Old workers' transition to retirement in Italy: from an individual to a couple perspective

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1. Introduction

The well-known process of population aging forces the European Union to settle new economic strategies. Among these, active aging has a prominent role. As Italy is one of the European countries with the highest old dependency ratio and the lowest labour participation of older workers (especially women), the study of the older workers labour market becomes fundamental, even for addressing policy.

The aims of this work are two: the first is to estimate, using event history models, the impact of socio-demographic and economic variables on the retirement decision of those who were employed at age 50; the second is to focus on the labour behaviour of married couples.

Section 2 provides a short theoretical background and the research hypothesis I want to test. Section 3 contains data description and statistical method used, while in the next section are shown the main results. Finally the conclusions are provided in Section 5.

2. Theoretical framework and research hypothesis

The European population age structure is dramatically changing. In the last decades there has been a rise in both the absolute number of old people and in their relative share on the total population. This demographic change has deep consequences from an economic and social point of view, in particular concerning the labour supply and the general welfare regime sustainability. To make economic growth possible the European Union settles a common Employment Strategy. In particular in 2001 the Stockholm European council fixes three main targets[1] that all European countries should archive by 2010. The study of the transition to retirement in Italy is therefore fundamental.

The retirement decision is affected by a great number of demographic, social and economic variables. Among those, from a theoretical point of view, age is very relevant, as well as gender and the educational level of the respondents. In order to have access to the pension system is necessary, in Italy, to have at least a certain age and to have worked at least a certain number of years: we can hypothesize that the more you are old the more you have those two titles. Also control for gender is very important for at least two different reasons: first of all, the number of years worked that make people have access to the pension system is lower for women than for men. Secondly, as is well known that there are gender differences in the labour market participation, we can hypothesize that there could be different behaviour even when we study the exit from that market. Several studies show a positive relation between educational level reached and activity rate: the more you are educated (the high is your human capital) the more you are likely to work. This relation seems even stronger for the female labour force. The hypothesis we want to test is if the educational level affects in the same way the permanence in the labour market at old ages or, in other words, if the more educated workers retire later then the less educated one.

[1] The targets are: raise the employment rate, the female employment rate and employment rate of over 55 years old at 70%, more than 60% and 50% respectively (European Council, 2000; European Council, 2001).

We have also to take into account other covariates strictly related with the kind of job the workers do or very relevant from a demographic point of view. As instance we can test if those who are childless behave differently from those who have children. Even more interesting is the impact of the marital status on the retirement decision. There is evidence from a previous study (Rinesi, 2007) suggesting that in Italy those who have a different marital status don't behave differently in a significant way. Here we want to check if even using an event history model and considering this covariate as a time-varying one this finding is confirmed or not.

One of the most relevant achievement of the recent decades is the increase in the female labour supply. As a consequence the society has been moving from a prevailing male breadwinner model to a dual earner family one. If the unit of analysis of the traditional studies on labour market is the individual, the one of more recent works is the family: they focus, in other words, on the interaction between the partners labour behaviour. The core hypothesis is that the labour participation decisions are not only individual but they are also the outcome of a couple's decision (recently Blossfeld and Drobnič, 2001; Bernasco, 2003). At the same time is possible to make the same hypothesis if we investigate a more specific labour market behaviour like the retirement one. From a theoretical point of view the main reasons why is possible to observe interdependent retirement decisions make reference to correlation on partners' leisure tastes and assortative mating[2] (Henretta and O'Rand, 1983; Henretta et al, 1993; Blau and Riphahn, 1998; Gustman and Steinmeier, 2000; Pienta, 2003; An, Christensen and Datta Gupta, 2004). Therefore, we have tested if this theory fit the Italian labour market by taking into account the behaviour of working couples.

To sum up, in this paper I want to take a deeper look into two different aspects of the transition to retirement: the first is the evaluation of the impact of certain demographic and socio-economic variables on the retirement decision. The second is to test the theory that states that labour market behaviour is also the outcome of a family decision, and not only an individual one.

[2] Many studies highlight that couples' members, at the time of marriage, are likely to have similar educational level and labour behaviour (for Italy see Bernardi, 1999; Del Boca et al, 2000): this phenomena is commonly known as "positive assortative mating".

