Public Disclosure Authorized

Public Disclosure Authorized

WPS7555

Policy Research Working Paper 7555

Greying the Budget

Ageing and Preferences over Public Policies

Luiz de Mello
Simone Schotte
Erwin R. Tiongson
Hernan Winkler

WORLD BANK GROUP
Europe and Central Asia Region
Office of the Chief Economist
February 2016

Policy Research Working Paper 7555

Abstract

This paper looks at how individual preferences for the allocation of government spending change along the life cycle. Using the Life in Transition Survey II for 34 countries in Europe and Central Asia, the study finds that older individuals are less likely to support a rise in government outlays on education and more likely to support increases in spending on pensions. These results are very similar across countries, and they do not change when using alternative model specifications, estimation methods, and data sources. Using repeated cross-sections, the analysis controls for cohort effects and confirms the main results. The findings are consistent with a body of literature arguing that conflict across generations over the allocation of public expenditures may intensify in ageing economies.

This paper is a product of the Office of the Chief Economist, Europe and Central Asia Region. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at hwinkler@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Produced by the Research Support Team

Greying the Budget: Ageing and Preferences over Public Policies

Luiz de Mello, OECD

Simone Schotte, German Institute for Global and Area Studies

Erwin R. Tiongson, Georgetown University

Hernan Winkler, World Bank

Keywords: Ageing, Public Spending, Cohort Effects

JEL Classification: H3, H5, J14

The views reported in this paper are the authors' own and do not necessary reflect those of the Organizations they are affiliated with or their member countries. Two anonymous referees provided many useful comments.
Luiz de Mello: Luiz.DEMELLO@oecd.org
Simone Schotte: simone.schotte@giga-hamburg.de
Erwin Tiongson: ert@georgetown.edu
Hernan Winkler: hwinkler@worldbank.org

1. Introduction

The countries of Europe and Central Asia are ageing rapidly. People aged at least 65 years now account for 12 percent of the population in those countries on average, against 6 percent in 1950, and this share is expected to reach 21 percent in 2050 (Bussolo et al, 2015). Those countries are early starters in a process that will eventually affect most parts of the world as they move through their demographic transitions. Population ageing has many implications for policy, for instance in terms of government expenditure, because individual preferences are translated through the political process into actual changes in the basket of public goods and services provided by government. To shed light on this issue, we investigate empirically whether individual preferences over policy change over the life cycle.

The median voter theorem, as applied to the analysis of income redistribution and fiscal policy, provides useful guidance on this process by comparing how the benefits of provision, as well as the costs, are distributed among individuals.[1] The theory is particularly useful in linking the distribution of income in a society to the level of government spending on redistributive programs, such as transfers to households, while controlling for individual characteristics that shape preferences over government provision (de Mello and Tiongson, 2006; Keely, and Tan, 2008). The idea is that as societies grow unequal, the gap between mean and median incomes rises, creating an incentive for the voter with median income, who sets the agenda under majority voting, to push for higher government spending on redistributive programs. Under progressive taxation, the median voter benefits from an increment in redistributive spending, while its costs are borne by wealthier taxpayers. Empirical evidence indeed underscores the relevance of the median voter, as opposed to voters with incomes in other segments of the distribution, for describing local public service provision (Brunner and Ross, 2010).[2]

The theory also sheds light on how individual preferences over policy may change with age, given that the benefits and costs of provision of different services are likely to vary over the life cycle. For example, older individuals are the main beneficiaries of increases in government spending on pensions, whose

[1] See Larcinese (2007) for a brief review of different applications of the median voter theorem, including in the analysis of income redistribution and fiscal policy. See also Meltzer and Richard (1981) for an early example of the use of the median voter theorem to analyze the size of government.

[2] Other non-income factors also matter, such as trust in government and ideology (Rudolph and Evans, 2005), gender and educational attainment, and labour market status, among others. For a survey, see for instance Alesina et al (2011). Stegmueller (2013) provides evidence that religious individuals are less likely to vote for more redistribution.

provision costs are borne by the younger generation in a pay-as-you-go system.[3] The elderly are also likely to support an increase in government spending on health care, especially when the costs of provision can be financed through general taxation. On the other hand, support for higher spending on primary or secondary education is often stronger among the younger generations, who benefit from provision for their children. Cross-country evidence indeed highlights the importance of age as a key determinant of preferences over government provision (Busemeyer, Goerres and Weschle, 2009).

While it is difficult to assess the age-specific benefits and costs of different government programs, in the case of education, for example, a rising share of elders in the population can be argued to result in lower school funding and falling quality of education services - a hypothesis known as the "grey peril". Studies based on median voter theory suggest that ageing creates an income effect that leads to lower spending on education but which is offset almost entirely by a price effect that militates in favor of higher spending per student (Fletcher and Kenny, 2008). Taken at face value, the empirical evidence provides little solace to policy makers who expect higher government spending on age-related issues to be compensated at least in part by lower spending on education as a result of population ageing.

Despite the usefulness of the median voter theorem as a benchmark, the literature also suggests that motivation other than self-interest may attenuate or amplify the impact of ageing on preferences over policy. As explained more fully below, preferences may be driven by altruism, the externalities produced by selected expenditure programs, and other factors. Furthermore, the link between ageing and preferences is mediated by electoral turnout; in other words, the preferences of older voters may be different from the preferences of non-voters.[4] The net impact of ageing on expenditure preferences is therefore an empirical question.

In this paper, we use data from the Life in Transition Survey II (LITS II), which was collected by the European Bank for Reconstruction and Development and the World Bank in late 2010. LITS II covers almost 39,000 households in 34 countries in Europe and the former Soviet Union. The data set provides answers to questions on individuals' attitudes to policy, gauged in terms of their preferences for allocating government spending to a variety of programs, including health care, education, pensions and assistance to the poor, as well as standard individual characteristics that are known to affect

[3] See Jaime-Castillo (2013) for evidence on attitudes and determinants of reform of pension systems in Europe based on Eurobarometer data.

[4] Although the relationship between turnout and redistribution has been previously studied (Larcinese, 2007), to the best of our knowledge this is the first attempt to link ageing, expenditure preferences and electoral turnout.

preferences. We do not test the median voter theory per se but are interested in knowing how preferences over government spending on health care, education, pensions and transfers to poor households, which together account for the bulk of provision in advanced economies, change across age groups while controlling for other individual characteristics. Indeed, race, demographics, socio-economic characteristics and gender are important determinants of attitudes towards redistribution and government spending on social welfare (Keely and Tan, 2008).

One of our main findings is that there is indeed a strong correlation between a person's age and his or her preferences over policy, which is in turn reflected in how governments allocate scarce budgetary resources to competing programs. In particular, and in line with previous literature, we find that older individuals have stronger preference for allocating additional government spending to health care and pensions, whereas younger people tend to support additional spending on education. These findings are also fairly homogeneous among the countries covered in LITS II.

Second, the effect of ageing on preferences over policy is shaped by participation in the political process. As before, we find that older people are less likely than their younger counterparts to support an increase in government spending on education. In addition, older people who do not vote are even less supportive of raising spending on education than older people who do vote. The same is true for pensions: the positive relationship between age and support for increasing spending on pensions is less pronounced among people who vote than among non-voters. In other words, preferences over policy tend to be more nuanced among voters than among non-voters of different age groups.

Third, these findings are fairly homogeneous across countries and do not seem to be solely driven by cohort effects, a hypothesis that we tested using annual waves of Eurobarometer data between 2004 and 2011. In other words, the fact that older people are more (less) likely to support increases in spending on pensions (education) is not driven by a generational change, but by individuals changing their preferences as they grow older. In contrast, the fact that preferences over spending on health care or housing vary by age seems to be highly driven by cohort effects rather than along the life cycle.

The paper is organized as follows. The next section reviews the main findings in the literature on the associations between age and preferences over government spending. Section 3 describes the data set, the estimation strategy, the main empirical findings and robustness checks. Section 4 concludes.

2. A review of the Literature

Population ageing could bring about a dramatic change in the level and composition of government spending. If the elderly have selfish preferences they are likely to support an increase in government pensions financed by their younger peers in a pay-as-you-go system. Likewise, since a large share of health care consumption occurs during the last years of life (see, for example, Dormont, Grignon and Huber, 2006; de Mello and Tiongson, 2009), the elderly are also likely to support increases in government spending on health and long-term care, especially when the additional costs can be financed through general taxation. On the other hand, younger people tend to support increases in government spending on primary and secondary education, as well as on climate change adaptation and mitigation programs, since they are more likely than the older generations to reap the expected benefits of these policies.

Despite the usefulness of the median voter theory as a benchmark, self-interest may not be the key driver of preferences over policy. For example, the elderly may have altruistic preferences towards the younger and/or future generations. They may also benefit from externalities associated with higher spending on programs that benefit their younger peers (for instance, if higher spending on education reduces crime rates and raises real estate values). Similarly, as noted by Fullerton and Dixon (2010), the middle-aged may support increases in government spending on old-age pensions to help ease their burden of caring for their parents. In addition, the median voter theory assumes one-dimensionality, whereas the policy space may be multi-dimensional and involve trade-offs among several programs, as is the case in this paper.

