Senior activity rate, retirement incentives and labor relations

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Abstract

How is it that populations react so differently to incentives among developed countries? We noticed that senior participation rates to the labour force not only differ strikingly in level from one country to another, they also differ in their reaction to retirement incentives set by governments.

We show the importance of the disutility of labor in the retirement decision by a simple trade-off model. According to this model, reaction of senior activity rate to policy changes depends on the properties of the distribution of work conditions at the country level. We then identify these properties by an empirical study based on panel data for nineteen OECD countries from 1980 to 2004. We show that the elasticity of senior male labor force participation rate to retirement incentives is stronger in countries with better and more homogeneously distributed working conditions. These results also apply to countries with higher generalized trust.

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KEYWORDS : Early retirement incentives, labor relations, seniors activity rate.

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1 Introduction

The issue of the efficiency of economic reforms is a central one 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. Labor force participation of older individuals is motivated both by the general issue of labor force participation in order to produce wealth and by the sustainability of pension systems. Most of developed countries have been constantly adjusting pension systems during the last decades to reach these objectives. This is why one of the main point of the Lisbon strategy to develop Europe was the fostering of senior employment in order to "make Europe, by 2010, the most competitive and the most dynamic knowledge-based economy in the world". The weak values of this economic indicator in some European countries was considered a restrain for growth.

Instruments to increase senior employment rate can be postponing of the standard retirement age or decreasing retirement incentives[1] which involve pension and contribution rates changes. However, the effect of these policies is far from homogeneous in all countries : while in some countries population respond automatically to incentives, in other countries, no policy seems to affect senior employment, or very lightly. In table 1, we consider medium-term evolutions describing the evolutions of policies and activity rates between 1990 and 2004. We clearly see that nor the populations treated (age groupe 55-59 or age group 60-64), nor incentives (changes in the standard retirement age or in the implicit tax on continued work), nor reactions to these are homogenous. This table shows that most countries used the tax instrument to foster senior activity rate, particularly for younger seniors (before 60 years old). In 2004, senior activity rates are not so heterogenerous (from 70 to 90%), except for France and Italy. However, this is far from true if we consider activity rates between 60 and 64, which range from 15.5 to 68.9%. This is also the case of the evoution of senior activity rates over the period. Similarly, changes in retirement incentives between 1990 and 2004 are different across countries. As a result, the reaction of senior activity rate to changes in incentives is far from unique.

Focusing on Finland and Italy can give us an idea of striking differences in reactions of seniors to monetary incentives. Figure 1 presents the evolutions of seniors activity rate and implicit tax on continued work at age 55 for these countries. In the case of Finland, we notice a perfect symmetric movement of

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[1] Variables will be described in further details in the data section.

Figure 1: Implicit tax on continued work and seniors activity rate 1980-2004 in Finland and Italy.

incentives to retirement at 55 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 employment rate continued its decreasing trend when the Italian government strongly decreased the incentive to retire in the second half of the 1990s. It is like Italian seniors did not react 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 paper argues that quality of labor relations in a country is likely to alter the response of senior activity rate to changes in retirement incentives. We present a model where senior workers have the choice between work and retirement. Their choice is affected by their perception of the 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. We show that the disutility of labor, approximated by labor relations and non-monetary rewards employees may get from their work and trust in others, foster 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.

This paper is related to three axis of literature. The first one is about policy efficiency in different backgrounds. This question as been adressed by Acemoglu et al. (2008) which points out the importance of constraints on politics in a central bank reform aiming at fighting inflation. These authors conclude that a reform will be more efficient when there are stronger constraints on the executive.

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Table 1: Evolutions of seniors activity rates and retirement incentives between 1990 and 2004.

	Increase of standard retirement age ?	Age group 55-59			Age group 60-64		
		Activity rate in 2004	Change in activity rate	Change in implicit tax	Activity rate in 2004	Change in activity rate	Change in implicit tax
Australia	No	74.29	-.73	-5.65	51.93	1.28	22.49
Belgium	No	56.97	6.76		19.6	.27	4.1
Canada	No	75.61	-.53	4.81	53.23	2.35	7.62
Finland	No	70.65	7.23	-7.09	32.82	2.91	-43.52
France	No	63.75	-3.95	5.15	15.15	-7.65	-8.29
Germany	Yes	80.61	-1.86	2.54	38.34	2.43	-2.28
Ireland	No	75.39		-2.37	54.89		-78
Italy	Yes	56.29	-12.46	-75.58	30.39	-5.61	
Japan		93.21	1.14		70.67	-2.22	
Korea	No	80.81	-2.78	11.19	64.96	-2.21	36.27
Netherlands	Yes	76.81	10.52	-2.1	31.27	8.59	-57.28
New Zealand	No	85.37	6.77	-.45	68.94	33.95	-27.01
Norway	No	81.7	-.32	-2.29	64.29	.08	5.76
Portugal	No	72.57	-2.44	4.24	51.22	-5.51	-1.06
Spain	No	74.97	-1.7	-10.41	47.85	.97	21.32
Sweden	No	84.29	-3.09	-10.15	65.92	2.33	28.32
Switzerland	No	89.39		-1.32	66.07		3.82
United Kingdom	No	77.47	-3.93	6.68	55.72	1.35	7.68
United States	Yes	77.55	-2.34	-.18	57.01	1.49	6.35

Activity rates are in percentage of total population
Changes are in percentage points

Institutional determinants of retirement inspired a large literature which makes our second axis. Duval (2003), whose measures we used in the empirical section, studied the importance of monetary incentives given by the social system in the determination of senior employment rates. He showed that a decrease of the incentive to retirement may reduce the fall of employment between two five-years age groups (for instance from 60 to 64 or 55 to 59). In a dynamic approach, Blau and Goodstein (2009) investigate to what extent changes in social security rules explain changes in labor force participation of seniors in the United States. Blau and Shvydko (2007) 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. 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. Their point out the importance of firms' decisions in the senior employment rate. If their are the only decision makers (which is the case when wages are rigid and above the walrasian level), employment will not respond to incentives given to employees.

The third axis of literature linked to our subject treats the importance of labor relations. Such idea on the influence of labor relations on macroeconomic outputs was studied in a very practical approach 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 (2008). They show that policy can affect cooperation on the labor market depending on individual expectations regarding collective relations organization. The way culture and beliefs can affect activity rates has been underlined by Giavazzi, Schiantarelli and Seranelli (2009). They show that culture matters for women employment rate.

The structure of the paper is as follows. In section 2 we present the model and derive its implications. In section 3, we describe the data used in the empirical part. Section 4 presents macroeconomic empirical results and section 5 concludes.

2 Model

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 labord force participation rate at the macroeconomic level.

Individual trade-off

Before the standard retirement age, individuals can choose early retirement.

Assume that there are two periods. In the first period, an individual can choose to continue working or to retire. In the later case, she gets a truncated pension αp, where $0 < \alpha < 1$ and p is the full pension benefit. If she choose 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. Thus, assuming a very simple 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 route can be written as

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

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

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

This result only implies that a worker stop to work in the first period if her disutility of labor exceeds the net gain of work during one more period. It is straighforward to see that the incentive to continue working decrease with wage w and increases with the penalty α imposed on pension by early retirement. This result only implies that a worker stop to work in the first period if her disutility of

labor exceeds the net gain of work during one more period. It is straighforward to see that the incentive to continue working decrease with wage w and increases with the penalty α imposed on pension by early retirement.

Aggregate consequences

Assume that in a given country c disutility of labor is ditributed among seniors according to the cumulative distribution function $F_c\left(.\right)$. Then, assuming that there is a mass 1 of seniors, the proportion of seniors who continue working in country c is simply given by

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

Since $F_c\left(.\right)$ 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. However, we can derive additional proporties 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 labor relations $F_c\left(.\right)$.