3. Data and Methods

This study use the data from the "Survey on Health, Ageing and Retirement in Europe" (SHARE). This survey was carried out in 2004 involving 11 European countries. The survey targeted persons aged 50 or over, however are also included the respondents' partner, even if younger. The second wave is still on going so the new data are not available yet. Finally I have focused the analysis only on the Italian data, so the initial sample is made up of almost 2,600 individuals. Since I consider only those who work at age 50 (dropping housewives, unemployed, enable people and those who are not labour force in general), the final sample is made up of more then 1,500 persons.

The survey is a very broad-spectrum one because of the wide range of topics that are investigated. As instance it would be very interesting to quantify the effect of the health condition or the family income on the retirement decision; unfortunately, there is no time information about those variables (but only at the interview time), so it is not possible to use them without mixing up causes and consequences of the behaviour. On the contrary we can include in the model some economic and socio-demographic variables as well as information about partners' labour condition for those who are married with a partner that was working at age 50.

To test our hypothesis we use three different models. The aim of the first one is to analyse the transition to retirement of all people who works at the age of 50 and to measure the impact of some relevant covariates on this process. The second goal of this paper is to study the exit from the labour market of working couples; in particular we will focus on the timing of retirement and on the interrelation between partners' behaviours. To take into account of the different role that women and men have in the family, we estimate two different models. In order to check our hypothesis we use a Piecewise constant intensity regression models. In plain terms, the time factor[3] is transformed in a categorical variable and divided into sub-intervals: is assumed that

[3] In this study the time variable is expressed in century months. I have the month information for the date of birth: for the other variable I impute it by generating a random variable. Finally I hypothesize that the survey was carried out in June.

the risk is constant within each interval while the hazard rate can change between them.

The covariates that are introduced in the first model are both time constant and time varying. As a time constant we have gender, cohort, number of children (if any), educational level and kind of work, while marital status is considered as a time-varying covariate.

More in details, the cohort considered are three: the first includes those who were born before 1930, the second one those who were born between 1930 and 1945 while the last cohort is made of those who were born after 1945. We cluster the number of children in three categories: no child, one child and two children or more. We classify the educational level achieved in three groups: we consider with a low educational level those who have no degree or primary education, with a medium level those who have a high school diploma and with a high educational level those who have at least the University Degree. We have considered this variable as a time constant one because we assume that after age 50 the educational career is completed. The only economic variable we take explicitly into account is the kind of job the workers do (or the retired did). Since we have not complete information about the last job of those who are retired when interviewed, we can only distinguee those who are (were) employed from those who are (were) self-employed. Finally, we construct the marital status: since we have only the information about the year of the last wedding, we assumed that married people were single before. We have to say that this assumption is not too strict as it can seems, because second marriages are not so frequent in Italy as they are in other countries, especially with reference to old persons and the cohorts under consideration. Also the year of marriage for those who were divorced or widowed at the interview time is missing. We assume for both that at age 50 they were married yet. Finally, not always we have the year of marriage for those who were married at the interview. As we sad before, in the SHARE survey were interviewed not only the respondent buy also the respondents' partner, if any. Therefore, we assume that those who have the same family identifier and are married, are married together: in other word we assign the year of marriage of the partner when this information is missing.