There is a large body of literature on the effects of age on preferences towards the allocation of government spending. Cross-country studies tend to show that population ageing is *not* associated with rising government expenditure on pensions and health care. For example, Breyer and Craig (1997) and Tepe and Vanhuysse (2010) find that the median age is positively but not significantly correlated with the level of benefits per pensioner. Using data covering a larger set of countries and time horizons, Hollanders and Koster (2011) also find that ageing is not associated with higher expenditure on pensions and health care. However, within countries, the results are mixed. Evidence for the United States shows that a higher share of elderly residents in a state or school district is indeed associated with lower spending on education (see Poterba, 1997; Fletcher and Kenny, 2008; and Harris, Evans and Schwab, 2011). In contrast, a larger share of elderly residents at the district level in the Republic of Korea is associated with higher school subsidies, which may be due to the elderly seeking to improve property

values (Go, 2015). In Norway, altruism plays a role at the local government level but mostly by increasing support for education among the middle-aged who have children, rather than through stronger support for old-age care among the middle aged who have elderly parents (Rattsø and Sørensen, 2010).

Our paper is closer in nature to a second strand of literature that focuses on subjective preferences for the allocation of public spending, rather than on actual outcomes.[5] Busemeyer, Goerres and Weschle (2009) provide a thorough review of the literature and report mixed empirical findings on the effects of ageing on overall welfare spending, probably as a result of aggregation effects. The authors focus on OECD countries and contribute to the literature by analyzing different components of welfare spending and by focusing on the total population, rather than just the labor force. They find significant differences in preferences for redistribution across age groups, particularly for education and pensions, although the strength of these age-related differences varies across countries.

The literature also highlights the importance of cohort, in addition to time, effects. Fullerton and Dixon (2010) use data for the United States and look at three spending categories (health care, education and social security) over a long time span (1984–2008). They find evidence in support of the "grey peril" hypothesis for education, although their results are mixed for pensions and health care. Our paper is closely related to Sorensen (2013), who uses repeated cross-sections for 22 countries and finds that when time and cohort effects are taken into account, elderly people prefer lower (higher) spending on education (health care and pensions). These life-cycle effects vary considerably across countries, but they are generally quite small. One limitation of the data used by Sorensen (2013) is that the alternatives available in the questionnaire for additional government expenditure are not mutually exclusive. In other words, individuals can choose to increase or decrease expenditure in all categories. In contrast, in a more realistic scenario individuals would be faced with trade-offs, so that increasing expenditure in one category would require offsets in others.

Against this background, our paper makes three contributions to the literature. First, it tests the "grey peril" hypothesis for a larger set of countries. Using data from LITS II, we use comparable data for 34 economies, mostly developing ones. This is important, as most papers in the literature focus on advanced economies. Second, even though Sorensen (2013) allows for age and cohort effects, we use

[5] There is of course a large literature showing how individual preferences do not necessarily translate into actual policy. See for example Gilens and Page (2015) for a recent example.

two different surveys where individuals are asked to rank mutually exclusive alternatives and are therefore faced with explicit policy trade-offs.[6] Third, we account for participation in the political process as a mediating factor in the relationship between ageing and expenditure preferences. Larcinese (2007) provides compelling evidence that voter turnout affects redistributive preferences overall, but the possible effects of ageing on spending preferences remains an empirical question.

3. Data and Empirical Analysis

3.1. The Data Set and Descriptive Statistics

This paper uses data from the Life in Transition Survey II (LITS II), collected by the European Bank for Reconstruction and Development and the World Bank in late 2010. Almost 39,000 respondents in 34 countries were asked questions about their preferences over government policy, their subjective well-being and their reactions to economic and political change. The Survey covers countries in Eastern Europe and the former Soviet Union, as well as in Western Europe. Table A1 in the Appendix lists the countries included in the Survey and the number of observations in each country.

We measure individual preferences over policy on the basis of responses to the following question: "*In your opinion, which of these fields should be the first and second priorities for extra government spending? Education, Health care, Housing, Pensions, Assisting the Poor, Environment (including water quality), Public infrastructure, Other."* We focus on the policy areas that have been selected as the first or second-highest priority for government intervention.

Preliminary analysis of the data shows how preferences over policy change with age and across countries. First, health care is the top policy priority area for LITS II respondents, and education, pensions and assistance to the poor are also listed as important priorities (Table 1). These four policy categories will therefore be the focus of our analysis. Second, support for additional government spending on education is high, but it falls with age, where the converse is true for pensions (Figure 1). Third, support for assisting the poor is consistently higher among countries in the Balkans than in the other regions covered in LITS II. Finally, increasing government expenditures for environmental purposes receives the least support in every region, although it is slightly higher among countries in Western Europe.

[6] This is a significant improvement over the existing literature though of course it still does not provide a list of all possible spending programs, including defense.

These findings confirm a strong correlation between changes in the demographic structure of the population and preferences over policy. But, if voting patterns also vary with age, the effect of ageing on the policy agenda might be strengthened if older people are also more likely to vote. The LITS II data set allows us to shed light on this issue too: it appears that the share of voters who participated in the last election, including at the local, parliamentary or presidential levels, increases with age and plateaus at around age 60 (Figure 2). Voting patterns are very similar across regions, although the share of voters seems to be slightly lower among the new member States of the European Union.

3.2. Econometric Model

The preliminary evidence analyzed above suggests that support for increasing expenditure in certain areas changes with age. However, this pattern could be driven by ageing itself or by other factors that also change throughout the life cycle. For example, if older people earn more than younger people, they might be more likely to use private than public services and may therefore be less likely to support increasing public spending in areas that will not benefit them directly. Under progressive taxation, older people may also be unlikely to support the allocation of additional spending to areas from which they would derive no or limited benefit, while also being likely to bear the brunt of the additional tax burden needed to finance additional spending. To deal with these issues, we estimate the effect of ageing on preferences over policy while controlling for other observable individual characteristics.

We assume that individual *i* supports the allocation of additional government spending to area *S* if the latent variable y^* is greater than zero:

$$\mathrm{S_i} = 1 \;\; \text{if} \;\; \mathrm{y_i^*} = \alpha_0 + \sum_a^A \alpha_a age_{a,i} \;\; + \sum_k^K \beta_k X_{k,i} + \varepsilon_i > 0$$

Latent variable y^* can be thought of as the level of utility that the individual derives from supporting a given policy, which depends on his or her age, a set of individual traits X_i and an error term ε_i. If ε_i is normally distributed, then the probability of supporting S can be estimated using the following Probit model:

$$\mathrm{P}\left(\mathrm{S_i} = 1 \middle| \mathrm{age_{a,i}}, \mathrm{X_i}\right) = \Phi\left(\alpha_0 + \sum_a^A \alpha_a age_{a,i} \;\; + \sum_k^K \beta_k X_{k,i}\right) \qquad (1)$$

The set of covariates X_i includes household per capita consumption, gender, marital status, number of children, educational dummy variables, employment status and country dummy variables. The *age*

dummy variables are defined for the following age groups: 25 to 34 years, 35 to 44 years, 45 to 54 years and older than 54 years (the omitted category is 18 to 24 years). Our main interest is on the coefficient associated with the oldest age group. We chose 54 years as the upper age bound for this group so as to have a high enough number of observations in the oldest age bracket to obtain precise estimates.[7]

Inclusion of country effects in the estimating equation is particularly important. On the basis of the raw data, there appears to be some homogeneity in the effects of ageing on preferences over policy across countries (see Figure 1). However, specific features of government programs, such as entitlement criteria and benefit generosity, are likely to vary across countries and affect the incidence of the associated benefits and costs of provision, which affect individual preferences in different countries.

3.3. Empirical Results

The estimated coefficients of equation (1), reported in Table 2, confirm the negative (positive) correlation between age and support for allocating additional government spending to education (health care and pensions). More specifically, the first column indicates that individuals older than 54 years are 18.3 percent less likely than their peers younger than 25 years to claim that education is a priority for additional government expenditure. The fifth column shows that individuals in the oldest age bracket are 30 percent more likely than the youngest group to report that pensions should be a priority for additional government expenditure. The empirical analysis also shows that older people (those in the highest age group) are 3.7 percent less likely to support an increase in government assistance to the poor when compared to their peers in the youngest age group.

The sign of the estimated coefficient on age is robust to the inclusion of covariates, although its magnitude is slightly lower – except for *Assisting the Poor*, whose magnitude becomes larger – suggesting that life cycle factors, such as number of children and marital status, as well as educational attainment, employment status and income (measured by consumption), are indeed correlated with policy preferences. For example, individuals with children are more likely to support an increase in public spending on education and less likely to support increases in spending on health care and pensions. More educated people are more supportive of increases in spending on education and health care and less supportive of increases in spending on pensions and assistance to the poor. Paid workers are more likely to support higher spending on education and less likely to support increasing

[7] Table A1 in the Appendix displays the number of individuals older than 54 and older than 64 in LITS II.

expenditure on pensions or assistance to the poor. Richer individuals are more likely to support hiking education spending but are less likely to support increasing expenditure on assistance to the poor. Individuals affiliated with a political party are more likely to support increasing expenditure on health care and lowering expenditure on pensions. Former members of the Communist Party are 20 percent more likely than others to support additional spending on health care. Membership in a religious organization is not correlated with policy preferences.

These findings are fairly homogenous across the countries covered in LITS II. Figure 3 shows the estimated coefficients associated with the age dummy variable "Older than 54 years". In every country included in the sample (except for France), older individuals are less (more) likely to support increases in government expenditure on education (pensions). Accordingly, older individuals are more (less) likely to support increases in government spending on health care (assisting the poor) in almost every country, but the coefficients are mostly not statistically different from zero.

Table A2 shows the estimation results using a different definition of the dependent variable. In particular, we consider only the first (instead of the first and second) priority for government expenditure. The results shows that even though the point estimates are different in some cases, the signs and magnitudes of the age coefficients are very similar to those reported in Table 2. In other words, the results are not sensitive to this alternative definition of the dependent variable.