2. The derivative of n^c with respect to α is

$$\frac{\partial n^c}{\partial \alpha} = -\left(1 + \beta\right)pF_c^{'}\left(.\right).$$

Since $F_c^{'}\left(.\right) \geq 0$, we get $\partial n^c / \partial \alpha \leq 0$. This implies that the stronger the incentive to retire early, the larger the proportion of seniors who stop working. Individuals responds to incentives unless the density of variable δ_i is null. However, the size of the effect of α on n^c depends on the characteristics of the distribution function $F_c\left(.\right)$.

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

3   Data

This section describes data used in this paper. We used data from several sources. Our sample includes 19 countries : Australia, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan South Korea, Netherlands, New

Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States. We focus on seniors male individuals in order to avoid all issues related to female employment.

Senior activity rates

Senior activity rates are taken from the Key Indicators of the Labor Market provided by the International Labor Organization. Data are available for males and females by age group from 1980 onwards. We selected data for males aged between 55 and 64. Senior activity rates do differ in space, but also exhibit different evolutions in time.

Pension system

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 at a given age for a five year period. It takes into account expected pension wealth and both employers and employees rates of contribution to the pension system. In other terms, when the implicit tax on continued work increases, a worker has weaker incentives to continue working. For a detailed presentation of the methodology, see Duval (2003). In this paper, we use the measures for the 55-60 and the 60-64 age groups as alternative indicators of the whole pension system generosity. For each age group, the implicit tax is available with or without 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 focused on the indicators without early retirement schemes and estimations involving implicit tax on continued work including early retirement route are presented in appendix.

Working conditions

We understand the disutility of labor modelled in this paper as a non-monetary payoff workers can get through their work. This concept covers both the quality of relations at the workplace and all incentives that can increase job satisfaction. We use ISSP surveys about work orientations as a measure of work relations. This survey has been conducted in 1989, 1997 and 2005 in 30 countries. Among the broad set of questions asked to workers, we selected four questions that reflect two aspect of working conditions. Two of them are explicitly and directly related to relations at the workplace, namely :

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- *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).

The two other questions are related to the non-monetary payoff workers may get from their work :

- *job justformoney* : "How much you agree or disagree with each statement, thinking of work in general : A job is just a way of earning money - no more."

- *job evenwithoutmoney* : "How much you agree or disagree with each statement, thinking of work in general : I would enjoy having a paid job even if I did not need the money."

Answers to those questions are coded from 1 (strongly agree) to 5 (strongly disagree). Hence, we recoded *job evenwithoutmoney* in the opposite way to get a measure that reflects improving working conditions.

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

Unfortunately, these questions are only asked to workers and since we are interested in working conditions perceived by all seniors, including those who are retired, the computed indicator may be biased if only seniors are selected. Hence, we used male workers aged between 35 and 54 to asses the perception of working conditions at the country level.

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 measures.

Control variables

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 Empirical results

This 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 does react stronger to changes in incentives in countries with better working conditions. Since senior activity rates and implicit taxes are always taken in log, estimated coefficients reflect elasticities of labor market participation to retirement incentives.

Cross country evidence

We pooled all available observations in order to investigate the cross-country relationship between working conditions and senior activity rates. Table 2 presents the estimated coefficients for different specifications. In column 1, we simply regress senior males activity rate on average relation between management and employees. The estimated coefficient is positive and significant at the 5% level. In column 2, we include a dummy variable for European countries to be sure that this relationship is not driven only by the opposition between Europe and the rest of the world. The estimated coefficient on *rel management* increases and becomes significant at the 1% 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 relation between management and employees remains significant at the 5% level and has the same order of magnitude as in former specifications. In column 4, we add real GDP per capita and standard retirement age as additional control variable, which lowers the significance of the coefficient on *rel management*, though not too far from 10%.

In columns 5 to 16 we repeat the same exercise with the three others measures of working conditions. The effect of *rel workmates* and *job evenwithoutmoney* variables is robust to the introduction of standard retirement age. However, we find no significant effect of variable *job justformoney* on senior activity rate.

Table 2: Pooled cross sections.

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 55-59

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
rel management	0.391** (0.0234)	0.458*** (0.00160)	0.435** (0.0374)	0.349 (0.118)				
rel workmates					0.397* (0.0639)	0.639*** (0.000706)	0.712*** (0.00266)	0.637*** (0.00928)
Europe		-0.187*** (0.00145)	-0.223** (0.0131)	-0.228** (0.0164)		-0.243*** (0.000212)	-0.319*** (0.000648)	-0.322*** (0.00109)
Implicit tax			0.0407 (0.302)	0.0446 (0.273)			0.0648* (0.0714)	0.0705* (0.0587)
Real GDP per capita				-0.00192 (0.984)				-0.0706 (0.455)
Standard retirement age				0.0385* (0.0689)				0.0277 (0.143)
Constant	2.622*** (0.000214)	2.527*** (2.07e-05)	2.545*** (0.00309)	0.395 (0.790)	2.453*** (0.00773)	1.648** (0.0245)	1.249 (0.182)	0.470 (0.718)
Observations	38	38	35	35	38	38	35	35
R-squared	0.157	0.339	0.286	0.342	0.136	0.411	0.420	0.443

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
job justformoney	0.150 (0.106)	0.140 (0.136)	0.101 (0.203)	0.112 (0.255)				
job evenwithoutmoney					0.505*** (1.96e-07)	0.476*** (6.45e-07)	0.448*** (3.24e-06)	0.458*** (1.12e-05)
Europe		-0.157** (0.0121)	-0.158** (0.0284)	-0.199** (0.0109)		-0.0514 (0.124)	-0.0260 (0.533)	-0.0148 (0.762)
Implicit tax			0.0132 (0.706)	0.0372 (0.275)			-0.0194 (0.353)	-0.0250 (0.270)
Real GDP per capita				-0.147 (0.162)				0.0556 (0.470)
Standard retirement age				0.0548** (0.0115)				-0.00591 (0.736)
Constant	3.604*** (0)	3.772*** (0)	3.870*** (0)	1.737 (0.203)	2.401*** (1.91e-10)	2.541*** (7.24e-11)	2.663*** (1.06e-10)	2.456*** (0.00725)
Observations	38	38	35	35	38	38	35	35
R-squared	0.081	0.212	0.190	0.292	0.590	0.602	0.578	0.581

OLS regressions with time fixed effects
Included countries are those surveyed in ISSP 1989, 1997 or 2005
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 2: Seniors activity rate and relations between mangement and employees in 2005.
ISSP Work Orientation 2005 for all countries except Austria (1989), Italy (1997) and Netherlands (1997). Labor force participation rate of males aged between 55 and 64.

As shown in tables 7, 8 and 9 in appendix, using other measures of retirement incentives (for age group 60-64 or including early retirement incentives) as control variables gives very similar results. 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.

Figures 2 and 3 shows the positive relationship between labor force participation rate of seniors and the variables *rel management* and *job evenwithoutmoney* in 2005. In line with estimations made here, working conditions explain a substantial part of differences in senior activity rate across countries. Figures 4 and 5 in appendix describe the same relationship for *rel workmates* and *job justformoney*. Consistently with pooled regressions results, there is no significant effect of the later on activity rate.

Hence, in a cross section of countries, better working conditions are associated with stronger labor fore participation rate of senior males.