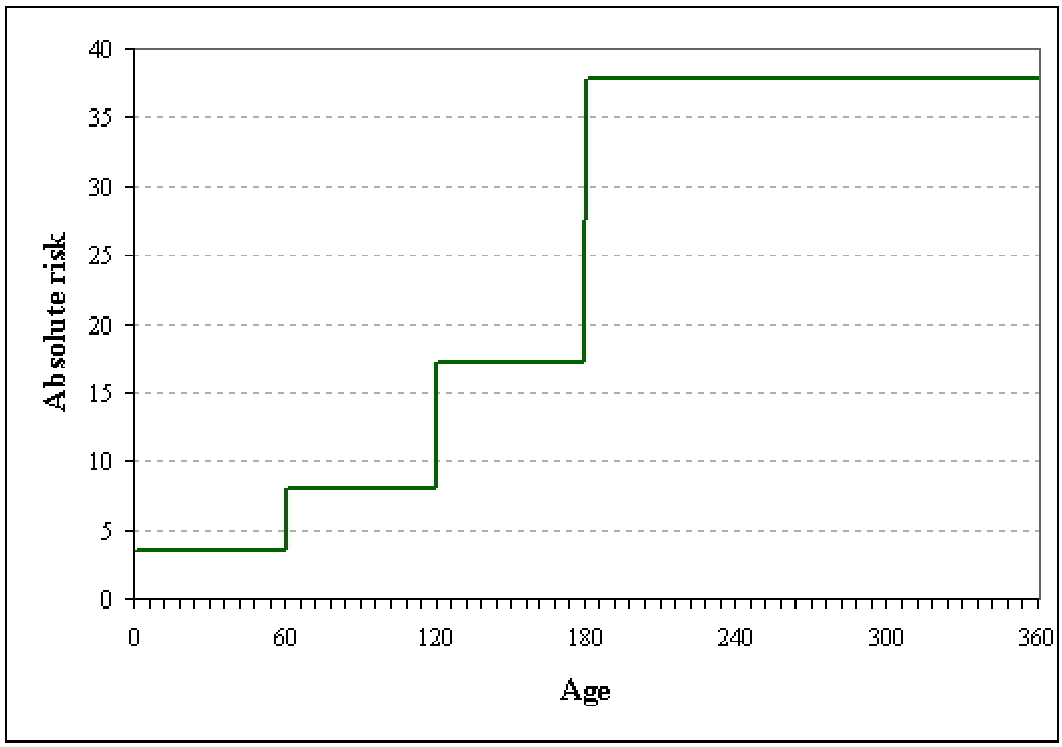
In the models we run to estimate the couples' joint retirement behaviour we take into account the same covariates we have introduced in the previous model. Obviously we do not consider gender (we run two separate models) nor the marital status since only married people entered into our analysis. The only covariate we add is the one we use to measure the link between partner retirement behaviour. In particular, we consider the partners' role only for those couples where both work at age 50. We assume that those who have not a working partner take an individual retirement decision, while the one of a working couple depend on the partner behaviour. There are several way to measure this joint retirement behaviour (Gower, 1998) but here we consider the retirement sequence: in other words we take into account if the wife retires earlier then her husband or vice versa or if the partners retires together. We consider also the time distance between the retirement decisions for those who don't exit from the labour market simultaneously.

A final remark: as all the retrospective surveys, also the analysis of the SHARE data are made on a selected sample and are based on the respondents' recollection of past events. Moreover women that work at age 50 are a particular and selected sample of all the women, because paid work is much more common for male than for female, especially in a familistic welfare regime like the Italian one, at the old ages and for the cohorts we study.

4. Results

A first glance on the transition understudy is provided by the baseline hazard that shows the absolute risk to exit from the labour market measured in months since the 50^{th} worker birthday. The time factor is divided into four sub-intervals (the splitting points are 55, 60 and 65 years old) and, within each of these, the absolute risk is supposed to be constant. Fig. 1 shows that the more a worker is old (moving from an interval to next one) the more the absolute risk to exit from the labour market is higher.

Fig. 1 - Absolute risk per 1000 person-months



Source: own calculation on SHARE data (2005).

As a descriptive statistics we have computed two different measures: the first is the percentage of workers that are retired at a specific age (55, 60 and 65 years old) and the second is the age at which half of the sample exit from the labour market. We find that 23% of workers are already retired at age 55 (Table 2); this share rises at almost 57% for those who are 60 years old and increases further on (84%) at age 65. Finally the median age at retirement is 59.4 years old.

Table 2 - Transition to retirement of those who were employed at age 50. Kaplan-Meier survival curve estimates.

Workers retired at age 55 (%)	23.1
Workers retired at age 60 (%)	56.8
Workers retired at age 65 (%)	84.0
Duration (years) at which 50% of workers retires	59.4

Source: own calculation on SHARE data (2005).

We have computed the same measures by three variables that in the literature are considered to have an high impact on the transition to retirement: gender,

educational level and kind of work. The results shown in Table 3 and the Kaplan-Meier survival curves according to the same covariates (Fig. 2) seem to confirm that there are highly and significantly different behaviours according to the characteristic we have controlled for[4].