Based on the link between ageing and preferences over policy, the next step is to assess the potential for translating these preferences into actual policy through participation of different age groups in the political process. Because participation in elections tends to increase with age, as seems to be the case on the basis of the raw data, the preferences of older individuals are more likely to be reflected in policy making than those of their younger peers. To shed more light on this possibility, we interacted the age dummy with an indicator of participation in elections. The indicator is defined as a 0-1 variable to identify the individuals surveyed in LITS II who have voted in the latest election.

The results, reported in Table 3, confirm the previous findings but also suggest that individual preferences over policy are more similar across age groups for individuals who vote than for those who do not. As before, the estimated coefficients show that older people are less likely to support increasing government spending on education. However, older people who do not vote are even less supportive of raising education expenditure than older people who do vote. The same pattern holds for pensions: the positive relationship between ageing and support for increasing spending on pensions is less

pronounced among people who vote than among non-voters. In other words, while an ageing society might be less (more) supportive of increasing government expenditures on education (pensions), these changes in preferences are smaller among those who actually participate in the electoral process.

Table 4 displays the average characteristics of voters and non-voters by age to shed light on why voters display more similar preferences across age groups than non-voters. First, the results show that voters are more likely to have children and to be married than non-voters in each age group. They are also more likely to be college graduates and to be employed. Finally, voters are more likely than non-voters to be affiliated with religious and political organizations and to be former members of communist parties. On the basis of these characteristics, it could be argued that because they are better educated and more likely to be affiliated with religious and political organizations, voters have preferences over policy that are better informed and more strongly shaped by societal rather than subjective considerations than non-voters, regardless of their age.[8] Purely life cycle-related considerations may therefore play a less prominent role in shaping preferences over policy among voters than among non-voters.

Robustness Check 1: Correlation across Policies

Preferences over government expenditure are likely to be correlated across policy areas, and therefore so are the error terms across the discrete choice models. If this is indeed the case, estimating a multi-equation model that explicitly takes this correlation into account would improve the efficiency of the estimates. To be sure, we estimated a bivariate Probit model incorporating preferences over increases in government expenditure on education and pensions. Table 5 reports the empirical findings, as well as the parameter estimates of standard Probit equations for both education and pensions. The estimated correlation coefficient is -0.66 and statistically different from zero, suggesting that preferences are indeed correlated. However, this does not seem to affect the coefficients associated with age, which are very similar across model specifications and show that older individuals are less (more) likely to support raising expenditure on education (pensions).

Robustness Check 2: Cohort Effects

[8] This is consistent with the literature on turnout over the last three decades indicating that voters tend to be richer and more educated. See Larcinese (2007) for empirical evidence, as well as the early findings of Wolfinger and Rosenstone (1980) and Lijphart (1997). In fact, both older and younger voters alike are richer than their non-voter counterparts.

Preferences over policy might change not only with age but also across cohorts. For example, if younger generations are more supportive of increases in government spending on the environment, they may also be more supportive of these policies when they grow old than the current generation of old individuals. In other words, the age patterns that emerge in a cross-sectional survey could be a mix of both life cycle effects and preferences changing across generations.

Empirical evidence underscores the importance of controlling for age or cohort effects. To our knowledge, the only paper that attempts to disentangle age, cohort and time effects in attitudes towards public spending priorities in European economies is Sorensen (2013). Using data from the International Social Survey Program (ISSP) – which comprises four repeated cross-sectional sample surveys for the years 1985, 1990, 1996 and 2006 covering 22 countries, 16 of them in Europe – the author finds that people do shift their public spending priorities over the life cycle, but not by as much as cross-sectional age comparisons would suggest. In particular, older people tend to be less (more) supportive of an increase (decrease) of government expenditure on education (pensions) than their younger peers. However, controlling for cohort effects significantly reduces, but not entirely eliminates, these age patterns. As mentioned in the literature review section above, one limitation of the data used by Sorensen (2013) is that the alternatives available in the questionnaire for additional government expenditure are not mutually exclusive.

To disentangle cohorts and age effects we need a panel data set covering a sufficiently long time period or a pseudo-panel of repeated cross-sectional data that would allow us to follow the same individuals or group of individuals over time. As far as we know, the best data set to meet these requirements is Eurobarometer, from which we use repeated cross-sections with annual frequency between 2004 and 2013 for 27 European countries.[9] An advantage of this data set is that it allows us to study perceptions towards a broader set of issues. The Eurobarometer survey includes the question "*What do you think are the two most important issues facing (OUR COUNTRY) at the moment?*", and respondents can choose within a set of 16 mutually exclusive categories. Figure 4 shows the average results for the top choices,[10] which includes general contextual considerations, such as unemployment, the economic situation and prices, followed by more specific subject areas, such as crime, health care, pensions and immigration. While this question does not specifically try to gauge preferences regarding the allocation

[9] The group of countries includes Netherlands, Germany, Italy, Luxembourg, Denmark, Ireland, Great Britain, Greece, Spain, Portugal, Finland, Sweden, Austria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, Bulgaria, Romania, Turkey and Croatia.
[10] Other categories include Public Transportation, Defense, Foreign Affairs, Others, Don't know.

of government expenditure, it does provide a snapshot of the main concerns among the residents of Europe.

We stack the surveys for all years and countries and estimate the following specification of equation (1):

$$\mathrm{P}\left(\mathrm{S_{i,t}}=1\middle|\mathrm{age_{a,i,t}}, cohort_{c,i,t}, year_{y,i,t}, \mathrm{X_{I,t}}\right) = \Phi\left(\alpha_0 + \sum_a^A \alpha_a age_{a,i,\mathrm{t}} + \sum_c^C \beta_c cohort_{c,i,\mathrm{t}} + \sum_y^Y \gamma_y year_{y,i,\mathrm{t}} + \sum_k^K \beta_k X_{k,i,\mathrm{t}}\right) \quad (2)$$

In addition to the variables of equation (1), we control for cohort of birth and survey year. We consider twelve 5-year-of-birth groups, starting with those born between 1925 and 1929, and moving on to those born between 1980 and 1984. There is a large literature regarding the identification of age, cohort and time effects (see Schulhofer-Wohl, 2013; and McKenzie, 2006). A well-known challenge in this literature is that such effects cannot be identified without making specific assumptions, since they are perfectly collinear. We follow Deaton and Paxson (1994) and implement the normalization of time effects by assuming that trends are only captured by cohort effects, so that the time effects are orthogonal to a time trend.

Table 6 displays the estimates of equation (2) without controlling for cohort effects, and Table 7 displays the estimates including cohort dummy variables. To facilitate the description of the results, Figure 5 shows the estimated coefficients of a specification that introduces age and cohorts in a linear form. The results are consistent with those reported in Table 6 and Table 7. The left panel shows that, consistent with the findings that emerged from using the cross-sectional data of LITS II, older people are more likely to consider pensions and health care as policy priorities, while being less likely to consider education as a top priority. The results also suggest that fighting crime is another important concern for the older residents of Europe. Finally, inflation, taxation, housing and unemployment seem less of a concern among older individuals.

The right panel of Figure 5 shows that, once we control for year of birth, the estimates become less precise, possibly due to the strong correlation between age and cohort. However, the age patterns regarding preferences for education and pensions do not change and remain statistically significant; that is, individuals are more (less) likely to consider pensions (education) as a policy priority as they become older, and this is not driven by a cohort effect. Fighting crime also becomes a more important policy concern throughout the life cycle of Europeans. It is important to keep in mind that these estimates might be affected by an attenuation bias. However, since most countries in the sample are developed or

middle-income economies, information on age and year of birth is likely to be reported precisely in the survey.

The fact that controlling for cohort effects reduces the magnitude of some of the age effects should not be surprising. Some of the cohorts included in the analysis were marked by important historical events in the region, such as economic crises, the Second World War, post-war reconstruction, the emergence of the Welfare State, and the rise and fall of socialism in Eastern Europe, which may have shaped respondents' preferences regarding the role of the government in society.

4. Conclusions

This paper tests empirically the relationship between age and preferences over the allocation of government expenditure. Using data for several countries in Europe and the former socialist economies, we find that older individuals are less likely to consider education, assisting the poor and protecting the environment as priorities for additional government spending. In contrast, they are more likely to support the allocation of additional government resources to pensions and health care as key priorities. These finding are quite similar across countries. Participation in elections affects the link between ageing and preferences to some extent, as preferences over policy tend to be more nuanced among voters than among non-voters.

Our results are robust to controlling for other factors that change over the life cycle and to accounting for the correlation between policy alternatives. Using a different data set, we find consistent results and show that the main findings do not seem to be driven by cohort or generational effects. To our knowledge, our paper is the first to provide evidence of the "grey peril" effect for a large group of developed and middle-income economies. In addition, we build on Sorensen (2013) and disentangle age and cohort effects by using a measure of policy preferences that takes trade-offs into account.

According to our results, ageing societies are more likely to choose lower levels of education spending. The effect of this change on spending per pupil is not clear, since the number of students is expected to decrease as the population ages. However, the fact that ageing societies may choose higher levels of pension spending may create fiscal pressures in countries with pay-as-you-go systems. As a result, our results highlight the importance of reforming pension systems. Our findings also highlight that there is some degree of heterogeneity across countries in the relationship between age and policy preferences. An investigation of the drivers of these differences is an important area for future research.

Bibliography

Alesina, A., P. Giuliano, A. Bisin and J. Benhabib (2011), "Preferences for Redistribution", in J. Benhabib, A. Bisin and M.O. Jackson (Eds.), *Handbook of Social Economics* (North Holland), pp. 93-132.

