

CONFLICT BETWEEN ALTRUISTIC GENERATIONS: SOCIAL SECURITY AND THE POLITICS OF AGING SOCIETIES

Robert Grafstein

Department of Political Science

University of Georgia

Athens, GA 30602

bobgraf@uga.edu

706.542.2988 (phone) 706.542.4421 (fax)

Abstract

Pay-as-you-go funding is a key feature of most social security programs and expected shortfalls in funding are nearly universal as well. If parents love their children, why do they support social security programs that are actuarially unsustainable in their present form? This paper develops an overlapping generations model, incorporating elements of Tabellini's (2000) positive theory of social security and Bénabou and Ok's (2001) analysis of income mobility, to show why a majority of rational voters who care about their descendants can insist on the preservation of current benefits for themselves but accept social security's future retrenchment. Implications of this explanation are tested using a 2001 Eurobarometer survey on pensions and comparative intergenerational mobility data (Comi 2004).

I thank Markus Crepaz, Keith Dougherty, Asha Gupta, Sharda Jain, Manuel Sánchez de Dios, and Michael Tolley for helpful comments on an earlier version of this paper. They are not responsible for any of its errors.

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1 Introduction

The public pension programs found in modern democratic societies redistribute income in two ways. First, they transfer income from higher wage to lower wage workers. Since all democratic societies are characterized by right-skewed income distributions, this intragenerational redistribution is not surprising: barring substantial distortions in turnout, in each of these countries a majority of voters have below-average incomes. Accordingly, a potential voting majority favors this kind of transfer.

Second, public pension programs exhibit a pervasive pattern of redistribution from workers to the elderly.¹ Why does this intergenerational redistribution also receive majority support when the necessary majority includes those below the normal retirement age as well as the parents of those workers? There is a huge literature in political economy examining why a generic majority interest in redistribution has been advanced or thwarted by labor unions, global competition, electoral rules, and cross-cutting cleavages. But distortions of the majority's will are not the issue here. Social security programs remain both politically strong and popular.

An obvious explanation for the political sustainability of intergenerational transfers is that workers anticipate benefitting from the same lopsided arrangement when they retire. Yet given the typical program's benefit structure, their nearly universal pay-as-you-go (PAYG) financing, and demographic trends found in all advanced democracies, this

¹This paper is concerned with *ex ante* redistribution. Strictly speaking, public pension programs introduce two other forms of redistribution. One is the *ex post* transfer to retirees who have experienced unexpected longevity or poor income outcomes. *Ex post* transfers are inherent in all insurance, public and private. The other is a transfer over the life-cycle of individuals, in short, a form of forced savings.

intergenerational redistribution is for all practical purposes irrevocable (Mulligan and Sala-i-Martin 1999a). Workers will never completely recoup their contributions (e.g., Gokhale 2007).

To many observers, therefore, the best explanation for this transfer lies with the disproportionate political capacity of the elderly to raid the coffers of their descendants (e.g., Grossman and Helpman 1998; Mulligan and Sala-i-Martin 2004). Since conflict is endemic to politics, this explanation has a natural appeal. If one believes that parents are generally altruistic toward their children, however, the puzzle of intergenerational transfers cannot be dispatched so easily. The political warfare model, in truth, begins to look unnatural. Indeed given altruism, the very fact that the basic financial structure of social security is consistent with a model of intergenerational political conflict is puzzling.

Of course, neither actuarial tables nor planted axioms about altruism substitute for an explicit consideration of the politics sustaining social security programs. Ultimately, social security is subject to the same political constraints as any other program. Whether a democratic majority supports it depends on the economic and political conditions voters face. I will argue that the willingness of altruistic parents to support current programs and thereby accept irrevocable transfers from their progeny is rooted in *rational* but nonetheless overly optimistic expectations about what their children's economic situation will be when expected financial challenges to these programs occur and when the debt associated with the current financial structure comes due. With no lack of moral consistency, one generation may politically support a program for itself that must be scaled back for its children.