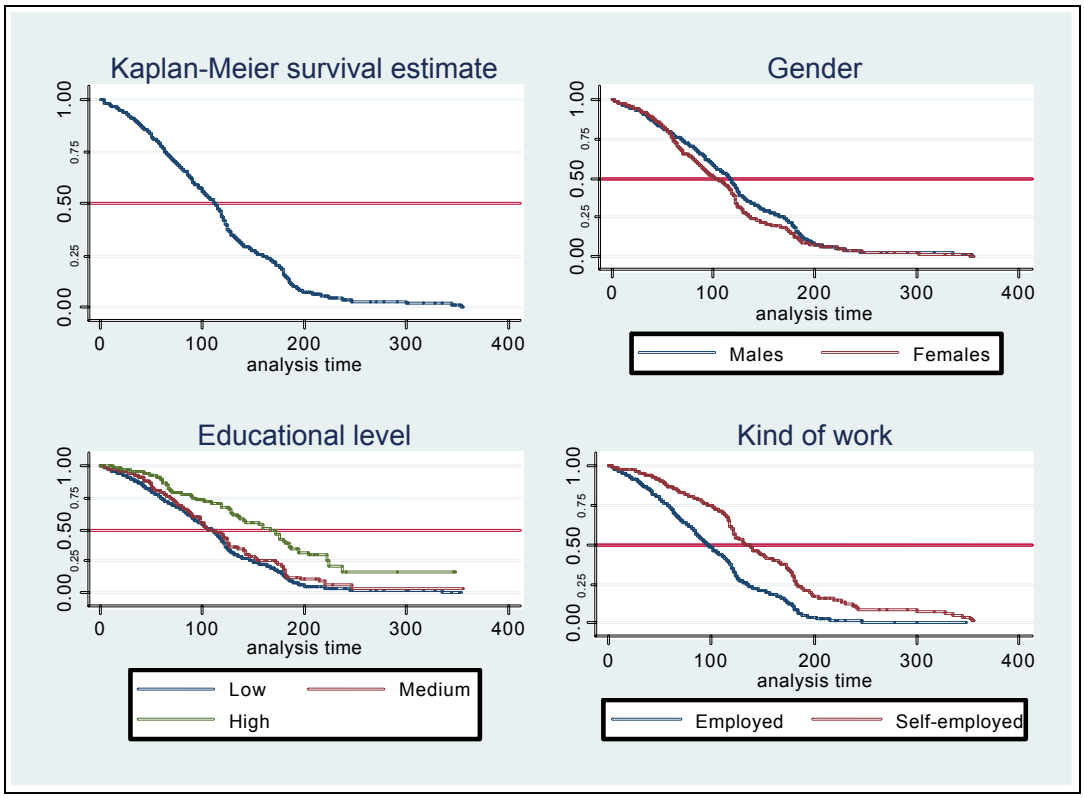
Table 3 - Transition to retirement of those who were employed at age 50 by selected covariates. Kaplan-Meier survival curve estimates.

Variables	Workers retired at age 55 (%)	Workers retired at age 60 (%)	Workers retired at age 65 (%)	Duration (years) at which 50% of workers retires
Gender				
Male	22.4	54.4	83.1	59.8
Female	26.4	62.8	87.3	58.6
Educational level				
Low	25.9	59.6	87.1	59.2
Medium	21.3	58.2	82.8	59.0
High	13.4	34.4	58.1	63.7
Kind of Job				
Employed	28.5	65.3	90.1	58.2
Self-Employed	12.4	38.4	71.6	61.3

Source: own calculation on SHARE data (2005).

[4] For the log-rank tests for equality of survival functions by Gender, Educational Level and Kind of job see Appendix (Table A1).

Fig. 2 - Kaplan-Meier survival curves by gender, educational level and kind of job. The analysis time is expressed in century month since the 50th birthday.



Source: own calculation on SHARE data (2005).

This result encourages to keep going with the analysis and to estimate the impact of this covariate on the transition to retirement also adding other variables in our analysis. The results of the first model we have estimate are shown in Table 4. As we hypothesize, the respondents' age has a highly significant impact on the risk to exit from the labour market. The more you are old, higher is the risk to experiment the event understudy if compared with the one of those who are younger than 55. In particular, if compared with the reference category, the relative risk is more than double for those who are from 55 to 59 years old, almost five times for the 60-64 years old workers and nearly eleven time higher for the last category considered. The second covariate we have taken into account is gender: as expected, women have a significant higher relative risk (+19%) to exit from the labour market then men. Let's move on the cohort effect: the risk to retire is higher for the younger respondents then for those who were born before 1930 (reference category). If having or not children or the marital status seem not affect the labour market behaviour, we can't conclude the same for the educational level. We use those who have low education as the reference

category of this covariate. The risk of those who have a medium educational level is approximately 30% lower than for those who have a low one. The difference is even bigger (60% less) if we consider the workers with a high education. Finally we have estimate the impact of the kind of job the worker do on the risk of exit from the labour market. It appears that being self-employed (instead of employed) brings down in a significant way the risk of experiment it (-53%).