Berkman, M.B. and E. Plutzer (2004), "Gray Peril or Loyal Support? The Effects of the Elderly on Educational Expenditures", *Social Science Quarterly*, Vol. 85, pp. 1178-92.

Breyer, F. and B. Craig (1997), "Voting on Social Security: Evidence from OECD Countries", *European Journal of Political Economy,* Vol. 13, pp. 705-24.

Brunner, E.J. and S.L. Ross (2010), "Is the Median Voter Decisive? Evidence from Referenda Voting Patterns", *Journal of Public Economics*, Vol. 94, pp. 898–910.

Busemeyer, M.R., A. Goerres and S. Weschle (2009), "Attitudes towards Redistributive Spending in an Era of Demographic Ageing: The Rival Pressures from Age and Income in 14 OECD Countries", *Journal of European Social Policy*, Vol. 19, pp. 195-212.

Bussolo, M., J. Koettl and E. Sinnott (2015), *Golden Ageing: Prospects for Healthy, Active, and Prosperous Ageing in Europe and Central Asia* (World Bank).

Deaton, A.S. and C. Paxson (1994), "Saving, Growth, and Ageing in Taiwan", *Studies in the Economics of Ageing* (University of Chicago Press), pp. 331-62.

de Mello, L. and E. Tiongson (2006), "Income Inequality and Redistributive Government Spending", *Public Finance Review*, Vol. 34, pp. 282-305.

de Mello, L. and E. Tiongson (2009), "What Is the Value of (My and My Family's) Good Health?", *Kyklos*, Vol. 62, pp. 594-610.

Dormont, B., M. Grignon and H. Huber (2006), "Health Expenditure Growth: Reassessing the Threat of Ageing", *Health Economics*, Vol. 15, pp. 947-63.

Fletcher, F. and L.W. Kenny (2008), "The Influence of the Elderly on School Spending in a Median Voter Framework", *Education Finance and Policy*, pp. 283-315.

Fullerton, A.S. and J.C. Dixon (2010), "Generational Conflict or Methodological Artifact? Reconsidering the Relationship between Age and Policy Attitudes in the US, 1984–2008", *Public Opinion Quarterly*, Vol. 74, pp. 643-73.

Gilens, M. and B.I. Page (2015), "Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens," *Perspective on Politics*, Vol. 12, No. 3, pp. 564-581.

Go, S. (2015), "The Effect of Population Ageing on Local School Subsidies in Korea", *The Korean Economic Review*, Volume 31, Number 1, Summer, pp. 121-144.

Harris, A.R., W.N. Evans and R.M. Schwab (2001), "Education Spending in an Ageing America", *Journal of Public Economics*, Vol. 81, pp. 449-72.

Hollanders, D. and F. Koster (2011), "The Graying of the Median Voter Ageing and the Politics of the Welfare State in OECD Countries", *Netspar Discussion Paper*, No. 01/2011-003.

Jaime-Castillo, A.M. (2013), "Public Opinion and the Reform of the Pension Systems in Europe: The Influence of Solidarity Principles", *Journal of European Social Policy*, Vol. 23, pp. 390-405.

Keely, L.C. and C.M. Tan (2008), "Understanding Preferences for Income Redistribution", *Journal of Public Economics*, Vol. 92, pp. 944-61.

Larcinese, V. (2007), "Voting over Redistribution and the Size of the Welfare State: The Role of Turnout", *Political Studies*, Vol. 55, pp. 568-585.

Lijphart, A. (1997), "Unequal Participation:Democracy's Unresolved Dilemma", *American Political Science Review*, 91 (1), 1–14.

McKenzie, D.J. (2006), "Disentangling Age, Cohort and Time Effects in the Additive Model", *Oxford Bulletin of Economics and Statistics*, Vol. 68, pp. 473-95.

Poterba, J.M. (1998), "Demographic Change, Intergenerational Linkages, and Public Education", *American Economic Review*, Vol. 88, pp. 315-20.

Rattsø, J. and R.J. Sørensen (2010), "Grey power and public budgets: Family altruism helps children, but not the elderly", *European Journal of Political Economy*, Vol. 26, pp. 222–234.

Rudolph, T.J. and J. Evans (2005), "Political Trust, Ideology, and Public Support for Government Spending", *American Journal of Political Science*, Vol. 49, pp. 660-71.

Schulhofer-Wohl, S. (2013), "The Age-Time-Cohort Problem and the Identification of Structural Parameters in Life-Cycle Models", *Unpublished manuscript*.

Sørensen, R.J. (2013), "Does Ageing Affect Preferences for Welfare Spending? A study of Peoples' Spending Preferences in 22 countries, 1985–2006", *European Journal of Political Economy*, Vol. 29, pp. 259-71.

Stegmueller, D. (2013), "Religion and Redistributive Voting in Western Europe", *The Journal of Politics*, Vol. 75, No. 4, October 2013, pp. 1064–1076.

Tepe, M. and P. Vanhuysse (2010), "Elderly Bias, New Social Risks and Social Spending: Change and Timing in Eight Programmes across Four Worlds of Welfare, 1980-2003", *Journal of European Social Policy*, Vol. 20, pp. 217-34.

Wolfinger, R. E. and Rosenstone, S. J. (1980), *Who Votes?* (New Haven: Yale University Press).

Table 1. Attitudes Towards Policy Priorities in Europe and Central Asia

In your opinion, which of these fields should be the first and second priorities for extra government spending?	
Education	44.1%
Healthcare	66.0%
Housing	18.0%
Pensions	27.9%
Assisting the Poor	26.7%
Environment	8.1%
Public Infrastructures	7.3%
Observations	37,698

Sample includes all countries in LITS II. Sampling weights reflect country size

Table 2. Marginal Effects on the Probability of Supporting an Increase in Government Expenditures

Probit regression: Marginal Effects

	Which should be the first or second priority for extra government spending?							
	Education		Healthcare		Pensions		Assisting the Poor	
Age of Respondent (1)								
25-34	-0.0349**	-0.0801***	0.0643***	0.0568***	-0.0107	0.0245	-0.0112	0.0052
	(0.0162)	(0.0172)	(0.0145)	(0.0155)	(0.0160)	(0.0179)	(0.0140)	(0.0152)
35-44	-0.0258	-0.0743***	0.0773***	0.0691***	0.0331*	0.0743***	-0.0089	0.0066
	(0.0166)	(0.0184)	(0.0146)	(0.0164)	(0.0171)	(0.0201)	(0.0143)	(0.0164)
45-54	-0.0826***	-0.1004***	0.0772***	0.0639***	0.1334***	0.1459***	-0.0054	0.0111
	(0.0165)	(0.0185)	(0.0149)	(0.0168)	(0.0186)	(0.0211)	(0.0148)	(0.0170)
Older than 54	-0.1831***	-0.1376***	0.1057***	0.1001***	0.3057***	0.2506***	-0.0373***	-0.0530***
	(0.0150)	(0.0185)	(0.0141)	(0.0168)	(0.0163)	(0.0193)	(0.0136)	(0.0159)
Children		0.0368***		-0.0111**		-0.0328***		0.0067
		(0.0057)		(0.0052)		(0.0053)		(0.0047)
Selected respondent is female		-0.0116		0.0447***		0.0282***		0.0098
		(0.0094)		(0.0088)		(0.0083)		(0.0080)
Secondary education		0.1386***		0.0557***		-0.0826***		-0.0664***
		(0.0161)		(0.0144)		(0.0128)		(0.0129)
Tertiary education		0.2834***		0.0619***		-0.1703***		-0.1344***
		(0.0166)		(0.0154)		(0.0132)		(0.0134)
Work for income		0.0333***		0.0066		-0.0476***		-0.0316***
		(0.0104)		(0.0099)		(0.0093)		(0.0091)
Log of per capita consumption, PPP		0.0074*		-0.0021		-0.0044		-0.0126***
		(0.0042)		(0.0038)		(0.0035)		(0.0033)
Member of Religious Organization		0.0007		-0.0339***		-0.0018		-0.0114
		(0.0120)		(0.0115)		(0.0106)		(0.0103)
Affiliated to Political Party		0.0229		0.0025		-0.0383*		0.0089
		(0.0231)		(0.0218)		(0.0197)		(0.0212)
Former member of Communist Party		-0.0344		-0.0192		0.0325		0.0020
		(0.0238)		(0.0233)		(0.0210)		(0.0217)
Observations		37,197		37,306		37,698		37,211
Pseudo R2		0.0811		0.0210		0.0176		0.0372

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Controls include country dummy variables

Table 3. Marginal Effects on the Probability of Supporting an Increase in Government Expenditures, including interactions with voting behavior.