I develop an overlapping generations model involving three generations, two of which are old enough to vote on a uniform income tax determining the next period's level of social security spending, which is funded on a PAYG basis.² In this model, anchored in

²For a different version of the model applied to the U.S. social security program, see Grafstein (2009).

work by Tabellini (2000) and Bénabou and Ok (2001), altruism between generations rules out pure exploitation. What confounds the ordinary impact of parental altruism, however, is not only naked self-interest but parents' expectations about the future value of the income-producing endowments their children inherit. The evolution of these endowments is modeled as an increasing concave stochastic function of current productivity (the fuller explanation is in section 4). Under this assumption and a few others, the model implies that a majority of voters can rationally expect their children and grandchildren to have above-average incomes even after adjusting for economic growth.³ These parent-voters will then provide less support for the long-term redistribution characterizing, to varying degrees, all the social security programs the paper will examine. Those voters currently benefitting from social security's progressivity may accept its future retrenchment precisely because they believe their descendants are more likely to be hurt by the program's redistributive character.⁴ By the same token, redistributive social security programs maintain support from altruistic poorer voters whose (grand)children will pay relatively less for the benefits their retired parents will enjoy.

The model identifies specific forces affecting the individual's time-varying support for social security programs. These forces are embodied in four empirical hypotheses. One, the higher individuals' incomes are, the less likely they are to support intragenerational redistribution through social security. Yet two, the greater the degree of income mobility in a country, the less likely are its citizens with below-mean income to support such redistribution. Three, low-income retirees will have lower support for redistribution through social security than will low-income workers. Four, high-income retirees will also have relatively lower support for redistribution than will high-income workers.

³For empirically reasonable parameter estimates, this implication is valid for modern democracies.

⁴This complements Fuster's (1999) argument that progressive social security programs benefit altruistic individuals worried about negative shocks to their descendants' incomes.

While the model is straightforward in its implications, complications emerge when it is tested in a cross-country setting. Despite the structural parallels already noted, social security programs vary in many respects, and the institutional contexts in which democratic voters make choices about welfare spending vary enormously as well. The need for comparable data on intergenerational mobility suggests looking to Europe to examine the political basis of the typical social security system. I test the preceding hypotheses using a 2001 Eurobarometer survey on pensions (Christensen 2006). Consistent with the model, the subsample is limited to democratic countries for which comparable income mobility data are available, although with suitable modification the model applies to any regime sensitive to popular opinion.

2 Why Social Security Programs Are Politically Sustainable

Why do public social security programs typically entail net permanent losses for younger relative to older generations? One possible explanation appeals to the bounded rationality of older voters whose contradictory and uninformed beliefs compartmentalize their concern for their children and their concern for their own pocketbooks (e.g., Kotlikoff and Burns 2004, xiii; Retirement Confidence Survey 2006). While this kind of open-ended explanation is difficult to refute, the size of the current financial tax burden for most workers means the economic ramifications of these programs would be hard for the public to ignore (Tabellini 2000, 523-24). Evidence from the U.S. suggests that the public, and the elderly in particular, are relatively well informed about social security (e.g., Jacobs and Shapiro 1998; Campbell 2003). In any case, we will see that individuals behave as if they were rationally influenced by their age, the relation of their personal income to the mean, and differences in income mobility.

It might be argued that financial rebalancing has been blocked by institutional inertia or path dependence. But this idea does not seem to have much explanatory bite. In each of the countries studied here, the initial programs were explicitly designed, so we have to explain the original financial inequity. Moreover, these programs have been redesigned multiple times over the years, in each case reproducing and typically intensifying the intergenerational transfer (e.g., Galasso 2006). Path dependence, in short, is another term for the basic political puzzle: why retirees seemingly use elections and political pressure against the interests of their own descendants.

Given the size of the intergenerational transfer, a simpler and more promising approach is to deny the existence of the general puzzle by denying the importance of altruism in intergenerational politics. According to Mulligan and Sala-i-Martin's (1999b) "gerontocracy" model, for example, the elderly have the advantage in distributional conflicts between the generations because their lower productivity translates into lower opportunity costs of leisure activity, which can be directed toward lobbying and voting. As a result, organizations of the elderly enjoy a competitive advantage when promoting social security programs whose retirement incentives only strengthen that advantage.