Table 4 - Model 1: Relative risks and p-values of the transition to retirement[5].

Covariates	Relative Risks	p-value
Age		
50-55	1	-
55-60	2.23	0.000
60-65	4.80	0.000
65 and more	10.73	0.000
Gender		
Male	1	-
Female	1.19	0.009
Cohort		
<1930	1	-
1930-1944	1.36	0.000
≥1945	1.59	0.000
Number of Children		
None	1	-
One	0.97	0.841
Two or more	0.88	0.321
Educational level		
Low	1	-
Medium	0.72	0.000
High	0.39	0.000
Marital Status		
Single	0.97	0.837
Married	1	-

[5] For testing and model fit see Appendix (Table A2).

Divorced	1.00	0.999
Widowed	0.84	0.287
Kind of Job		
Employed	1	-
Self-Employed	0.47	0.000

Source: own calculation on SHARE data (2005).

We have seen that the marital status seems not to have a significant impact on the retirement transition. At the same time, can we still consider the exit from the labour market (especially for those who are in couple) as an individual decision? We have tested this hypothesis only with reference to the working couples[6]. We run separate models by gender in order to take into account explicitly the different role that men and women have into the family dynamics.

The results of the model for males respondents are shown in Table 5. Introducing the partner labour behaviour seems not to affect the impact of the variables on the transition understudy we estimate in Model 1 (Table 4) like age, educational level and kind of work. While on the one hand it appears that the differences between cohorts are not highly significant (if compared with the one used as reference category), on the other there are still no significantly differences between those who have child from those who are childless. Is important to point out that wives decision to exit from the labour market seems not to affect in a significant way the husbands behaviour (those whose wife is still working are the reference category). If the relative risk to experiment the event understudy is two time higher for those whose wife is retired from 1 to 2 years before, compared with the reference category, this difference is only weakly significant.

Table 5 - Model 2: Retirement relative risks for male workers, standardizes by selected covariates[7].

Covariates	Relative Risks	p-value
Age		
50-55	1	-

[6] We consider as working couples only those couples where both the partners were employed at age 50.
[7] For testing and model fit see Appendix (Table A3).

55-60	2.27	0.000
60-65	4.65	0.000
65 and more	11.84	0.000
Cohort		
<1930	1	-
1930-1944	1.39	0.124
≥1945	3.08	0.000
Number of Children		
None	1	-
One	0.78	0.414
Two or more	0.85	0.551
Educational level		
Low	1	-
Medium	0.55	0.007
High	0.14	0.000
Kind of Job		
Employed	1	-
Self-Employed	0.39	0.000
Partner behaviour		
Wife still works	1	-
Wife retired 0-1 year before	1.49	0.293
Wife retired 1-2 years before	2.01	0.065
Wife retired 2-6 years before	1.59	0.112
Wife retired more than 6 years before	2.11	0.116

Source: own calculation on SHARE data (2005).

It was ran the same model for female workers (Table 6). Firstly we can evaluate the impact of the covariates that were introduced also in Model 1: if higher ages are still associated with higher relative risks, the impact of other covariates seems weakened and, in same cases, not significant at all. The impact of the husband labour market behaviour, on the contrary (and unlike we saw for males), seems very important. The risk to retire is significantly higher for those with a retired husband than for those with a working partner (reference category). In particular, it seems that there is an inverse relation between the number of years since when the partner is retired and the relative risk that the wife have to exit from the labour market: in other

words the relative risk is higher if the husband is retired from 0 to 1 year before while afterward the relative risk slow down.

Table 6 - Model 3: Retirement relative risks for female workers, standardizes by selected covariates[8].