Probit regression: Marginal Effects

	Which should be the first or second priority for extra government spending?			
	Education	Healthcare	Pensions	Assisting the Poor
Age of Respondent (1)				
25-34	-0.1107***	0.0659**	0.0423	0.0392
	(0.0290)	(0.0260)	(0.0308)	(0.0267)
35-44	-0.1225***	0.0840***	0.1505***	0.0167
	(0.0310)	(0.0279)	(0.0356)	(0.0282)
45-54	-0.1532***	0.0642**	0.1876***	0.0592*
	(0.0331)	(0.0307)	(0.0381)	(0.0321)
Older than 54	-0.2033***	0.1228***	0.3083***	-0.0348
	(0.0313)	(0.0279)	(0.0315)	(0.0271)
Voted	0.0151	0.0825***	0.0157	-0.0119
	(0.0281)	(0.0267)	(0.0274)	(0.0243)
Voted*25-34	0.0455	-0.0266	-0.0297	-0.0448
	(0.0366)	(0.0337)	(0.0336)	(0.0286)
Voted*35-44	0.0672*	-0.0334	-0.0903***	-0.0155
	(0.0383)	(0.0355)	(0.0312)	(0.0313)
Voted*45-54	0.0706*	-0.0167	-0.0504	-0.0569*
	(0.0411)	(0.0374)	(0.0343)	(0.0309)
Voted*Older than 54	0.0785**	-0.0507	-0.0673**	-0.0210
	(0.0374)	(0.0338)	(0.0310)	(0.0303)
Observations	36,830	36,940	36,791	36,841
Pseudo R2	0.0836	0.0224	0.101	0.0386

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

(1) Omitted category is 18 to 24

Controls include marital status, gender, education, work status, consumption per capita, political party and religious organization membership and country dummy variables

Table 4. Characteristics of voters and non-voters

	Never married	Children	Selected respondent is female	Secondary education	Tertiary education	Work for income	Log of per capita consumption, PPP	Member of Religious Organization	Affiliated to Political Party	Former member of Communist Party
					Voters					
Younger than 55	23%	88%	60%	50%	42%	64%	5.37	17%	7%	3%
55 or older	5%	20%	61%	44%	33%	24%	5.58	25%	6%	12%
					Non-Voters					
Younger than 55	36%	74%	59%	56%	35%	55%	5.29	15%	3%	1%
55 or older	7%	17%	66%	44%	24%	20%	5.26	20%	2%	9%

Note: Each cell display the average value of each variable on each column, for each age group.

Table 5. Bivariate Probit vs. Probit: Estimated Coefficients

	Bivariate Probit		Probit Models	
	Education	Pensions	Education	Pensions
Age of Respondent (1)				
age25	-0.1529***	-0.0202	-0.1556***	-0.0236
	(0.0413)	(0.0492)	(0.0416)	(0.0504)
age35	-0.1359***	0.0907*	-0.1359***	0.1158**
	(0.0441)	(0.0523)	(0.0443)	(0.0539)
age45	-0.2161***	0.3013***	-0.2133***	0.3206***
	(0.0461)	(0.0530)	(0.0465)	(0.0544)
age55	-0.3160***	0.6105***	-0.3010***	0.6339***
	(0.0448)	(0.0504)	(0.0450)	(0.0516)
Never Married	-0.0060	-0.0402	-0.0063	-0.0468
	(0.0324)	(0.0366)	(0.0326)	(0.0376)
Children in the household	0.0908***	-0.0951***	0.0921***	-0.0994***
	(0.0143)	(0.0160)	(0.0144)	(0.0165)
Selected respondent is female	-0.0281	0.0792***	-0.0297	0.0887***
	(0.0239)	(0.0259)	(0.0239)	(0.0262)
Secondary education	0.3610***	-0.2707***	0.3558***	-0.2620***
	(0.0415)	(0.0407)	(0.0414)	(0.0405)
Tertiary education	0.7293***	-0.5622***	0.7297***	-0.5491***
	(0.0445)	(0.0447)	(0.0445)	(0.0445)
Work for income	0.0814***	-0.1394***	0.0803***	-0.1398***
	(0.0263)	(0.0284)	(0.0265)	(0.0287)
Log of per capita consumption, PPP	0.0171	-0.0130	0.0187*	-0.0134
	(0.0106)	(0.0110)	(0.0108)	(0.0108)
Member of Religious Organization	0.0035	-0.0018	0.0005	-0.0040
	(0.0305)	(0.0327)	(0.0306)	(0.0328)
Affiliated to Political Party	0.0530	-0.1316**	0.0584	-0.1246*
	(0.0583)	(0.0648)	(0.0581)	(0.0663)
Former member of Communist Party	-0.0955	0.0995	-0.0908	0.1027*
	(0.0616)	(0.0620)	(0.0615)	(0.0618)
Observations	37,041		37,197	37,159
Rho	-0.652			

(1) Omitted category is 18 to 24

Controls include country dummy variables

Table 6. What do you think are the two most important issues facing the country at the moment? Marginal Effects from Probit Models

	Educational System	Healthcare System	Pensions	Protecting the Environment	Fighting Crime	Economic Situation	Raising Prices/Inflation	Taxation	Fighting Terrorism	Housing	Immigration	Unemployment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
age 25-29	-0.0109***	0.0233***	0.0100*	-0.0018	0.0004	0.0145*	-0.0030	0.0005	0.0008	-0.0006	-0.0042	-0.0185*
	(0.0026)	(0.0056)	(0.0058)	(0.0020)	(0.0052)	(0.0075)	(0.0051)	(0.0028)	(0.0015)	(0.0025)	(0.0027)	(0.0102)
age 30-34	-0.0122***	0.0384***	0.0097	0.0011	-0.0003	0.0299***	-0.0059	-0.0029	-0.0016	-0.0050**	-0.0068**	-0.0407***
	(0.0022)	(0.0051)	(0.0059)	(0.0020)	(0.0059)	(0.0083)	(0.0059)	(0.0030)	(0.0014)	(0.0024)	(0.0034)	(0.0099)
age 35-39	-0.0121***	0.0428***	0.0131**	-0.0007	0.0029	0.0446***	-0.0140**	-0.0109***	0.0004	-0.0102***	-0.0056	-0.0421***
	(0.0024)	(0.0058)	(0.0054)	(0.0026)	(0.0062)	(0.0106)	(0.0060)	(0.0032)	(0.0024)	(0.0016)	(0.0039)	(0.0117)
age 40-44	-0.0065**	0.0485***	0.0156***	0.0023	0.0049	0.0365***	-0.0161***	-0.0097***	-0.0019	-0.0122***	-0.0073**	-0.0469***
	(0.0032)	(0.0057)	(0.0059)	(0.0021)	(0.0071)	(0.0101)	(0.0063)	(0.0033)	(0.0022)	(0.0022)	(0.0035)	(0.0099)
age 45-49	-0.0136***	0.0457***	0.0235***	0.0040*	0.0145**	0.0368***	-0.0225***	-0.0105**	-0.0021	-0.0131***	-0.0106***	-0.0370***
	(0.0025)	(0.0043)	(0.0062)	(0.0022)	(0.0063)	(0.0105)	(0.0073)	(0.0042)	(0.0018)	(0.0020)	(0.0034)	(0.0086)
age 50-54	-0.0171***	0.0527***	0.0397***	0.0017	0.0214**	0.0253**	-0.0316***	-0.0132***	-0.0009	-0.0133***	-0.0111***	-0.0331***
	(0.0026)	(0.0048)	(0.0068)	(0.0018)	(0.0084)	(0.0100)	(0.0058)	(0.0039)	(0.0023)	(0.0016)	(0.0040)	(0.0091)
age 55-59	-0.0213***	0.0519***	0.0596***	0.0037	0.0299***	0.0169*	-0.0336***	-0.0199***	0.0022	-0.0154***	-0.0109***	-0.0427***
	(0.0025)	(0.0072)	(0.0090)	(0.0028)	(0.0083)	(0.0094)	(0.0070)	(0.0035)	(0.0026)	(0.0020)	(0.0040)	(0.0099)
age 60-64	-0.0168***	0.0656***	0.0697***	0.0024	0.0425***	0.0122	-0.0397***	-0.0227***	0.0006	-0.0166***	-0.0102**	-0.0642***
	(0.0034)	(0.0069)	(0.0118)	(0.0023)	(0.0101)	(0.0112)	(0.0065)	(0.0042)	(0.0029)	(0.0019)	(0.0040)	(0.0116)
age 65-69	-0.0139***	0.0578***	0.0822***	0.0049*	0.0496***	-0.0043	-0.0413***	-0.0162***	0.0031	-0.0194***	-0.0083*	-0.0715***
	(0.0034)	(0.0087)	(0.0148)	(0.0027)	(0.0105)	(0.0107)	(0.0076)	(0.0046)	(0.0033)	(0.0019)	(0.0048)	(0.0141)
age 70-74	-0.0146***	0.0676***	0.0923***	-0.0013	0.0569***	-0.0258**	-0.0337***	-0.0222***	0.0045	-0.0190***	-0.0110**	-0.0884***
	(0.0040)	(0.0086)	(0.0152)	(0.0019)	(0.0118)	(0.0110)	(0.0082)	(0.0034)	(0.0045)	(0.0022)	(0.0051)	(0.0127)
Observations	173,756	173,756	173,756	173,756	173,756	173,756	173,756	173,756	173,756	154,407	173,756	173,756
R-squared	0.0955	0.0804	0.0676	0.106	0.0670	0.0434	0.0782	0.0515	0.256	0.0938	0.129	0.0671

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Controls include marital status, number of children, employment status, retired, gender, city size, education, year and country fixed effects

Table 7. What do you think are the two most important issues facing the country at the moment? Marginal Effects from Probit Models, controlling for cohort effects.