Despite its many strengths, the gerontocracy model is incomplete. For example, spending on youth has, in general, also increased out of proportion to demographics. Yet Mulligan and Sala-i-Martin (1999b, 5) attribute this increase to the preferences of the middle aged, presumably a reflection of parental altruism. More surprising from the perspective of a conflict model, a European Commission report (Gallup Organisation 2009, 40) found that a striking 84% of European respondents agreed that their government should make "much more money available for pensions and care for the elderly" (2009, 60). Age groups varied from a low of 80% agreement for those 15-24 to a high of 86% for those 55-64, with 85% for those 65+ (2009, 61). Further, 87% of respondents, with strong majorities across all age groups, agreed that "Older people are not just receiving from

society, they are also giving something back. . . . The financial help of parents and grandparents is important for young adults who establish their own households and families" (2009, 68). A minimum of two-thirds of each country's respondents disagreed with the proposition that the elderly are a burden on society. For the sample of countries used here, Portugal evidenced the *lowest* level of disagreement (75%), and even then 67% "strongly disagreed."⁵

This intergenerational agreement does not reflect a similar homogeneity of perceived political interests: respondents were much more divided in their expectations about the possible skewing of political decisionmaking against the young due to the impact of increasing numbers of elderly voters, with 43% agreeing, 51% disagreeing.

Nor are Europeans unaware of the financial difficulties facing public pension programs. Overall, 59% of respondents agreed that "in coming decades governments will no longer be able to pay for pensions and care for older people" (Gallup Organisation 2009, 52). For the sample countries used here, only Spain fell short of a majority (49%) but even fewer (44%) disagreed. Working age respondents are particularly aware of this problem. Agreement by the age groups 15-24, 25-39, 40-54, 55-64, and 65+ was 55%, 62%, 63%, 55%, and 52% respectively (2009, 53). In short a majority in all age groups was pessimistic, but those at or near retirement were the least so.

Europeans are also aware of the political source of this government incapacity: 58% agreed that "People in employment will be increasingly reluctant to pay taxes and social contributions to support older people" (2009, 54), although there was minority agreement (41% and 45% respectively) in two of the countries studied here, Ireland and Spain. By the

⁵Interestingly, the Gallup Organisation (2009, 41) finds that the 65+ age group had the lowest level of disagreement with this proposition (72%), the 55-64 age group the next lowest (82%). Note that this study is not used in the empirical analysis in section 5 since mobility estimates, in this case from Comi's (2004) 1994-98 data, should be as contemporaneous with survey data as possible.

same token, only a minority of Europeans believed that governments are *currently* "spending too little on education and young people compared to older people" (2009, 56), but there was a slim majority in Ireland (52%). Perhaps more relevant, there was not a majority in any of the age groups except 15-24.

Talk is cheap and empirical evaluations of parents' actual *financial* altruism toward their children are mixed (Laferrère and Wolff 2006, 952-56). One important qualification, however, is that some of the leading negative findings regarding so-called pure altruism by parents (e.g., Altonji, Hayashi, and Kotlikoff 1997) are invalid when the child's future income is uncertain (McGarry 2000), as it is assumed to be here. Villanueva (2002) similarly finds empirical support for the altruism assumption when parental uncertainty about children's wage opportunities and effort is recognized.

Looking beyond the gerentocracy model, Bohn (2005) explains the intergenerational "cooperation" supporting an unfunded social security program by showing support to be the equilibrium of a repeated noncooperative game between overlapping generations that vote on its continuation each period (see also Cooley and Soares 1999; Galasso 2006). He argues, in a general equilibrium, majority-rule setting, that social security benefit structures can be politically sustainable on a PAYG basis since voters of median age or higher will support the necessary tax increases. To reach this result, Bohn assumes that in calculating the program's future net benefits voters treat their previous contributions as sunk costs. Even though the median voter is below retirement age, her support for the program is sustained each period by "trigger strategies" entailing the destruction of the program if any cohort of retirees fails to receive the appropriate benefit.