Figure 3: Seniors activity rate and "I would enjoy having a paid job even if I did not need the money" in 2005.
ISSP Work Orientation 2005 for all countries except Austria (1989), Italy (1997) and Netherlands (1997). Labor force participation rate of males aged between 55 and 64.
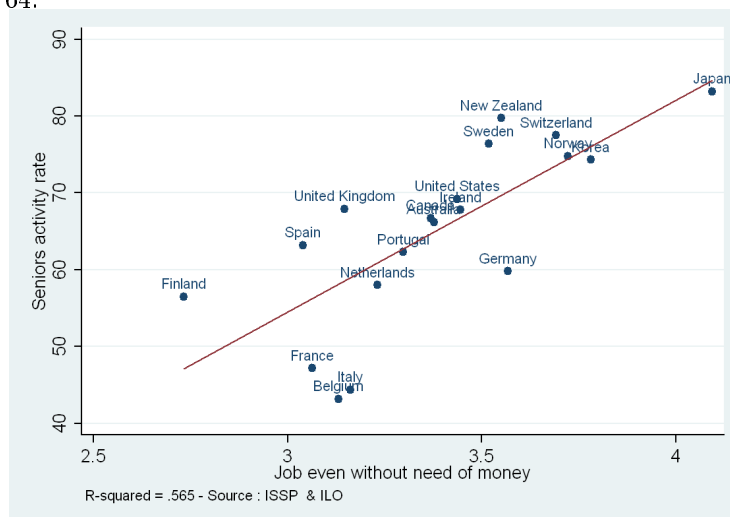

Panel data evidence

We first estimate the average effect of the implicit taxes on senior activity rate. Table 3 displays estimated coefficients. It is clear that wealth, measured as the real GDP per capita, and economic activity, measured as male unemployment rate, both have a negative effect on labor force participation 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 developments than on specific national wealth effects. We find no significant effect of standard retirement age. This means that changes in standard retirement age is not a major determinant of senior activity rate at the country level.

Neglecting the case of implicit tax on continued work for age group 55-59, the estimated elasticity of implicit tax variables is roughly equal to −0.03 is most demanding specifications. The corresponding effect for implicit tax for

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age group 55-59 is null.

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 :

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

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_{it} 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 the constant and e_{it} the error term. More complete specifications include year fixed effects Y_t. Thus, the estimated elasticity may now vary with working conditions :

$$\frac{\partial n_i}{\partial T_i} = \hat{\delta_1} + \hat{\delta_2} W_i.$$

Table 4 uses the implicit tax for age group 55-59. The measure of working conditions is the average value of each variable at the country level. In the case of *rel management* and *rel workmates*, the interaction term is always positive and strongly significant even when including time fixed effects and standard retirement age. This implies that countries with average better working conditions react stronger to changes in incentives than others. The two bottom line of the table present the values of elasticities for the countries with lower and higher working conditions. The previously null estimated effect ranges in fact from 0 to −0.04 or −0.05 depending on the working conditions variable used.

Estimations using the variable *job justformoney* produce weaker results. In the simplest specification (column 7), the interaction term is significant and negative. However, this effect does not persist in more when using time fixed effects. This result mirrors the one found in cross section regressions. When using *job evenwithoutmoney*, only the interaction term is significant. This leads to stronger estimated elasticities. In appendix, tables 10, 11 and 12 present the coefficients of the same regressions, but using different implicit taxes. The results are broadly similar to the later.

Consequently, labor participation rate of senior react stronger to changes in retirement incentives in countries with better average working conditions.

Table 3: Panel data : Benchmark estimation.

Dependent variable : Labor market participation rate of males aged between 55 and 64

	(1)	(2)	(3)	(4)	(5)	(6)
	Implicit tax for age group 55-59			Implicit tax for age group 60-64		
Implicit tax	-0.0191	-0.0179	-0.0164	-0.0284**	-0.0315***	-0.0380***
	(0.239)	(0.353)	(0.388)	(0.0356)	(0.00642)	(0.00719)
Unemployment rate	-0.00957***	-0.00633***	-0.00623***	-0.0112***	-0.00661***	-0.00714***
	(0)	(0.00826)	(0.00814)	(0)	(0.000299)	(0.00103)
Real GDP per capita	-0.153***	-0.124	-0.116	-0.144***	-0.0209	-0.0731
	(5.77e-09)	(0.126)	(0.146)	(3.98e-07)	(0.727)	(0.282)
Standard retirement age			0.00235			-0.0115
			(0.840)			(0.266)
Constant	5.787***	5.513***	5.276***	5.725***	4.528***	5.790***
	(0)	(1.83e-10)	(2.35e-05)	(0)	(0)	(1.08e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	288	288	288	300	300	289
R-squared (within)	0.192	0.450	0.450	0.229	0.496	0.507
Number of countries	18	18	18	19	19	19

	(7)	(8)	(9)	(10)	(11)	(12)
	Implicit tax for age group 55-59 including early retirement route			Implicit tax for age group 60-64 including early retirement route		
Implicit tax	-0.0432***	-0.0285*	-0.0272*	-0.0349***	-0.0298***	-0.0322***
	(0.00700)	(0.0604)	(0.0684)	(0.00288)	(0.00156)	(0.00375)
Unemployment rate	-0.0116***	-0.00675***	-0.00664***	-0.0109***	-0.00603***	-0.00662***
	(0)	(0.00292)	(0.00243)	(0)	(0.000824)	(0.00182)
Real GDP per capita	-0.189***	-0.0762	-0.0674	-0.145***	-0.0124	-0.0564
	(0)	(0.242)	(0.268)	(2.42e-08)	(0.839)	(0.396)
Standard retirement age			0.00388			-0.00792
			(0.746)			(0.422)
Constant	6.225***	5.067***	4.729***	5.768***	4.457***	5.404***
	(0)	(0)	(5.54e-06)	(0)	(0)	(1.15e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	306	306	306	317	317	306
R-squared (within)	0.296	0.498	0.500	0.264	0.493	0.499
Number of countries	19	19	19	19	19	19

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Panel data : Interactions with average working conditions.

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 55-59

	(1)	(2)	(3)	(4)	(5)	(6)
		rel management			rel workmates	
Implicit tax	0.253***	0.229**	0.250**	0.288***	0.215**	0.235**
	(0.000914)	(0.0160)	(0.0122)	(0.000206)	(0.0233)	(0.0143)
Interaction	-0.0721***	-0.0658***	-0.0702***	-0.0750***	-0.0568***	-0.0607***
	(0.000181)	(0.00390)	(0.00296)	(4.10e-05)	(0.00673)	(0.00396)
Unemployment rate	-0.00984***	-0.00682***	-0.00659***	-0.00942***	-0.00608**	-0.00581**
	(0)	(0.00337)	(0.00390)	(7.49e-09)	(0.0102)	(0.0121)
Real GDP per capita	-0.153***	-0.133*	-0.111	-0.146***	-0.110	-0.0882
	(2.08e-09)	(0.0717)	(0.137)	(7.49e-09)	(0.145)	(0.243)
Standard retirement age			0.00634			0.00591
			(0.560)			(0.592)
Constant	5.790***	5.615***	4.981***	5.718***	5.384***	4.779***
	(0)	(0)	(3.15e-05)	(0)	(0)	(7.46e-05)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	288	288	288	288	288	288
R-squared (within)	0.226	0.478	0.481	0.234	0.473	0.476
Number of countries	18	18	18	18	18	18
Min effect	0	0	0	0	-0,01	0
Max effect	-0,06	-0,05	-0,05	-0,05	-0,04	-0,04

	(7)	(8)	(9)	(10)	(11)	(12)
		job justformoney			job evenwithoutmoney	
Implicit tax	0.0708*	-0.0561	-0.0539	0.00938	0.0822	0.0938
	(0.0723)	(0.245)	(0.252)	(0.897)	(0.221)	(0.187)
Interaction	-0.0275**	0.0116	0.0114	-0.00847	-0.0299*	-0.0324*
	(0.0328)	(0.350)	(0.354)	(0.642)	(0.0655)	(0.0571)
Unemployment rate	-0.00911***	-0.00682***	-0.00672***	-0.00945***	-0.00586**	-0.00561**
	(5.11e-10)	(0.00895)	(0.00863)	(6.26e-11)	(0.0165)	(0.0208)
Real GDP per capita	-0.150***	-0.141	-0.133	-0.155***	-0.144*	-0.128
	(1.45e-08)	(0.112)	(0.126)	(1.53e-08)	(0.0569)	(0.100)
Standard retirement age			0.00222			0.00506
			(0.849)			(0.655)
Constant	5.750***	5.683***	5.456***	5.798***	5.708***	5.213***
	(0)	(1.47e-09)	(2.52e-05)	(0)	(0)	(3.07e-05)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	288	288	288	288	288	288
R-squared (within)	0.200	0.451	0.452	0.193	0.462	0.464
Number of countries	18	18	18	18	18	18
Min effect	0	-	-	-	-0,08	-0,09
Max effect	-0,04	-	-	-	-0,12	-0,13

