-0.009	-0.011	-0.002	-0.012
Observations	290	290	290	290	290	290
Number of countries	19	19	19	19	19	19
R-squared (within)	0.263	0.428	0.484	0.244	0.420	0.483

|	Age group 60-64					
Dispersion of labor relations:	rel workmates			rel management		
	(7)	(8)	(9)	(10)	(11)	(12)
Implicit tax	-0.088***	-0.067**	-0.066**	-0.051	-0.023	-0.033
	(0.034)	(0.031)	(0.027)	(0.039)	(0.035)	(0.033)
Interaction term	0.126	0.050	0.237*	-0.084	-0.146	-0.020
	(0.104)	(0.116)	(0.135)	(0.099)	(0.104)	(0.099)
Unemployment rate	-0.022***	-0.012***	-0.008*	-0.022***	-0.014***	-0.011**
	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)
Real GDP per capita	-0.300***	0.050	0.208	-0.309***	0.001	0.151
	(0.055)	(0.156)	(0.147)	(0.056)	(0.156)	(0.144)
Standard retirement age			0.053***			0.047***
			(0.017)			(0.018)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
[min] Country	-	-	Ireland	-	-	-
[min] Labor relations	-	-	0.1	-	-	-
[min] Effect	-	-	-0.047**	-	-	-
[max] Country	-	-	Italy	-	-	-
[max] Labor relations	-	-	0.2	-	-	-
[max] Effect	-	-	-0.017	-	-	-
Observations	294	294	294	294	294	294
Number of countries	0.271	0.393	0.450	0.271	0.399	0.442
R-squared (within)	19	19	19	19	19	19

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions with country fixed effects. Unbalanced panel of countries observed between 1980 and 2004. All regressions include a constant term. Implicit tax on continued work is defined for reported age group and includes early retirement route. See table 2 for *rel management* and *rel workmates*. The interaction term as well as the [min] and [max] lines are presented in table 5.

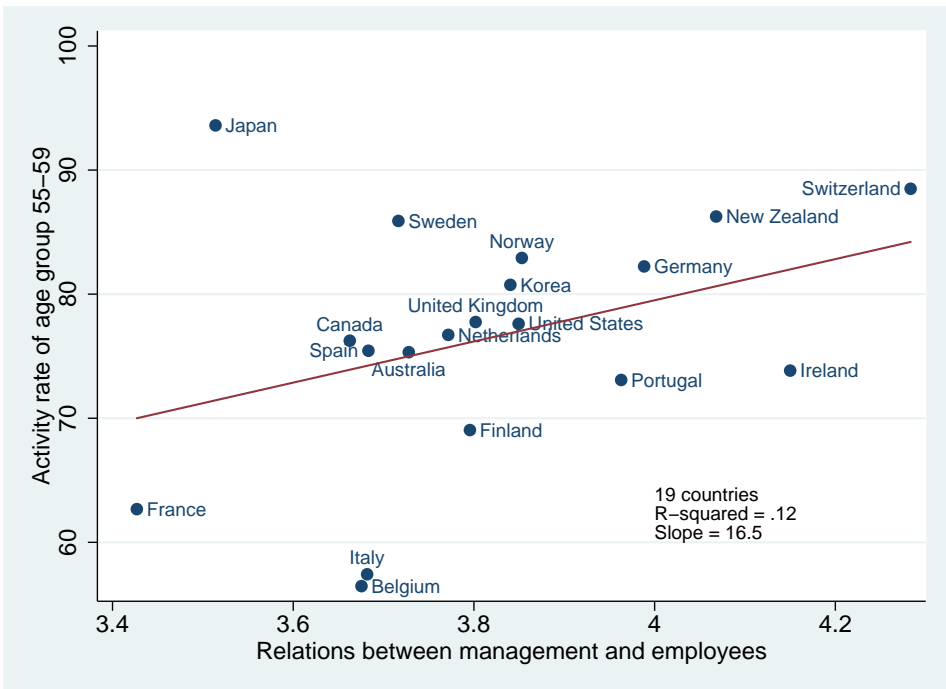**Figure 3:** Quality of Relations between Management and Employees Expressed by Seniors and Prime-age Workers

Source: ISSP Work Orientations.*Relations between management and employees* is the average by country of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between management and employees?"*. Answers range from 1, *"very bad"*, to 5, *"very good"*. Prime-age workers are aged between 35 and 54 at the time of interview. Seniors are aged 55 or over at the time of interview. The line is the 45° line.