	Educational System	Healthcare System	Pensions	Protecting the Environment	Fighting Crime	Economic Situation	Raising Prices/Inflation	Taxation	Fighting Terrorism	Housing	Immigration	Unemployment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
age 25-29	-0.0098***	0.0154**	0.0152**	-0.0039*	0.0195***	-0.0051	-0.0014	0.0022	0.0064**	-0.0038	-0.0019	-0.0173
	(0.0037)	(0.0073)	(0.0073)	(0.0022)	(0.0060)	(0.0108)	(0.0064)	(0.0035)	(0.0027)	(0.0031)	(0.0039)	(0.0135)
age 30-34	-0.0132**	0.0170	0.0183*	-0.0030	0.0340***	-0.0080	-0.0038	-0.0008	0.0079	-0.0088***	-0.0032	-0.0287
	(0.0054)	(0.0104)	(0.0103)	(0.0032)	(0.0092)	(0.0156)	(0.0088)	(0.0045)	(0.0055)	(0.0034)	(0.0067)	(0.0175)
age 35-39	-0.0177***	0.0077	0.0193*	-0.0052	0.0511***	-0.0064	-0.0130	-0.0101*	0.0129	-0.0116***	-0.0022	-0.0174
	(0.0065)	(0.0129)	(0.0115)	(0.0048)	(0.0130)	(0.0231)	(0.0125)	(0.0057)	(0.0088)	(0.0041)	(0.0089)	(0.0237)
age 40-44	-0.0153*	0.0037	0.0201	-0.0033	0.0618***	-0.0223	-0.0124	-0.0101	0.0118	-0.0112**	-0.0063	-0.0157
	(0.0085)	(0.0154)	(0.0138)	(0.0052)	(0.0187)	(0.0247)	(0.0152)	(0.0071)	(0.0091)	(0.0051)	(0.0095)	(0.0249)
age 45-49	-0.0230***	-0.0029	0.0244	-0.0045	0.0750***	-0.0279	-0.0108	-0.0107	0.0139	-0.0095	-0.0110	-0.0081
	(0.0086)	(0.0157)	(0.0159)	(0.0063)	(0.0226)	(0.0260)	(0.0177)	(0.0091)	(0.0090)	(0.0069)	(0.0105)	(0.0259)
age 50-54	-0.0270***	0.0035	0.0333*	-0.0091	0.0817***	-0.0384	-0.0107	-0.0121	0.0174*	-0.0061	-0.0122	-0.0157
	(0.0083)	(0.0196)	(0.0194)	(0.0061)	(0.0269)	(0.0268)	(0.0191)	(0.0103)	(0.0100)	(0.0078)	(0.0121)	(0.0295)
age 55-59	-0.0316***	0.0048	0.0441*	-0.0088	0.0909***	-0.0399	-0.0083	-0.0170	0.0229*	-0.0034	-0.0122	-0.0318
	(0.0085)	(0.0240)	(0.0235)	(0.0070)	(0.0316)	(0.0309)	(0.0217)	(0.0118)	(0.0123)	(0.0100)	(0.0132)	(0.0346)
age 60-64	-0.0294***	0.0217	0.0426*	-0.0096	0.1018***	-0.0415	-0.0127	-0.0174	0.0183	0.0011	-0.0110	-0.0469
	(0.0093)	(0.0266)	(0.0238)	(0.0072)	(0.0344)	(0.0331)	(0.0260)	(0.0141)	(0.0123)	(0.0110)	(0.0139)	(0.0369)
age 65-69	-0.0245**	0.0224	0.0411	-0.0077	0.1042***	-0.0592*	-0.0062	-0.0045	0.0179	0.0043	-0.0087	-0.0464
	(0.0118)	(0.0301)	(0.0273)	(0.0089)	(0.0390)	(0.0350)	(0.0290)	(0.0179)	(0.0126)	(0.0133)	(0.0154)	(0.0405)
age 70-74	-0.0181	0.0373	0.0326	-0.0112	0.1142**	-0.0786**	0.0204	-0.0054	0.0172	0.0123	-0.0073	-0.0608
	(0.0139)	(0.0327)	(0.0276)	(0.0078)	(0.0467)	(0.0359)	(0.0328)	(0.0179)	(0.0136)	(0.0170)	(0.0158)	(0.0427)
born 1930-1934	-0.0066	0.0253	0.0632	0.0134	-0.0571**	0.0585	-0.0692**	-0.0183	-0.0100	-0.0242***	-0.0138	-0.0255
	(0.0198)	(0.0333)	(0.0386)	(0.0179)	(0.0285)	(0.0447)	(0.0301)	(0.0164)	(0.0083)	(0.0051)	(0.0141)	(0.0452)
born 1935-1939	0.0058	0.0298	0.0386	0.0180	-0.0511**	0.0717*	-0.0460	-0.0222	-0.0110	-0.0242***	-0.0020	-0.0228
	(0.0231)	(0.0339)	(0.0322)	(0.0172)	(0.0249)	(0.0407)	(0.0306)	(0.0151)	(0.0077)	(0.0057)	(0.0153)	(0.0436)
born 1940-1944	0.0189	0.0345	0.0246	0.0176	-0.0523**	0.0673*	-0.0329	-0.0090	-0.0125*	-0.0191***	-0.0021	-0.0238
	(0.0240)	(0.0309)	(0.0267)	(0.0155)	(0.0236)	(0.0407)	(0.0282)	(0.0169)	(0.0072)	(0.0070)	(0.0160)	(0.0406)
born 1945-1949	0.0241	0.0478	0.0152	0.0181	-0.0594***	0.0641*	-0.0238	-0.0077	-0.0151**	-0.0161**	-0.0017	-0.0109
	(0.0235)	(0.0301)	(0.0230)	(0.0138)	(0.0209)	(0.0366)	(0.0258)	(0.0151)	(0.0059)	(0.0079)	(0.0146)	(0.0371)
born 1950-1954	0.0152	0.0486*	0.0043	0.0189	-0.0585***	0.0684*	-0.0286	-0.0021	-0.0149***	-0.0098	0.0003	0.0003
	(0.0188)	(0.0254)	(0.0196)	(0.0122)	(0.0206)	(0.0351)	(0.0221)	(0.0134)	(0.0057)	(0.0082)	(0.0142)	(0.0326)
born 1955-1959	0.0153	0.0536**	0.0022	0.0162	-0.0611***	0.0807***	-0.0193	-0.0024	-0.0148***	-0.0056	-0.0025	-0.0161
	(0.0160)	(0.0225)	(0.0167)	(0.0106)	(0.0188)	(0.0302)	(0.0197)	(0.0113)	(0.0057)	(0.0085)	(0.0126)	(0.0289)
born 1960-1964	-0.0270***	0.0035	0.0333*	-0.0091	0.0817***	-0.0384	-0.0107	-0.0121	0.0174*	-0.0061	-0.0122	-0.0282
	(0.0133)	(0.0187)	(0.0127)	(0.0076)	(0.0154)	(0.0294)	(0.0173)	(0.0094)	(0.0056)	(0.0082)	(0.0115)	(0.0255)
born 1965-1969	0.0098	0.0464***	-0.0054	0.0061	-0.0613***	0.0697**	0.0002	-0.0010	-0.0125**	0.0010	-0.0048	-0.0279
	(0.0117)	(0.0161)	(0.0115)	(0.0058)	(0.0132)	(0.0272)	(0.0149)	(0.0074)	(0.0057)	(0.0072)	(0.0092)	(0.0241)
born 1970-1974	0.0070	0.0359**	-0.0106	0.0072	-0.0511***	0.0625***	-0.0005	-0.0009	-0.0110**	0.0047	-0.0069	-0.0196
	(0.0081)	(0.0142)	(0.0094)	(0.0052)	(0.0096)	(0.0228)	(0.0112)	(0.0066)	(0.0054)	(0.0067)	(0.0080)	(0.0223)
born 1975-1979	-0.0035	0.0183	-0.0126*	0.0056*	-0.0409***	0.0471***	-0.0025	-0.0039	-0.0103***	0.0099*	-0.0056	-0.0053
	(0.0062)	(0.0113)	(0.0072)	(0.0034)	(0.0074)	(0.0173)	(0.0093)	(0.0048)	(0.0036)	(0.0056)	(0.0065)	(0.0155)
born 1980-1984	-0.0019	0.0067	-0.0071	0.0032	-0.0316***	0.0298***	-0.0010	-0.0019	-0.0050	0.0029	-0.0059	0.0112
	(0.0039)	(0.0066)	(0.0045)	(0.0026)	(0.0051)	(0.0101)	(0.0070)	(0.0032)	(0.0034)	(0.0041)	(0.0040)	(0.0117)
Observations	173,756	173,756	173,756	173,756	173,756	173,756	173,756	173,756	173,756	154,407	173,756	173,756
R-squared	0.0961	0.0806	0.0681	0.106	0.0674	0.0435	0.0783	0.0517	0.257	0.0947	0.129	0.0672

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Controls include marital status, number of children, employment status, retired, gender, city size, education, year and country fixed effects

Figure 1. Which should be the first or second priority for extra government spending?