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Interaction between implicit tax and the dispersion of working conditions

We will now use the coefficient of variation of working conditions at the country level as an indicator of the distribution of the quality of labor relations. Table 5 uses the implicit tax on continued work for age group 60-64 as pension system generosity measure. For *rel management* and *rel workmates* variables, the interaction term between implicit tax and the coefficient of variation, an indicator of the dispersion of working conditions, is positive and significant in all specifications. The positivity of the coefficient suggest that countries with more a more homogeneous distribution of working conditions react stronger to changes in incentives than countries with higher dispersion of working conditions. In the two bottom lines of the table, the reading order is opposite to the one in former tables. The maximum (minimum) effect is the elasticity associated with the country with the higher (lower) dispersion of working conditions.

In the second part of table 5, we use the coefficient of variation of variables *job justformoney* and *job evenwithoutmoney* to assess the distribution of working conditions at the country level. Estimated interactions are all non-significant. Tables 13, 14 and 15 in appendix replicate the same exercise, but using alternative implicit taxes. Results are fully in line with those presented here.

Thus, labor participation rate of seniors react stronger to changes in retirement incentives in countries with more homogeneous working conditions. However, this results is restricted to *rel management* and *rel workmates* variables.

Interaction between implicit tax and generalized trust

In table 6, we replace working conditions by trust of males aged between 55 and 64. Trust is measured at the country level using the European Values Survey and the World Values Survey. Trust is the share of people who answer "most people can be trusted" to the following question : "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people ?" This widely used measure of trust in others is recognized as a proxy for many aspects of cooperation and confidence incentives. Table 6 shows that trust in others play the same role as the quality of labor relations in the response of seniors participation rate to retirement incentives. The interaction term between trust and implicit tax is always negative and strongly

Table 5: Panel data : Interactions with the dispersion of working conditions.

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 60-64

	(1)	(2)	(3)	(4)	(5)	(6)
	rel management			rel workmates		
Implicit tax	-0.0517***	-0.0629***	-0.0625***	-0.0692***	-0.0680***	-0.0677***
	(0.00393)	(4.88e-06)	(0.000377)	(0.000294)	(7.20e-06)	(8.01e-05)
Interaction	0.0982*	0.133**	0.109**	0.289***	0.259***	0.240***
	(0.0754)	(0.0143)	(0.0362)	(0.000170)	(0.000741)	(0.000621)
Unemployment rate	-0.0111***	-0.00566***	-0.00627***	-0.0101***	-0.00501***	-0.00515**
	(0)	(0.00266)	(0.00416)	(1.80e-10)	(0.00640)	(0.0160)
Real GDP per capita	-0.134***	0.0217	-0.0274	-0.125***	0.0155	-0.0150
	(1.31e-06)	(0.740)	(0.708)	(3.79e-06)	(0.791)	(0.823)
Standard retirement age			-0.00732			-0.00607
			(0.479)			(0.523)
Constant	5.630***	4.118***	5.078***	5.534***	4.173***	4.862***
	(0)	(1.07e-09)	(2.39e-06)	(0)	(0)	(4.68e-07)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	300	300	289	300	300	289
R-squared (within)	0.239	0.513	0.516	0.273	0.530	0.534
Number of countries	19	19	19	19	19	19
Min effect	-0,04	-0,05	-0,05	-0,05	-0,05	-0,05
Max effect	-0,02	-0,02	-0,03	-0,01	-0,02	-0,02

	(7)	(8)	(9)	(10)	(11)	(12)
	job justformoney			job evenwithoutmoney		
Implicit tax	-0.0340*	-0.0245	-0.0351*	-0.0263*	-0.0383***	-0.0466***
	(0.0789)	(0.103)	(0.0512)	(0.0722)	(0.000653)	(0.00274)
Interaction	0.0144	-0.0175	-0.00758	-0.00715	0.0231	0.0287
	(0.683)	(0.574)	(0.795)	(0.418)	(0.418)	(0.321)
Unemployment rate	-0.0111***	-0.00691***	-0.00729***	-0.0113***	-0.00635***	-0.00679***
	(6.16e-10)	(0.000475)	(0.00274)	(0)	(0.000765)	(0.00229)
Real GDP per capita	-0.145***	-0.0235	-0.0748	-0.144***	-0.0243	-0.0782
	(2.49e-07)	(0.699)	(0.282)	(7.63e-07)	(0.686)	(0.257)
Standard retirement age			-0.0113			-0.0118
			(0.278)			(0.246)
Constant	5.731***	4.560***	5.803***	5.719***	4.554***	5.852***
	(0)	(0)	(1.08e-08)	(0)	(0)	(1.24e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	300	300	289	300	300	289
R-squared (within)	0.230	0.497	0.507	0.229	0.498	0.510
Number of countries	19	19	19	19	19	19
Min effect	-	-	-	-	-	-
Max effect	-	-	-	-	-	-

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

significant. As previously, we find that the elasticity of senior activity rate to pension generosity is stronger in countries with higher trust. This result holds for all specifications (controlling for standard retirement age and including time fixed effects) and when using different measures of implicit tax on continued work. We do not measure the role of the dispersion of trust since it will not provide additional information in the case of a Bernoulli variable. All the information about the distribution function is summarized in the average answer.

Hence, labor force participation rate of seniors react stronger to changes in retirement incentives in countries with higher trust.

5 Conclusion

In this paper, we tried to identify the causes of different reactions of the senior populations to monetary incentives between countries. By a very simple model we first showed that one of the main determinant of how seniors react to policies is the distribution of trust given to employers in wage bargaining.We then used panel data from OCDE and opinions about working conditions from ISSP in nineteen countries to see more precisely in what conditions incentive policies are more efficient.

We found that if the average opinion about labor relations is good in a country, then senior employment will be more sensitive to changes in policy. We also found that concerning only questions specific to relations in the labor place reactions to policies are stronger when opinions are homogenous.

Finally, using the literature on social capital and as a prolongation of our work, we considered the role of trust in other people in the general way. It appeared that this broader indicator has a similar explicative power than more precise questions specific to the labor market.

To sum up, this paper stressed the hey role of work quality in general and labor relations in particular in the trade-off between work and retirement. This result implies that changes in retirement incentives is maybe a necessary condition to forster senior activity rate, but surely not a sufficient conditions. A policy that would only focus on financial incentives would miss its goal and would not have any effect on seniors activity if the later suffer from a large disutility of labor.

Table 6: Panel data : Interaction with trust.