Figure 4: Quality of Relations between Workmates Expressed by Seniors and Prime-age Workers
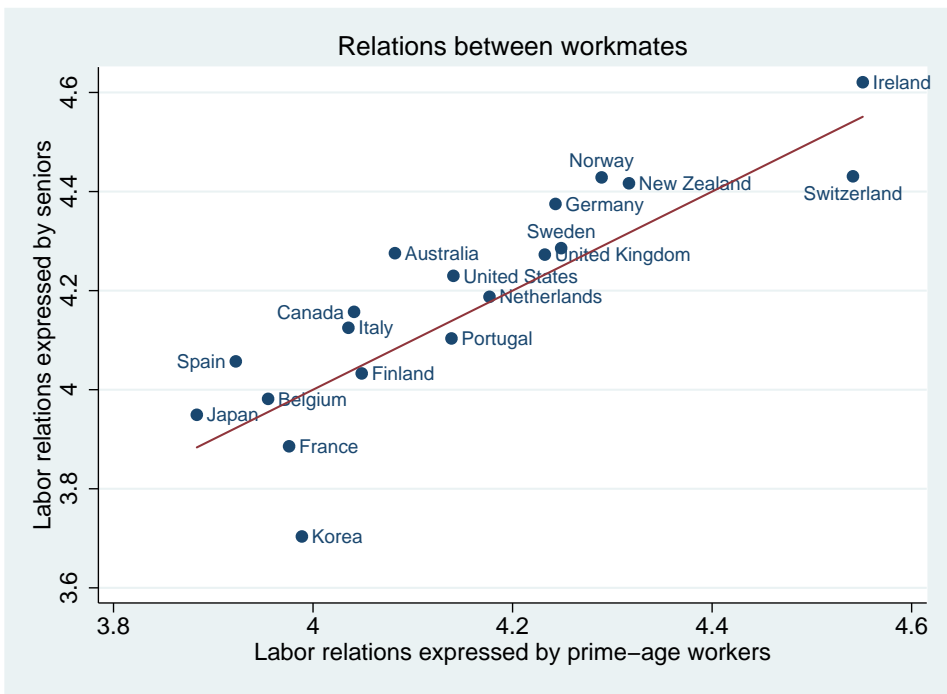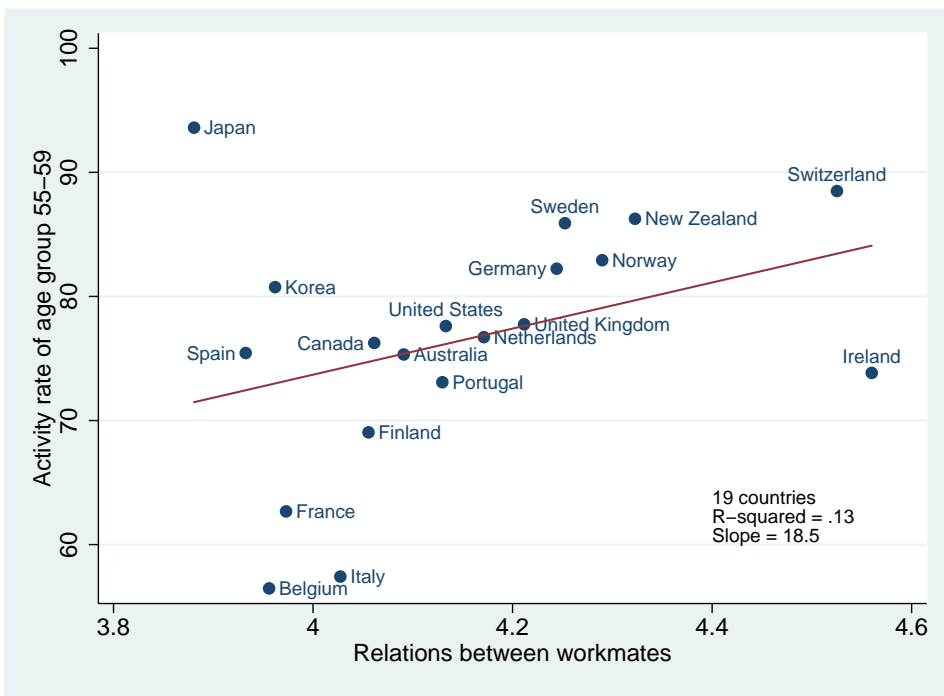