Bohn's analysis is designed to show how an implicit intergenerational compact can be sustained in the absence of altruism. "Altruism is almost too powerful to be interesting: social security is obviously viable if the young are eager to make transfers to the old" (Bohn 2005, 49). The key problem with his preferred explanation is that altruism does not

disappear with age.⁶ Voters rationally ignore their own sunk costs at each decision point, but the empirical puzzle is why voters also ignore the new "sunk costs" they impose on their descendants. The imposition of these costs seems to contradict the sacrifices that otherwise distinguish typical parental behavior: "Parents spend money, time, and effort on children through child care, expenditures on education and health, gifts, and bequests" (Becker and Murphy 1988, 3).

Becker and Murphy attempt to resolve this contradiction by arguing that pension benefits and similar transfers reflect a different kind of implicit political contract: negative bequests by parents help offset their earlier sacrifices, principally productivity-enhancing investments in public education (for a more recent analysis see Boldrin and Montes 2005). One problem with this explanation is that, according to the scholarly consensus, the elderly have received excessive returns from their investment (e.g., Mulligan and Sala-i-Martin 1999c, 22-24). Further, suppose Becker and Murphy's money's worth calculation was correct at one time along with their assumption of a net reproduction rate of unity for the population (1988, 10). But decreased mortality rates among those 65 and older change the age-composition of the population (see, e.g., Preston, Heuveline, and Guillot 2001, 158-61) and progressively increase the financial burden on workers.

In short, the scale of the intergenerational redistribution projected for most social security programs outstrips what reasonably might be anticipated as the effect of long-term economic growth and seems to challenge a simplistic vision of parental altruism.⁷ So conflict models are not entirely without merit. By the same token, for the reasons Becker

⁶The attempt to substitute trigger strategies for intergenerational altruism can also be questioned on formal grounds: the multiplicity of the resulting equilibria (Galasso and Profeta 2002, 12), the extent to which these strategies are contingent on the predicted reactions of future generations, and the fact that these particular solutions are not renegotiation proof (Tabellini 2000, 524; Fudenberg and Tirole 1991, 174-82; Chen and Song 2009, 4).

⁷Becker and Murphy (1988, 5-6) acknowledge that this kind of outcome would imply "weak altruism."

and Murphy list, models of intergenerational conflict seem unable to replace tout court models recognizing altruism. We are back with the original question: why have not altruistic parents intervened in the face of massive transfers? Their failure to do so presents a political puzzle.

3 Income Mobility and Redistribution

In country after country, social security programs are characterized by substantial intergenerational transfers. Due to demographics and the limits of economic growth, these transfers cannot be duplicated for subsequent beneficiaries. This demands an explanation. Of course, the existence of social security programs per se is not particularly puzzling. Risk-averse individuals planning ahead to retirement will want to insure themselves against bad wage histories and uncertainty about individual longevity. But these concerns lead to intracohort redistribution. The puzzle is the degree of redistribution across generations.

An important building block of my explanation for the political dynamics of social security is a modified version of Bénabou and Ok's (2001) Prospect of Upward Mobility (POUM) model of voting on redistribution. Bénabou and Ok posit a fairly standard income mobility process in which expected future income is a positive function of current income but increases at a decreasing rate, a process somewhat analogous to regression to the mean. Given this and a few more technical assumptions, they show, somewhat paradoxically, that a majority of altruistic voters may oppose long-term redistribution because they rationally expect to have above-average incomes. For parallel reasons, voters who currently benefit from the progressivity of social security will be willing to accept its future restriction because they expect their descendants to be hurt by the program's redistributive character.

A simple application to Italian income data and the associated income mobility process will help illustrate how the voters' calculations might work in practice. Based on 1977-2002

data Piraino (2006) summarizes the Italian case using a four-class transition matrix

$$\mathbf{M} = \begin{bmatrix} .201 & .514 & .199 & .086 \\ .116 & .474 & .293 & .117 \\ .118 & .351 & .270 & .261 \\ .028 & .112 & .381 & .480 \end{bmatrix},$$

where, reading from the top down, the first column of \mathbf{M} defines the respective probabilities that sons of *Low*, *Low-Middle*, *High-Middle*, and *High* income fathers will enter the lowest class next period, the second column defines the transition probabilities to the *Low-Middle* class, the third column defines the transition probabilities to the *High-Middle* class, and the fourth column defines the transition probabilities to the *High* income class.⁸ Notice that the sons of fathers in the lowest class have a small chance of entering next generation's upper class directly, while the sons of fathers in the upper class face a negligible risk of entering the lowest class directly.