Dependent variable : Labor market participation rate of males aged between 55 and 64

	(1)	(2)	(3)	(4)	(5)	(6)
	Implicit tax for age group 55-59			Implicit tax for age group 60-64		
Implicit tax	0.00449	0.000870	0.00193	-0.00389	-0.0146	-0.0170
	(0.772)	(0.966)	(0.922)	(0.768)	(0.222)	(0.236)
Interaction with trust	-0.0608***	-0.0470**	-0.0467**	-0.0547***	-0.0373**	-0.0448***
	(0.00878)	(0.0143)	(0.0170)	(0.00576)	(0.0113)	(0.00307)
Unemployment rate	-0.0106***	-0.00668***	-0.00660***	-0.0126***	-0.00739***	-0.00786***
	(0)	(0.00494)	(0.00485)	(0)	(6.41e-05)	(0.000252)
Real GDP per capita	-0.156***	-0.111	-0.104	-0.155***	-0.0174	-0.0670
	(1.87e-09)	(0.165)	(0.181)	(1.67e-08)	(0.773)	(0.318)
Standard retirement age			0.00186			-0.0127
			(0.873)			(0.207)
Constant	5.825***	5.389***	5.202***	5.837***	4.496***	5.812***
	(0)	(2.39e-10)	(2.12e-05)	(0)	(0)	(4.69e-09)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	288	288	288	300	300	289
Number of countries	18	18	18	19	19	19
R-squared (within)	0.216	0.463	0.463	0.260	0.510	0.526
Min effect	-0,01	-0,01	-0,01	-0,01	-0,01	-0,01
Max effect	-0,05	-0,04	-0,03	-0,04	-0,03	-0,03

	(7)	(8)	(9)	(10)	(11)	(12)
	Implicit tax for age group 55-59 including early retirement route			Implicit tax for age group 60-64 including early retirement route		
Implicit tax	-0.0212	-0.00714	-0.00518	-0.0180	-0.0140	-0.0127
	(0.231)	(0.667)	(0.749)	(0.144)	(0.171)	(0.297)
Interaction with trust	-0.0451***	-0.0446***	-0.0454***	-0.0349**	-0.0333***	-0.0383***
	(0.00256)	(0.000651)	(0.000505)	(0.0214)	(0.00643)	(0.00319)
Unemployment rate	-0.0129***	-0.00792***	-0.00780***	-0.0120***	-0.00686***	-0.00731***
	(0)	(0.000335)	(0.000270)	(0)	(0.000210)	(0.000620)
Real GDP per capita	-0.196***	-0.0799	-0.0690	-0.151***	-0.00713	-0.0463
	(0)	(0.214)	(0.254)	(2.62e-09)	(0.908)	(0.494)
Standard retirement age			0.00488			-0.00870
			(0.675)			(0.366)
Constant	6.297***	5.104***	4.679***	5.835***	4.407***	5.351***
	(0)	(0)	(4.70e-06)	(0)	(0)	(1.68e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	306	306	306	317	317	306
Number of countries	19	19	19	19	19	19
R-squared (within)	0.321	0.521	0.523	0.281	0.508	0.518
Min effect	-0,01	-0,01	-0,01	0	0	-0,01
Max effect	-0,03	-0,03	-0,03	-0,03	-0,02	-0,03

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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Figure 4: Seniors activity rate and relations between workmates in 2005.
ISSP Work Orientation 2005 for all countries except Austria (1989), Italy (1997) and Netherlands (1997). Labor force participation rate of males aged between 55 and 64.

Figure 5: Seniors activity rate and "Job is not just a way to earn money" in 2005.
ISSP Work Orientation 2005 for all countries except Austria (1989), Italy (1997) and Netherlands (1997). Labor force participation rate of males aged between 55 and 64.
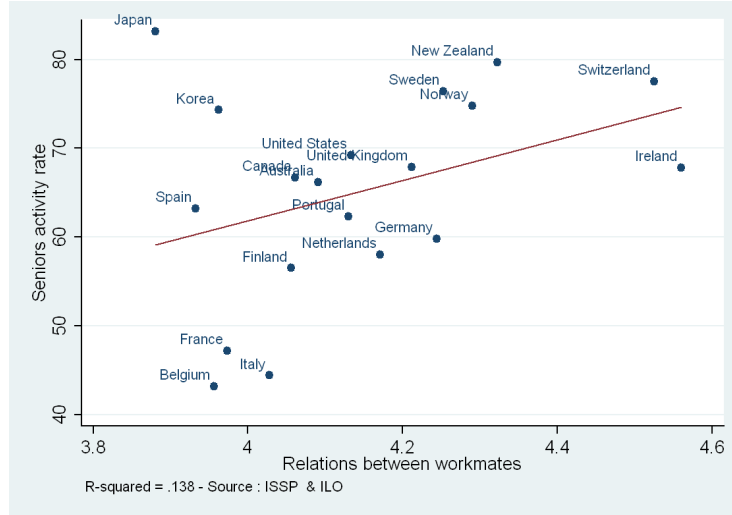

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Table 7: Pooled cross section - different variables (1).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 60-64

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
rel management	0.391** (0.0234)	0.458*** (0.00160)	0.327** (0.0285)	0.231 (0.257)				
rel workmates					0.397* (0.0639)	0.639*** (0.000706)	0.481** (0.0160)	0.347 (0.129)
Europe		-0.187*** (0.00145)	-0.147** (0.0439)	-0.139* (0.0504)		-0.243*** (0.000212)	-0.200** (0.0140)	-0.181** (0.0238)
Implicit tax			-0.0646* (0.0746)	-0.0542 (0.150)			-0.0466 (0.228)	-0.0392 (0.335)
Real GDP per capita				0.0769 (0.484)				0.0298 (0.736)
Standard retirement age				0.0250 (0.214)				0.0264 (0.122)
Constant	2.622*** (0.000214)	2.527*** (2.07e-05)	3.191*** (3.22e-06)	1.126 (0.379)	2.453*** (0.00773)	1.648** (0.0245)	2.416*** (0.00517)	0.925 (0.480)
Observations	38	38	37	37	38	38	37	37
R-squared	0.157	0.339	0.431	0.479	0.136	0.411	0.455	0.494

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
job justformoney	0.150 (0.106)	0.140 (0.136)	0.0690 (0.477)	0.0117 (0.913)				
job evenwithoutmoney					0.505*** (1.96e-07)	0.476*** (6.45e-07)	0.444*** (2.56e-06)	0.442*** (5.60e-05)
Europe		-0.157** (0.0121)	-0.107 (0.147)	-0.117* (0.0890)		-0.0514 (0.124)	-0.00768 (0.825)	-0.00564 (0.877)
Implicit tax			-0.0916*** (0.00902)	-0.0655* (0.0842)			-0.0807*** (0.000439)	-0.0820*** (0.00155)
Real GDP per capita				0.0237 (0.822)				0.0452 (0.398)
Standard retirement age				0.0375** (0.0127)				-0.00116 (0.946)
Constant	3.604*** (0)	3.772*** (0)	4.251*** (0)	1.704 (0.157)	2.401*** (1.91e-10)	2.541*** (7.24e-11)	2.862*** (0)	2.491*** (0.00642)
Observations	38	38	37	37	38	38	37	37
R-squared	0.081	0.212	0.372	0.453	0.590	0.602	0.717	0.719

OLS regressions with time fixed effects
Included countries are those surveyed in ISSP 1989, 1997 or 2005
Robust p values in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

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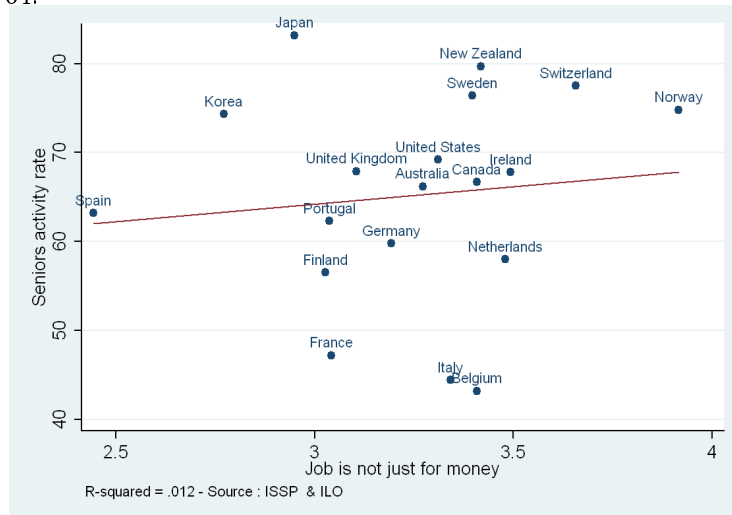
Table 8: Pooled cross section - different variables (2).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 55-59, including early retirement route