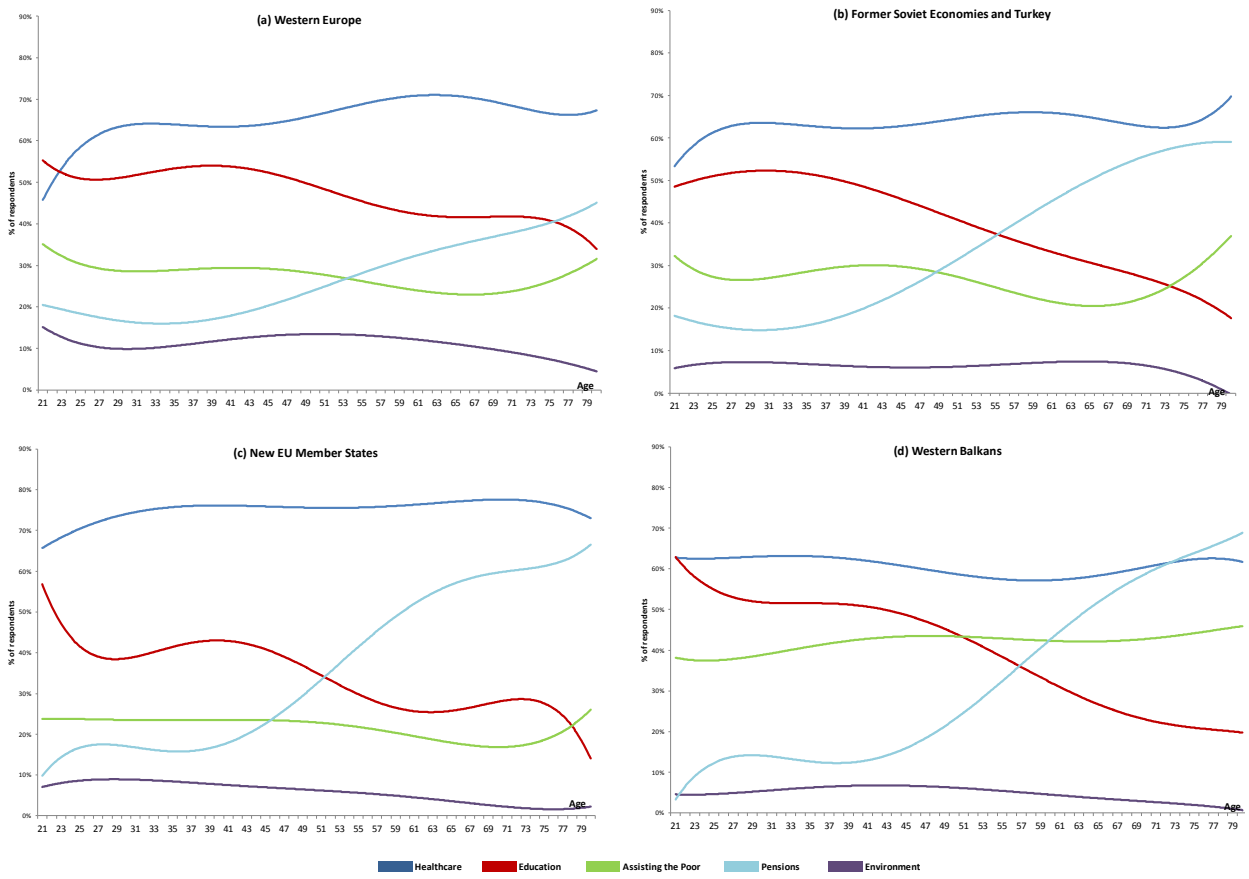
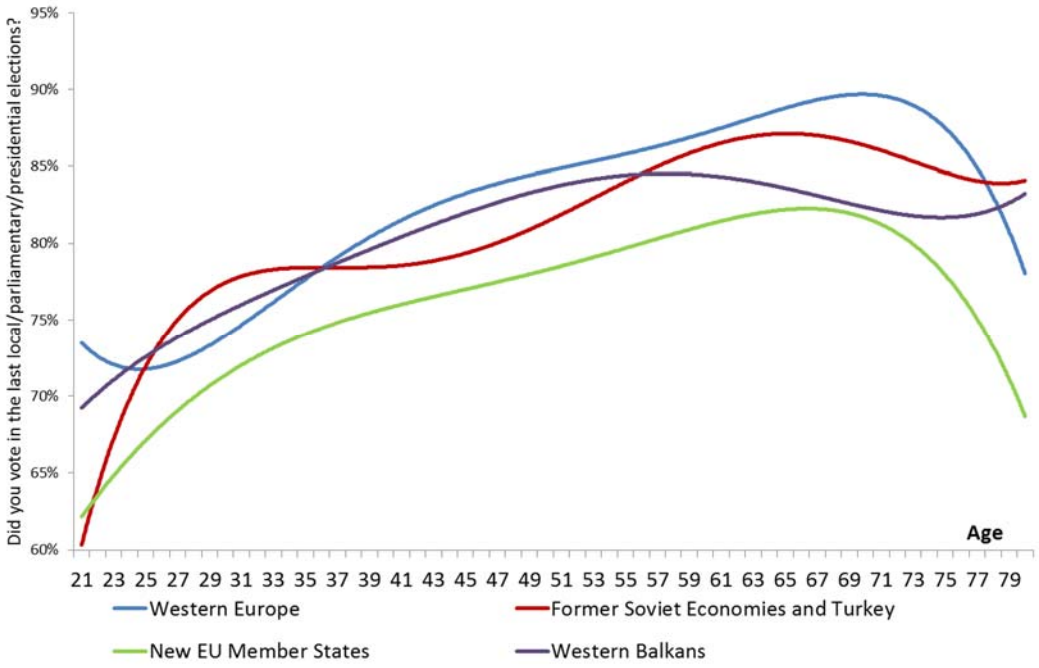


Figure 2. Did you vote in the last elections?



5th degree polynomial approximation based on LITS II.

Figure 3. Which should be the first or second priority for extra government spending?

Estimated Marginal Effects associated with "Older than 54" dummy variable.

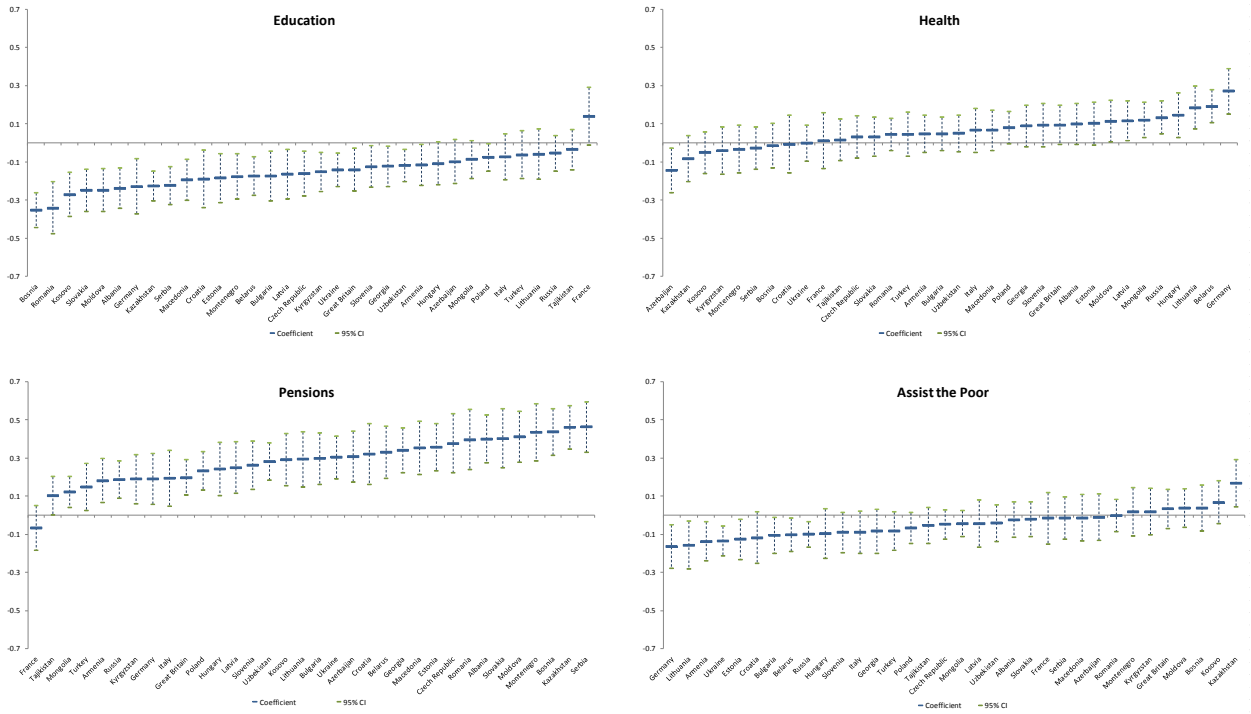
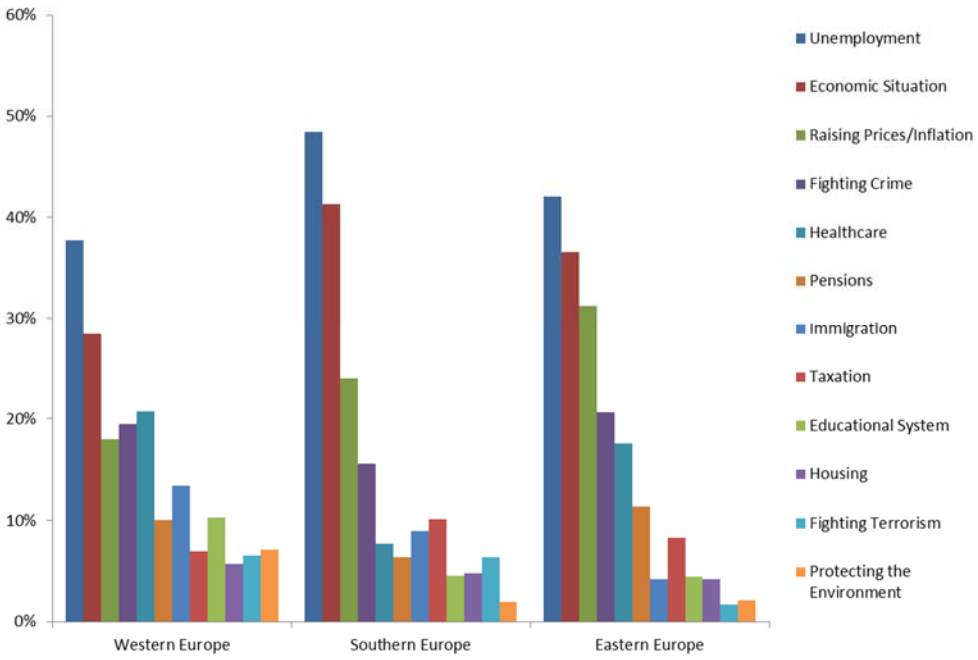
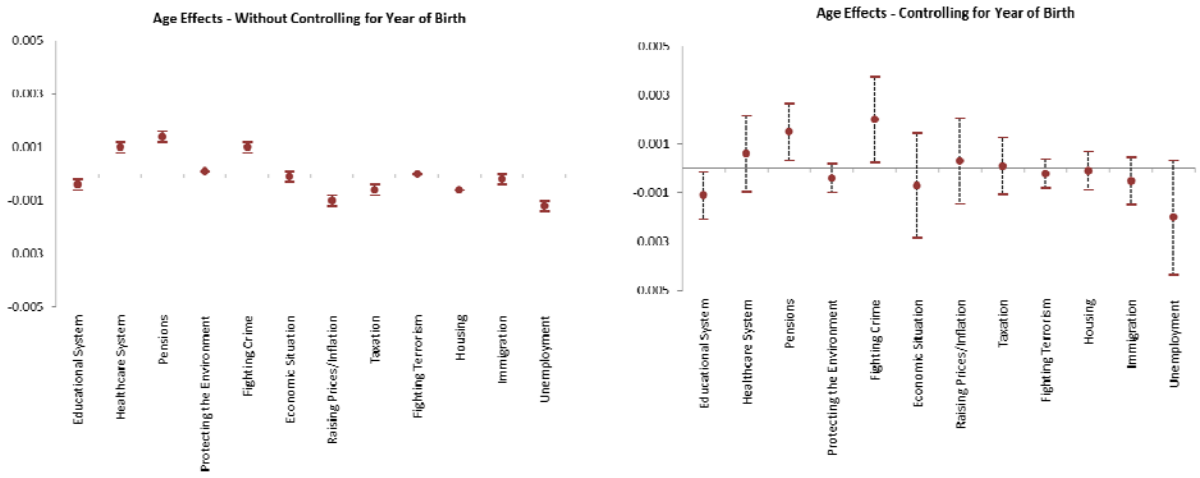