In 2002, mean Italian income was €14,631, and the first and second income classes were capped respectively at €8477 and €12,810 (median income).⁹ Clearly a majority of the population had below-average income. Yet even equating the *Low-Middle* with the bottom quartile's income and the income of the top quartile with the third quartile's income, the expected income for the sons of current *Low-Middle* class fathers was €18,749. In other words, in 2002 a majority of the Italian population could have rationally expected their children to have above-average income, although a majority could have rationally

⁸*Low* means incomes lower than two-thirds of the median, *Low-Middle* means incomes from two-thirds of the median to the median, *High-Middle* means incomes between the median and 150% of the median, and *High* includes all incomes above 150% of the median. In a published version, Piraino (2007) presents these data in a form that is somewhat less useful for my purposes.

⁹The maximum income in the sample was €245,388. Income data are from Clementi, Gallegati, and Kaniadakas (2008).

supported contemporaneous redistribution. If their calculations were risk neutral, they would have rejected a future policy of redistributive taxation, say to finance social security.

Looking longer term, suppose that in 2002 Italian incomes had in fact converged to the unique income distribution $\{.10, .35, .30, .25\}$ that is invariant to these transitions.¹⁰ Assuming a modest €20,000 for the top quartile, a majority would continue to oppose long-term redistribution while favoring it for 2002.

Of course, the typical voter is not risk neutral and social security represents an important form of insurance. Consider, then, the situation of a voter who is considering laissez-faire versus complete redistribution insuring her descendants against any idiosyncratic income risk. Assume she has the standard utility function

$$U(y_t) = \frac{y_t^{1-\gamma} - 1}{1-\gamma}, \gamma > 0,$$

where y_t is her income at time t and γ measures her degree of relative risk aversion or, more intuitively, the concavity of the function.¹¹ In Bénabou and Ok's (2001) analysis of U.S. data, the maximum degree of risk aversion consistent with majority opposition to redistribution is $\gamma = 0.35$, which is distinctly below typical empirical estimates of the parameter. For the Italian data, after again assigning just €20,000 to the *High* income class the maximum risk aversion parameter equals 1.7, which is within standard estimates. Means testing redistribution to target it to the lowest class would further increase the feasible upper bound on this parameter.

¹⁰In other words, $[\cdot 10 \cdot 35 \cdot 30 \cdot 25] \cdot \mathbf{M} = [\cdot 10 \cdot 35 \cdot 30 \cdot 25]$. The 2002 median income individual was somewhat poorer than the stationary median.

¹¹That is, $\gamma = -y_t U''(y_t)/U'(y_t) > 0$. When $\gamma = 1$, by l'Hôpital's rule, $U(y_t) = \ln(y_t)$. Galasso (2006, 75) calibrates γ for four of the countries studied here—France, Germany, Italy, and Spain—as 4.0, 2.41, 2.67, and 1.86 respectively. Fuster (1999, 626) sets it at 4.0, Fuster, İmrohoroğlu, and İmrohoroğlu (2003, 1256) at 2.0. Tabellini (2000, 529) makes the strong assumption that the (nonconstant) coefficient of relative risk aversion is always less than 1.

4 Intergenerational Altruism and Support for Social Security

The preceding section illustrated the hypothetical impact of the POUM process for the Italian case. This section develops a more general political-economic model of a social security program consistent with two stylized facts: the program is supported by a majority of voters in the short run yet the benefits it provides may be reduced or eliminated by voters who are altruistic toward their children. The model is based on Tabellini (2000), but modified to introduce POUM calculations, including an expansion from two to three overlapping generations.¹²