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
rel management	0.391**	0.458***	0.267*	0.0703				
	(0.0234)	(0.00160)	(0.0610)	(0.719)				
rel workmates					0.397*	0.639***	0.421**	0.124
					(0.0639)	(0.000706)	(0.0466)	(0.601)
Europe		-0.187***	-0.0565	-0.0415		-0.243***	-0.143	-0.0690
		(0.00145)	(0.631)	(0.685)		(0.000212)	(0.304)	(0.620)
Implicit tax			-0.0619	-0.0580			-0.0381	-0.0505
			(0.167)	(0.135)			(0.453)	(0.315)
Real GDP per capita				0.0253				0.0136
				(0.804)				(0.862)
Standard retirement age				0.0405**				0.0399**
				(0.0325)				(0.0124)
Constant	2.622***	2.527***	3.344***	1.190	2.453***	1.648**	2.600***	1.094
	(0.000214)	(2.07e-05)	(7.34e-07)	(0.304)	(0.00773)	(0.0245)	(0.00509)	(0.360)
Observations	38	38	36	36	38	38	36	36
R-squared	0.157	0.339	0.400	0.501	0.136	0.411	0.412	0.503

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
job justformoney	0.150	0.140	0.0521	-0.0139				
	(0.106)	(0.136)	(0.600)	(0.919)				
job evenwithoutmoney					0.505***	0.476***	0.409***	0.360***
					(1.96e-07)	(6.45e-07)	(5.09e-07)	(2.18e-05)
Europe		-0.157**	-0.00801	-0.0226		-0.0514	0.0486	0.0298
		(0.0121)	(0.944)	(0.857)		(0.124)	(0.286)	(0.551)
Implicit tax			-0.0791	-0.0661			-0.0575***	-0.0510**
			(0.119)	(0.245)			(0.00365)	(0.0110)
Real GDP per capita				0.0229				0.0130
				(0.861)				(0.826)
Standard retirement age				0.0443***				0.0169
				(0.00133)				(0.246)
Constant	3.604***	3.772***	4.196***	1.290	2.401***	2.541***	2.872***	1.805**
	(0)	(0)	(0)	(0.233)	(1.91e-10)	(7.24e-11)	(0)	(0.0268)
Observations	38	38	36	36	38	38	36	36
R-squared	0.081	0.212	0.354	0.499	0.590	0.602	0.689	0.707

OLS regressions with time fixed effects
Included countries are those surveyed in ISSP 1989, 1997 or 2005
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Pooled cross section - different variables (3).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 60-64, including early retirement route

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
rel management	0.391**	0.458***	0.308**	0.156				
	(0.0234)	(0.00160)	(0.0299)	(0.446)				
rel workmates					0.397*	0.639***	0.496***	0.319
					(0.0639)	(0.000706)	(0.00945)	(0.151)
Europe		-0.187***	-0.108	-0.101		-0.243***	-0.181*	-0.153*
		(0.00145)	(0.202)	(0.194)		(0.000212)	(0.0606)	(0.0900)
Implicit tax			-0.0719*	-0.0631			-0.0454	-0.0440
			(0.0888)	(0.117)			(0.295)	(0.297)
Real GDP per capita				0.00737				-0.0119
				(0.945)				(0.888)
Standard retirement age				0.0345*				0.0316*
				(0.0779)				(0.0568)
Constant	2.622***	2.527***	3.271***	1.510	2.453***	1.648**	2.346***	1.130
	(0.000214)	(2.07e-05)	(8.07e-07)	(0.245)	(0.00773)	(0.0245)	(0.00410)	(0.378)
Observations	38	38	38	38	38	38	38	38
R-squared	0.157	0.339	0.400	0.460	0.136	0.411	0.430	0.479

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
job justformoney	0.150	0.140	0.00776	-0.0350				
	(0.106)	(0.136)	(0.942)	(0.771)				
job evenwithoutmoney					0.505***	0.476***	0.432***	0.406***
					(1.96e-07)	(6.45e-07)	(4.04e-07)	(1.57e-05)
Europe		-0.157**	-0.0587	-0.0740		-0.0514	0.0106	0.000756
		(0.0121)	(0.453)	(0.322)		(0.124)	(0.764)	(0.984)
Implicit tax			-0.105**	-0.0812			-0.0742***	-0.0688***
			(0.0278)	(0.101)			(0.00214)	(0.00847)
Real GDP per capita				-0.000543				-0.0145
				(0.996)				(0.819)
Standard retirement age				0.0429***				0.0105
				(0.00336)				(0.507)
Constant	3.604***	3.772***	4.485***	1.793	2.401***	2.541***	2.887***	2.436***
	(0)	(0)	(0)	(0.131)	(1.91e-10)	(7.24e-11)	(0)	(0.00910)
Observations	38	38	38	38	38	38	38	38
R-squared	0.081	0.212	0.340	0.450	0.590	0.602	0.683	0.688

OLS regressions with time fixed effects
Included countries are those surveyed in ISSP 1989, 1997 or 2005
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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Table 10: Panel data : Interactions with average working conditions - different variables (1).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 60-64

	(1)	(2)	(3)	(4)	(5)	(6)
	rel management			rel workmates		
Implicit tax	0.197***	0.150*	0.118	0.345***	0.255***	0.245***
	(0.00440)	(0.0546)	(0.110)	(4.33e-07)	(0.000383)	(0.000334)
Interaction	-0.0602***	-0.0486**	-0.0413**	-0.0921***	-0.0707***	-0.0690***
	(0.000843)	(0.0138)	(0.0285)	(1.07e-07)	(4.11e-05)	(2.91e-05)
Unemployment rate	-0.0113***	-0.00658***	-0.00713***	-0.0108***	-0.00615***	-0.00630***
	(0)	(0.000234)	(0.000801)	(0)	(0.000599)	(0.00279)
Real GDP per capita	-0.138***	-0.0129	-0.0614	-0.132***	-0.00567	-0.0415
	(3.87e-07)	(0.825)	(0.352)	(3.65e-07)	(0.916)	(0.494)
Standard retirement age			-0.00830			-0.00848
			(0.413)			(0.378)
Constant	5.671***	4.456***	5.474***	5.623***	4.391***	5.291***
	(0)	(0)	(3.75e-08)	(0)	(0)	(9.29e-09)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	300	300	289	300	300	289
R-squared (within)	0.255	0.512	0.518	0.290	0.531	0.539
Number of countries	19	19	19	19	19	19
Min effect	-0,01	-0,02	-0,14	-0,01	-0,02	-0,02
Max effect	-0,06	-0,06	-0,18	-0,08	-0,07	-0,07

	(7)	(8)	(9)	(10)	(11)	(12)
	job justformoney			job evenwithoutmoney		
Implicit tax	0.111***	0.0252	0.0497	0.0316	0.114**	0.113**
	(0.00118)	(0.412)	(0.198)	(0.622)	(0.0499)	(0.0391)
Interaction	-0.0434***	-0.0177*	-0.0269**	-0.0176	-0.0427***	-0.0447***
	(0.000174)	(0.0654)	(0.0159)	(0.318)	(0.00581)	(0.00289)
Unemployment rate	-0.0100***	-0.00594***	-0.00564**	-0.0108***	-0.00514***	-0.00589***
	(1.01e-09)	(0.00196)	(0.0166)	(1.07e-10)	(0.00875)	(0.00739)
Real GDP per capita	-0.141***	-0.00880	-0.0427	-0.144***	-0.0315	-0.0928
	(4.90e-07)	(0.882)	(0.538)	(3.64e-07)	(0.598)	(0.158)
Standard retirement age			-0.0130			-0.00898
			(0.199)			(0.353)
Constant	5.693***	4.407***	5.583***	5.710***	4.615***	5.811***
	(0)	(0)	(1.87e-08)	(0)	(0)	(4.15e-09)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	300	300	289	300	300	289
R-squared (within)	0.261	0.501	0.516	0.234	0.520	0.529
Number of countries	19	19	19	19	19	19
Min effect	0,01	-0,04	-0,07	-	0	-0,01
Max effect	-0,06	-0,07	-0,11	-	-0,06	-0,07