Covariates	Relative Risks	p-value
Age		
50-55	1	-
55-60	2.45	0.000
60-65	5.89	0.000
65 and more	9.09	0.000
Cohort		
<1930	1	-
1930-1944	1.21	0.505
≥1945	1.51	0.174
Number of Children		
None	1	-
One	0.81	0.516
Two or more	0.70	0.246
Educational level		
Low	1	-
Medium	0.93	0.537
High	0.48	0.044
Kind of Job		
Employed	1	-
Self-Employed	0.72	0.093
Partner behaviour		
Husband still works	1	-
Husband retired 0-1 year before	3.77	0.000
Husband retired 1-2 years before	2.07	0.002
Husband retired 2-6 years before	2.64	0.000
Husband retired more than 6 years before	1.53	0.091

Source: own calculation on SHARE data (2005).

[8] For testing and model fit see Appendix (Table A4).

5. Conclusions

One of the most relevant challenge of the next decades is encouraging the active ageing. Therefore a better understanding of the factors that lead to the withdraw from the labour market make assessing social and economic policies more effective. In this work the focus is on the labour behaviour of old workers in Italy.

The first model we have introduced stresses the significant difference in the relative risk to experiment the transition to retirement according to some relevant socio-economic and demographic covariates. Among those the impact of age as well as gender, kind of work and educational level seems very relevant.

The next two models that were shown take a deeper look on couples' retirement timing. This is an increasingly central topic since the female labour supply has been rising in recent years and the dual earner family model is becoming more widespread, even with some geographic differences. The results make possible to highlight two major points: the first is that retirement decision is partly the outcome of an individual choice (i.e. depending by individual characteristics) and partly the consequence of the partner labour behaviour. The second point is that in Italy the dependence between spouse retirement behaviour doesn't seem completely symmetric. Wives with a retired husband have a significantly higher risk to exit from the labour market than those with a still working partner, irrespective of the date of her retirement. Moreover this interaction is even stronger in the first years after her changing in labour condition. This is not true vice versa: only husbands whose wife is retired since one-two years have a (weakly) significant higher risk to retire than those with a working wives. Therefore we can conclude that for the cohorts understudy the male-chauvinist model seems to prevail. This is one of the labour supply models reviewed by Killingsworth (1983) for family members' labour supply and it states that wives make their labour decisions on the basis of their husbands' ones. On the contrary, the husbands' labour supply decisions depend by their economic consideration and family's incomes. Moreover, the interdependent careers of couples in the late part of their life-courses have consequences on policy assessing. In other words, the effect of labour strategies targeted for a specific group of workers can affect the labour behaviour of the other family members.

A last remark: the focus of this paper is mainly on the individual factors that have an impact on labour supply side and on the interrelation between partners labour behaviour. We didn't intentionally take into account that the retirement decision also depends on other exogenous factors as the labour demand of old workers, the access to the pension system, the trade-unions political power, the labour policies and the specific welfare regime.

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Appendix

Table A1: Log-rank tests for equality of survival functions by Gender, Educational level and Kind of Job.

Covariates	Event observed	Event expected	Chi^2	$Prob>Chi^2$
Gender				
Male	686	725.11	6.87	0.0088
Female	369	329.89		
Educational level				
Low	850	755.78	41.66	0.0000
Medium	143	151.04		
High	63	128.18		
Kind of Job				
Employed	781	624.36	101.84	0.0000
Self-Employed	274	430.64		

Source: own calculation on SHARE data (2005).

Table A2: Comparison between full and initial model: Model 1.

	Log-likelihood	Parameters	DF*	G*	$Prob>Chi^2$
Initial model	-1656	0	-	-	-
Final model	-1347	14	14	619	0.0000

* = comparison to previous model
Source: own calculation on SHARE data (2005).

Table A3: Comparison between full and initial model: Model 2.

	Log-likelihood	Parameters	DF*	G*	$Prob>Chi^2$
Initial model	-259	0	-	-	-
Final model	-195	14	14	128	0,0000

* = comparison to previous model
Source: own calculation on SHARE data (2005).

Table A4: Comparison between full and initial model: Model 3.

	Log-likelihood	Parameters	DF*	G*	$Prob>Chi^2$
Initial model	-232	0	-	-	-
Final model	-175	14	14	114	0,0000

* = comparison to previous model
Source: own calculation on SHARE data (2005).