In each country j three generations coexist: dependent children, working parents, and retired parents. Each child has one parent and lives for three periods.¹³ The country's net rate of population growth is n_j , so for each parent there are $1 + n_j$ children (for the sake of notational simplicity, from here on I will suppress the country subscript unless needed). The consumption good is jointly consumed by each dependent child and working parent. With i indexing families, children from generation t inherit productive endowments from their generation $t-1$ parents, so $e_t^{it} = e_t^{it-1}$. The distribution of $e_t^i, |e_t^i| < 1$, is given by the known function $G_j(\cdot)$ having a 0 mean and negative median. The utility of each $t-1$ generation working parent in the i^{th} family is described by

$$W_t^i = U(c_t^i) + E_t^i [R_{t+1}^i + (1 + n)\delta W_{t+1}^i], \quad (1)$$

where c_t^i is the worker's (and dependent's) consumption at time t ; utility from household consumption, $U(\cdot)$, is a strictly increasing concave function with constant relative risk aversion as in the Italian example; E_t^i is mathematical expectation given i 's information at

¹²See Arrondel and Masson (2006) for the empirical significance of this distinction.

¹³Making this parent a female is a typical simplification in demographic models (e.g., Preston, Heuveline, and Guillot 2001).

time t (including e_t^{it}); R_{t+1}^i is the worker's own future utility as a retiree; and δ , $0 < \delta < \frac{1}{2}$, measures the worker's altruism toward each of her children as future workers.¹⁴ It would be straightforward to incorporate a time preference.

At first sight $0 < \delta < 1$ is a more natural restriction to impose on the typical working parent. However, the worker's direct expectation about her children's future is not the only channel for her altruism. As a retiree she will also have altruistic concerns for the working children supporting her. Specifically, at time t the utility of each $t - 2$ generation retiree in the i^{th} family is described by

$$R_t^i = d_t^i + (1 + n)\delta W_t^i, \quad (2)$$

where d_t^i is the retirees' period t consumption and δ , $0 < \delta < \frac{1}{2}$, continues to measure the now-retired parent's altruism toward her children. To prevent this double-counting of the children's utility from having an empirically excessive impact I constrain the combined parental altruism so that $I_t\delta^* < 1$, where $2\delta \equiv \delta^*$ and I_t is the gross rate of return on savings at time t . This constraint is necessary so long as the parent puts her own future utility above her child's.¹⁵

The worker's budget constraint is

$$(1 - \tau_t)w(1 + e_t^{it-1}) \geq c_t^i + s_t^i, \quad (3)$$

where for simplicity the "base" market wage w is assumed to be constant; τ_t , $0 \leq \tau_t \leq 1$, is a proportional income tax dedicated to funding contemporaneous social security benefits; and s_t^i is i 's savings, which can be positive or negative.¹⁶ There are no outside assets and

¹⁴I only consider this direction of altruism since in industrialized nations there is a strong "downward" asymmetry in transfers, particularly financial transfers (Arrondel and Masson 2006, 1009-12).

¹⁵In particular, this constraint parallels the standard restriction of the agent's temporal discount factor β by $\beta I_t \leq 1$: when $\beta I_t = 1$, the agent is exactly balancing the return from savings and the discounting of future consumption, when $\beta I_t < 1$ the agent is exhibiting impatience. Here $\beta = 1$.

¹⁶To focus on the public channel for altruism this formulation ignores the possibility of private bequests

output is not storable, so the sum of savings must equal 0. The wage is multiplied by $1 + e_t^{it-1}$ to produce a simple interpretation of the impact of above-mean ($e_t^{it-1} > 0$) and below-mean ($e_t^{it-1} < 0$) endowments on the effective wage, which therefore is defined on $(0, 2w)$.

The retiree's budget constraint is

$$g_t + I_{t-1}s_{t-1}^i \geq A + d_t^i, \quad (4)$$

where g_t is a lump-sum retirement benefit from the government and $A > 0$ is a fixed endowment.¹⁷ Because productive endowments are unequally distributed and there is a uniform social security benefit, the program is redistributive. The government budget is balanced each period, so with mean endowment 0, $g_t = \tau_t(1 + n)w$.

The impact of children's endowments on their individual earning capacity as workers cannot be fully predicted a period earlier. This timing reflects the financial uncertainties voters typically confront.¹⁸ In particular, childhood endowments are governed by a concave stochastic transition function f :

$$e_{t+1}^{it} = f(e_t^{it}, \epsilon_{t+1}^{it}),$$

where ϵ_{t+1}^{it} is an identically distributed random shock whose realization is the same for all generation t children in i , f is normalized to produce mean income of 0, which controls for the impact of per capita productivity growth, and a worker's expected endowment is a

or *inter vivos* transfers from retirees to their children. Also, for future reference we make the uncontroversial empirical assumption that $w > \gamma$.