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Panel data : Interactions with average working conditions - different variables (2).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 55-59, including early retirement route

	(1)	(2)	(3)	(4)	(5)	(6)
	rel management			rel workmates		
Implicit tax	0.255***	0.168**	0.185**	0.197***	0.135*	0.154**
	(0.000305)	(0.0238)	(0.0103)	(0.00556)	(0.0652)	(0.0270)
Interaction	-0.0797***	-0.0530***	-0.0569***	-0.0578***	-0.0397**	-0.0437***
	(3.95e-06)	(0.00421)	(0.00154)	(0.000168)	(0.0139)	(0.00438)
Unemployment rate	-0.0119***	-0.00718***	-0.00702***	-0.0114***	-0.00648***	-0.00626***
	(0)	(0.00132)	(0.00114)	(0)	(0.00427)	(0.00390)
Real GDP per capita	-0.186***	-0.0664	-0.0504	-0.184***	-0.0574	-0.0398
	(0)	(0.308)	(0.404)	(0)	(0.378)	(0.503)
Standard retirement age			0.00678			0.00696
			(0.544)			(0.537)
Constant	6.201***	4.986***	4.389***	6.171***	4.885***	4.260***
	(0)	(0)	(9.57e-06)	(0)	(0)	(1.80e-05)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	306	306	306	306	306	306
R-squared (within)	0.348	0.519	0.523	0.333	0.515	0.518
Number of countries	19	19	19	19	19	19
Min effect	-0,02	-0,01	-0,01	-0,03	-0,02	-0,02
Max effect	-0,09	-0,06	-0,06	-0,07	-0,05	-0,05

	(7)	(8)	(9)	(10)	(11)	(12)
	job justformoney			job evenwithoutmoney		
Implicit tax	0.0187	-0.00345	0.00105	-0.00931	0.0390	0.0488
	(0.653)	(0.928)	(0.976)	(0.882)	(0.490)	(0.400)
Interaction	-0.0182*	-0.00745	-0.00838	-0.0102	-0.0200	-0.0224
	(0.0715)	(0.412)	(0.321)	(0.517)	(0.134)	(0.100)
Unemployment rate	-0.0114***	-0.00650***	-0.00635***	-0.0115***	-0.00672***	-0.00655***
	(0)	(0.00617)	(0.00508)	(0)	(0.00303)	(0.00286)
Real GDP per capita	-0.189***	-0.0673	-0.0567	-0.192***	-0.0917	-0.0803
	(0)	(0.329)	(0.372)	(0)	(0.154)	(0.189)
Standard retirement age			0.00421			0.00587
			(0.725)			(0.609)
Constant	6.214***	4.977***	4.598***	6.253***	5.217***	4.723***
	(0)	(0)	(1.17e-05)	(0)	(0)	(4.14e-06)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	306	306	306	306	306	306
R-squared (within)	0.302	0.499	0.501	0.298	0.506	0.509
Number of countries	19	19	19	19	19	19
Min effect	-0,04	-	-	-	-	-
Max effect	-0,07	-	-	-	-	-

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Panel data : Interactions with average working conditions - different variables (3).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 60-64, including early retirement route

	(1)	(2)	(3)	(4)	(5)	(6)
	rel management			rel workmates		
Implicit tax	0.140**	0.0738	0.0507	0.167***	0.0943	0.0861
	(0.0268)	(0.298)	(0.436)	(0.00447)	(0.131)	(0.152)
Interaction	-0.0459***	-0.0272	-0.0216	-0.0485***	-0.0299**	-0.0280**
	(0.00309)	(0.127)	(0.192)	(0.000277)	(0.0387)	(0.0419)
Unemployment rate	-0.0109***	-0.00617***	-0.00668***	-0.0107***	-0.00595***	-0.00624***
	(0)	(0.000518)	(0.00152)	(0)	(0.000987)	(0.00340)
Real GDP per capita	-0.142***	-0.0109	-0.0510	-0.141***	-0.00678	-0.0394
	(1.92e-08)	(0.856)	(0.443)	(1.30e-08)	(0.909)	(0.551)
Standard retirement age			-0.00578			-0.00536
			(0.555)			(0.576)
Constant	5.738***	4.444***	5.211***	5.731***	4.402***	5.065***
	(0)	(0)	(4.79e-08)	(0)	(0)	(6.67e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	317	317	306	317	317	306
Number of countries	19	19	19	19	19	19
R-squared (within)	0.284	0.500	0.503	0.291	0.503	0.507
Min effect	-0,02	-	-	-0,02	-0,12	-0,11
Max effect	-0,06	-	-	-0,05	-0,14	-0,13

	(7)	(8)	(9)	(10)	(11)	(12)
	job justformoney			job evenwithoutmoney		
Implicit tax	0.0293	-0.00972	-0.00462	-0.0380	0.0387	0.0297
	(0.416)	(0.742)	(0.908)	(0.517)	(0.431)	(0.521)
Interaction	-0.0191**	-0.00604	-0.00801	0.000903	-0.0197	-0.0177
	(0.0498)	(0.454)	(0.428)	(0.953)	(0.123)	(0.145)
Unemployment rate	-0.0107***	-0.00589***	-0.00625***	-0.0109***	-0.00571***	-0.00639***
	(0)	(0.00128)	(0.00545)	(0)	(0.00198)	(0.00268)
Real GDP per capita	-0.146***	-0.00751	-0.0444	-0.145***	-0.0164	-0.0605
	(1.49e-08)	(0.903)	(0.527)	(5.90e-08)	(0.787)	(0.362)
Standard retirement age			-0.00776			-0.00597
			(0.427)			(0.537)
Constant	5.772***	4.408***	5.270***	5.767***	4.487***	5.310***
	(0)	(0)	(7.70e-08)	(0)	(0)	(2.15e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	317	317	306	317	317	306
Number of countries	19	19	19	19	19	19
R-squared (within)	0.272	0.493	0.500	0.264	0.500	0.504
Min effect	-0,05	-	-	-	-	-
Max effect	-0,07	-	-	-	-	-

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: Panel data : Interactions with the dispersion of working conditions - different variables (1).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 55-59

	(1)	(2)	(3)	(4)	(5)	(6)
		rel management			rel workmates	
Implicit tax	-0.0743***	-0.0783***	-0.0789***	-0.0685***	-0.0594***	-0.0589***
	(0.000428)	(6.08e-06)	(1.83e-05)	(0.000169)	(0.000497)	(0.00119)
Interaction	0.243***	0.269***	0.301***	0.346***	0.290***	0.329***
	(0.000200)	(1.30e-05)	(6.18e-06)	(7.75e-06)	(0.000337)	(0.000263)
Unemployment rate	-0.00925***	-0.00468**	-0.00404*	-0.00868***	-0.00505**	-0.00448*
	(0)	(0.0462)	(0.0732)	(2.14e-10)	(0.0347)	(0.0516)
Real GDP per capita	-0.138***	-0.0567	-0.0106	-0.140***	-0.0852	-0.0459
	(5.53e-08)	(0.483)	(0.897)	(2.90e-08)	(0.279)	(0.562)
Standard retirement age			0.0106			0.00952
			(0.323)			(0.377)
Constant	5.637***	4.853***	3.704***	5.656***	5.135***	4.124***
	(0)	(1.16e-08)	(0.00338)	(0)	(7.28e-10)	(0.000791)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	288	288	288	288	288	288
Number of countries	18	18	18	18	18	18
R-squared (within)	0.237	0.502	0.510	0.247	0.486	0.493
Min effect	-0,05	-0,05	-0,05	-0,04	-0,04	-0,03
Max effect	0	0	0,01	0	0	0,01