Figure 4. What do you think are the two most important issues facing the country at the moment?



Source: Eurobarometer surveys between 2004 and 2013.

Figure 5. What do you think are the two most important issues facing the country at the moment? Marginal Effects of Age



Each dot represents the marginal effects , while the dashed lines are the 95% confidence intervals. Control variables include marital status, number of children, employment status, retired, gender, city size, education, year and country fixed effects.

Table A1. Descriptive Statistics, LITS and United Nations Population Statistics

		Life in Transition Survey II (2010)				Population Estimates - United Nations			
		Among Household Heads 20 years or older		Among Household Heads 20 years or older		Among indivuals 20 years or older			
	Observations	% Older than 55		% Older than 65		Older than 55		Older than 65	
		%	N	%	N	%	Difference with LITS	%	Difference with LITS
Albania	1039	16.8%	234	8.5%	109	28.9%	12.1%	15.0%	6.5%
Armenia	968	22.4%	310	12.1%	156	26.5%	4.1%	14.9%	2.8%
Azerbaijan	976	8.2%	156	3.1%	73	17.9%	9.7%	8.8%	5.7%
Belarus	975	18.1%	190	7.7%	68	32.5%	14.4%	17.7%	10.0%
Bosnia and Herzegovina	1007	30.4%	325	18.3%	167	34.4%	4.0%	20.0%	1.7%
Bulgaria	994	49.8%	446	33.3%	267	40.1%	-9.7%	22.5%	-10.8%
Croatia	911	44.6%	435	28.6%	239	39.3%	-5.3%	22.2%	-6.4%
Czech Republic	984	32.6%	311	14.9%	135	36.9%	4.3%	19.2%	4.3%
Estonia	955	48.8%	497	29.9%	323	38.0%	-10.8%	22.2%	-7.7%
France	985	44.3%	439	26.3%	225	39.0%	-5.3%	22.2%	-4.1%
Georgia	952	38.6%	380	26.3%	225	33.2%	-5.4%	18.9%	-7.4%
Germany	1010	40.5%	381	26.9%	203	40.2%	-0.3%	25.6%	-1.3%
United Kingdom	1478	57.0%	677	46.4%	427	37.3%	-19.7%	21.8%	-24.6%
Hungary	1002	56.1%	526	38.4%	316	37.9%	-18.2%	21.1%	-17.3%
Italy	1038	37.5%	343	24.0%	173	40.3%	2.8%	25.0%	1.0%
Kazakhstan	973	14.8%	201	5.2%	87	21.5%	6.7%	10.0%	4.8%
Kyrgyzstan	990	7.8%	216	2.4%	93	16.0%	8.2%	7.5%	5.2%
Latvia	941	48.6%	432	37.8%	292	38.0%	-10.6%	23.0%	-14.8%
Lithuania	951	49.5%	464	35.9%	288	33.6%	-15.9%	19.9%	-16.0%
TFYR Macedonia	1036	22.9%	301	13.0%	159	30.8%	7.9%	15.5%	2.5%
Republic of Moldova	977	35.8%	454	18.9%	242	30.4%	-5.4%	14.8%	-4.1%
Mongolia	988	6.1%	162	2.9%	83	13.5%	7.4%	6.1%	3.2%
Poland	1573	39.4%	644	20.9%	328	34.1%	-5.3%	17.2%	-3.7%
Romania	1051	42.7%	462	28.2%	279	33.7%	-9.0%	18.7%	-9.5%
Russian Federation	1523	34.8%	592	20.3%	281	31.8%	-3.0%	16.6%	-3.7%
Serbia	1372	46.2%	627	25.6%	313	35.3%	-10.9%	18.0%	-7.6%
Slovakia	985	13.4%	180	3.3%	56	31.7%	18.3%	15.7%	12.5%
Slovenia	980	34.0%	315	19.9%	162	36.6%	2.6%	20.6%	0.7%
Sweden	885	57.9%	406	39.2%	193	40.5%	-17.4%	23.8%	-15.4%
Tajikistan	981	5.0%	150	2.5%	60	13.4%	8.4%	6.3%	3.8%
Turkey	976	11.6%	202	4.0%	71	22.0%	10.4%	10.9%	7.0%
Ukraine	1508	31.3%	574	13.5%	324	34.7%	3.4%	19.7%	6.2%
Uzbekistan	1472	7.5%	257	2.8%	106	15.8%	8.3%	7.5%	4.6%
Kosovo	1059	9.4%	159	3.7%	66				
Montenegro	968	19.2%	222	10.7%	109	33.3%	14.1%	17.0%	6.3%

Table A2. Marginal Effects on the Probability of Supporting an Increase in Government Expenditures, First Priority for Extra Government Expenditure.

Probit regression: Marginal Effects

	Which should be the first priority for extra government spending?							
	Education		Healthcare		Pensions		Assisting the Poor	
Age of Respondent (1)								
25-34	-0.0364***	-0.0620***	0.0317*	0.0391**	-0.0023	0.0171	-0.0041	0.0009
	(0.0125)	(0.0127)	(0.0164)	(0.0174)	(0.0120)	(0.0136)	(0.0106)	(0.0114)
35-44	-0.0381***	-0.0657***	0.0665***	0.0768***	0.0111	0.0367**	0.0015	0.0039
	(0.0128)	(0.0135)	(0.0169)	(0.0189)	(0.0129)	(0.0156)	(0.0109)	(0.0124)
45-54	-0.0731***	-0.0802***	0.0799***	0.0725***	0.0661***	0.0762***	0.0008	0.0060
	(0.0122)	(0.0132)	(0.0174)	(0.0193)	(0.0152)	(0.0172)	(0.0112)	(0.0128)
Older than 54	-0.1219***	-0.0974***	0.0804***	0.0723***	0.1791***	0.1453***	-0.0333***	-0.0465***
	(0.0117)	(0.0144)	(0.0157)	(0.0184)	(0.0144)	(0.0159)	(0.0101)	(0.0116)
Children		0.0278***		-0.0260***		-0.0171***		0.0066*
		(0.0046)		(0.0054)		(0.0040)		(0.0034)
Selected respondent is female		-0.0182**		0.0464***		0.0041		0.0027
		(0.0080)		(0.0087)		(0.0058)		(0.0060)
Secondary education		0.0791***		0.0506***		-0.0420***		-0.0517***
		(0.0141)		(0.0145)		(0.0084)		(0.0093)
Tertiary education		0.1914***		0.0256		-0.0775***		-0.0933***
		(0.0158)		(0.0157)		(0.0086)		(0.0097)
Work for income		0.0057		0.0066		-0.0299***		-0.0161**
		(0.0088)		(0.0099)		(0.0066)		(0.0067)
Log of per capita consumption, PPP		0.0051		-0.0025		0.0005		-0.0084***
		(0.0038)		(0.0039)		(0.0024)		(0.0023)
Member of Religious Organization		0.0149		-0.0287***		-0.0036		-0.0033
		(0.0103)		(0.0111)		(0.0072)		(0.0077)
Affiliated to Political Party		0.0252		-0.0028		-0.0226*		-0.0024
		(0.0198)		(0.0223)		(0.0134)		(0.0149)
Former member of Communist Party		-0.0109		-0.0131		0.0188		-0.0199
		(0.0188)		(0.0220)		(0.0143)		(0.0146)
Observations		37,041		37,041		37,431		37,041
Pseudo R2		0.0690		0.0247		0.0209		0.0389

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Controls include country dummy variables