Source: ISSP Work Orientations. *Relations between workmates* is the average by country of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between workmates / colleagues?"*. Answers range from 1, *"very bad"*, to 5, *"very good"*. Prime-age workers are aged between 35 and 54 at the time of interview. Seniors are aged 55 or over at the time of interview. The line is the 45° line.

Figure 5: Activity Rate of Age Group 55-59 and Relations between Management and Employees in 2005
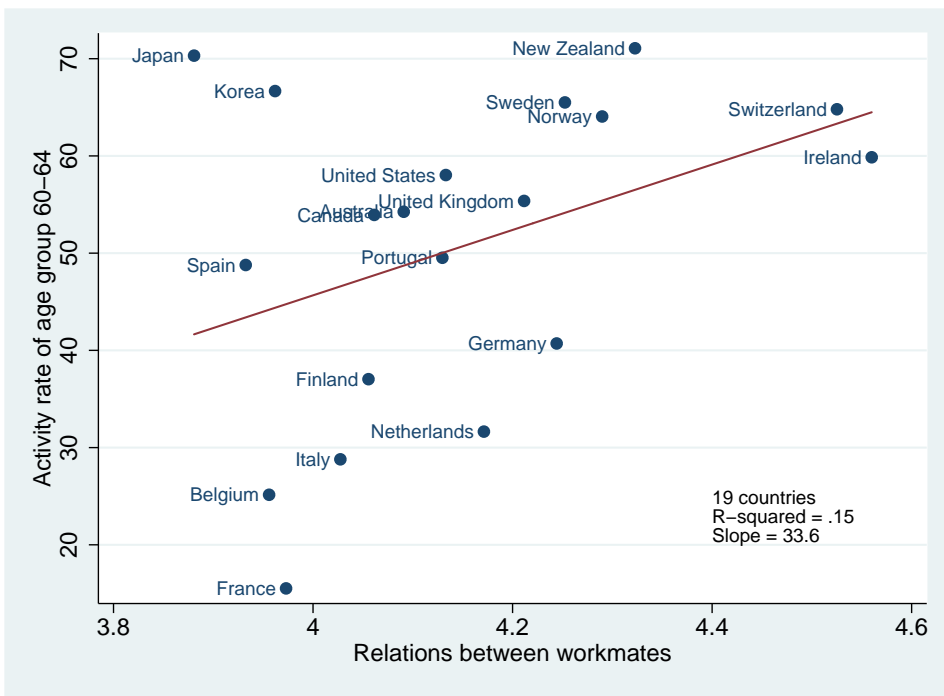

Source: OECD ans ISSP Work Orientations 2005 for all countries, except Italy and Netherlands (1997). *Relations between management and employees* is the average by country of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between management and employees?"*. Answers range from 1, *"very bad"*, to 5, *"very good"*.

Figure 6: Activity Rate of Age Group 55-59 and Relations between Workmates in 2005

Source: OECD ans ISSP Work Orientations 2005 for all countries, except Italy and Netherlands (1997). *Relations between workmates* is the average by country of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between workmates / colleagues?"*. Answers range from 1, *"very bad"*, to 5, *"very good"*.

Figure 7: Activity Rate of Age Group 60-64 and Relations between Workmates in 2005

Source: OECD ans ISSP Work Orientations 2005 for all countries, except Italy and Netherlands (1997). *Relations between workmates* is the average by country of answers by prime-age workers to the following question of ISSP: *"In general, how would you describe the relations at your workplace between workmates / colleagues?"*. Answers range from 1, *"very bad"*, to 5, *"very good"*.

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The Editor