	(7)	(8)	(9)	(10)	(11)	(12)
		job justformoney			job evenwithoutmoney	
Implicit tax	-0.0206	0.0150	0.0204	-0.0247	-0.0303	-0.0288
	(0.506)	(0.620)	(0.507)	(0.209)	(0.140)	(0.163)
Interaction	0.00308	-0.0643**	-0.0695**	0.0118	0.0262	0.0252
	(0.930)	(0.0319)	(0.0195)	(0.604)	(0.173)	(0.217)
Unemployment rate	-0.00954***	-0.00732***	-0.00722***	-0.00947***	-0.00606**	-0.00600**
	(1.00e-09)	(0.00210)	(0.00214)	(1.25e-10)	(0.0115)	(0.0109)
Real GDP per capita	-0.153***	-0.141*	-0.127*	-0.154***	-0.128	-0.122
	(7.40e-09)	(0.0643)	(0.0988)	(5.28e-09)	(0.115)	(0.127)
Standard retirement age			0.00435			0.00161
			(0.710)			(0.891)
Constant	5.787***	5.678***	5.253***	5.794***	5.557***	5.393***
	(0)	(0)	(2.66e-05)	(0)	(1.57e-10)	(1.97e-05)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	288	288	288	288	288	288
Number of countries	18	18	18	18	18	18
R-squared (within)	0.192	0.458	0.459	0.192	0.453	0.453
Min effect	-	-0,02	-0,02	-	-	-
Max effect	-	-0,05	-0,05	-	-	-

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: Panel data : Interactions with the dispersion of working conditions - different variables (2).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 55-59, including early retirement route

	(1)	(2)	(3)	(4)	(5)	(6)
	rel management			rel workmates		
Implicit tax	-0.0780***	-0.0616***	-0.0628***	-0.0704***	-0.0520***	-0.0530***
	(2.51e-06)	(6.10e-05)	(0.000152)	(8.33e-07)	(7.91e-05)	(0.000251)
Interaction	0.159***	0.147**	0.163***	0.217***	0.182**	0.211***
	(0.00863)	(0.0134)	(0.00540)	(0.00684)	(0.0213)	(0.00742)
Unemployment rate	-0.0112***	-0.00548**	-0.00512**	-0.0108***	-0.00537**	-0.00491**
	(0)	(0.0184)	(0.0178)	(0)	(0.0236)	(0.0256)
Real GDP per capita	-0.175***	-0.0185	0.00585	-0.177***	-0.0353	-0.00973
	(0)	(0.798)	(0.928)	(0)	(0.610)	(0.876)
Standard retirement age			0.00786			0.00839
			(0.483)			(0.449)
Constant	6.079***	4.502***	3.751***	6.094***	4.661***	3.864***
	(0)	(2.39e-09)	(0.000210)	(0)	(1.45e-10)	(0.000115)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	306	306	306	306	306	306
R-squared (within)	0.323	0.519	0.524	0.322	0.515	0.521
Number of countries	19	19	19	19	19	19
Min effect	-0,06	-0,05	-0,04	-0,05	-0,04	-0,04
Max effect	-0,03	-0,02	-0,01	-0,03	-0,01	-0,01

	(7)	(8)	(9)	(10)	(11)	(12)
	job justformoney			job evenwithoutmoney		
Implicit tax	-0.0375*	-0.0135	-0.0122	-0.0432***	-0.0346***	-0.0335**
	(0.0732)	(0.509)	(0.549)	(0.00224)	(0.00937)	(0.0128)
Interaction	-0.0124	-0.0316	-0.0317	-0.000150	0.0159	0.0164
	(0.593)	(0.221)	(0.212)	(0.994)	(0.446)	(0.428)
Unemployment rate	-0.0116***	-0.00711***	-0.00700***	-0.0116***	-0.00667***	-0.00655***
	(0)	(0.00180)	(0.00147)	(0)	(0.00338)	(0.00285)
Real GDP per capita	-0.188***	-0.0850	-0.0762	-0.189***	-0.0778	-0.0688
	(0)	(0.184)	(0.204)	(0)	(0.237)	(0.268)
Standard retirement age			0.00392			0.00403
			(0.744)			(0.734)
Constant	6.214***	5.157***	4.816***	6.225***	5.081***	4.731***
	(0)	(0)	(3.47e-06)	(0)	(0)	(5.91e-06)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	306	306	306	306	306	306
R-squared (within)	0.297	0.501	0.502	0.296	0.500	0.501
Number of countries	19	19	19	19	19	19
Min effect	-	-	-	-	-	-
Max effect	-	-	-	-	-	-

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: Panel data : Interactions with the dispersion of working conditions - different variables (3).

Dependent variable : Labor market participation rate of males aged between 55 and 64
Implicit tax variable : Implicit tax on continued work for age group 60-64, including early retirement route

	(1)	(2)	(3)	(4)	(5)	(6)
	rel management			rel workmates		
Implicit tax	-0.0605***	-0.0550***	-0.0538***	-0.0680***	-0.0564***	-0.0545***
	(0.000227)	(2.42e-05)	(0.000855)	(9.13e-06)	(1.32e-05)	(9.70e-05)
Interaction	0.110**	0.108**	0.0932*	0.251***	0.199***	0.187***
	(0.0342)	(0.0389)	(0.0682)	(0.000222)	(0.00512)	(0.00480)
Unemployment rate	-0.0106***	-0.00520***	-0.00577***	-0.00982***	-0.00476***	-0.00489**
	(0)	(0.00605)	(0.00729)	(0)	(0.00915)	(0.0195)
Real GDP per capita	-0.134***	0.0243	-0.0148	-0.130***	0.0216	-0.00263
	(1.44e-07)	(0.713)	(0.836)	(1.24e-07)	(0.725)	(0.969)
Standard retirement age			-0.00454			-0.00320
			(0.643)			(0.727)
Constant	5.661***	4.102***	4.781***	5.619***	4.123***	4.560***
	(0)	(1.44e-09)	(1.75e-06)	(0)	(5.96e-11)	(8.91e-07)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	317	317	306	317	317	306
Number of countries	19	19	19	19	19	19
R-squared (within)	0.279	0.506	0.507	0.303	0.516	0.518
Min effect	-0,05	-0,04	-0,04	-0,05	-0,04	-0,04
Max effect	-0,03	-0,02	-0,03	-0,02	-0,02	-0,02

	(7)	(8)	(9)	(10)	(11)	(12)
	job justformoney			job evenwithoutmoney		
Implicit tax	-0.0337**	-0.0309**	-0.0357**	-0.0333**	-0.0368***	-0.0406***
	(0.0300)	(0.0326)	(0.0200)	(0.0120)	(0.000549)	(0.00184)
Interaction	-0.00300	0.00251	0.00846	-0.00464	0.0203	0.0235
	(0.894)	(0.925)	(0.765)	(0.758)	(0.241)	(0.205)
Unemployment rate	-0.0109***	-0.00599***	-0.00647***	-0.0109***	-0.00582***	-0.00639***
	(0)	(0.000940)	(0.00272)	(0)	(0.00115)	(0.00239)
Real GDP per capita	-0.145***	-0.0117	-0.0535	-0.145***	-0.0107	-0.0559
	(2.42e-08)	(0.848)	(0.426)	(3.46e-08)	(0.862)	(0.414)
Standard retirement age			-0.00813			-0.00863
			(0.409)			(0.371)
Constant	5.767***	4.450***	5.386***	5.765***	4.436***	5.439***
	(0)	(0)	(1.42e-08)	(0)	(0)	(1.44e-08)
Time fixed effects	-	Yes	Yes	-	Yes	Yes
Observations	317	317	306	317	317	306
Number of countries	19	19	19	19	19	19
R-squared (within)	0.264	0.493	0.499	0.264	0.496	0.503
Min effect	-	-	-	-	-	-
Max effect	-	-	-	-	-	-

OLS regressions with country fixed effects
Robust p values in parentheses
*** p<0.01, ** p<0.05, * p<0.1