¹⁷One can think of A as an income floor in the event of negative savings, which prevents negative consumption by retirees.

¹⁸Villanueva's (2002) notion of uncertain effort is a possible component of e_{t+1}^{it} . The transition mechanism for e_{t+1}^{it} would then feed into Piketty's (1995) idea that the statistical inheritability of political ideology is rooted in the way children infer from family history the relative importance of luck and effort in determining individual income.

positive function of childhood endowment.¹⁹ When $f(\cdot, \cdot)$ is specified as an autoregressive loglinear function it becomes a standard way to characterize income mobility (e.g., Corak 2004).

To determine the additional equilibrium conditions, note that optimal savings are given by

$$U'(c_t^i) \frac{\partial c_t^i}{\partial s_t^i} + \frac{\partial E_t R_{t+1}^i}{\partial s_t^i} = 0,$$

and therefore

$$U'(c_t^i) = \frac{\partial E_t d_{t+1}^i}{\partial s_t^i} = I_t.$$

In equilibrium, then, marginal utilities from consumption equal marginal utilities from savings, which in aggregate are 0. Since the retiree's utility function is linear in consumption, her marginal utility from savings equals I_t .²⁰ Because $U(\cdot)$ is identical across individuals, all workers and their dependent children must have the same consumption for these conditions to hold.²¹ This restriction is only satisfied when $c_t = (1 - \tau_t)w$, which means that loans from workers with above-average endowments (who receive the market interest rate I_t) increase the consumption of workers with below-average endowments (who pay the market rate of interest).

¹⁹Technically, for the endowment pair e_t^{it}, e_{t+1}^{it} and shock ϵ_{t+1}^{it} , $\text{prob}(\epsilon_{t+1}^{it} | f(e_t^{it}, \epsilon_{t+1}^{it}) \leq e_{t+1}^{it})$ is decreasing in e_t^{it} (see Bénabou and Ok 2001, 450-51 and 455).

²⁰For the retiree's Lagrangian, the costate is $\lambda[d_t^i - A + g_t + I_{t-1}s_{t-1}^i]$, so $\partial R_t / \partial d_t^i = 1 - \lambda = 0$, and $\lambda = 1$. Therefore increases in consumption are one-for-one with increases in income.

²¹This captures the stylized facts that consumption inequality is lower than income inequality (for the U.S. case see Gordon and Dew-Becker 2008, 29-32), wealth inequality exceeds income inequality (OECD 2008), and this wealth is concentrated at the latter stages of the life-cycle (Fernández-Villaverde and Krueger 2007).

The equilibrium conditions are then:

$$\begin{aligned}
c_t^i &= (1 - \tau_t)w, \\
s_t^i &= (1 - \tau_t)e_t^{it-1}w, \\
d_t^i &= A + I_{t-1}(1 - \tau_{t-1})e_{t-1}^{it-2}w + \tau_t(1 + n)w.
\end{aligned} \tag{5}$$

These conditions make clear that in this model any apparent politics between generations *as groups* is an artifact of the relative homogeneity of each generation: the marginal disutility of payroll taxes and the marginal utility of social security payments are identical for all individuals within a cohort.

Substituting the equilibrium conditions into the utility functions of workers and retirees yields respectively:

$$\begin{aligned}
W_t^i &= U[(1 - \tau_t)w] + A + I_t(1 - \tau_t)e_t^{it-1}w \\
&\quad + (1 + n)E_t[\tau_{t+1}w + \delta^*W_{t+1}^i].
\end{aligned} \tag{6a}$$

$$R_t^i = A + \tau_t(1 + n)w + I_{t-1}(1 - \tau_{t-1})e_{t-1}^{it-2}w + \delta(1 + n)W_t^i. \tag{6b}$$

The first term represents the worker's utility from consumption; the second term represents her fixed income at retirement; the third term represents her after-tax loan (re)payments; and the last term sums her expected retirement benefits and her concern for the utility of her children when they are workers. Equation (6b) has a parallel interpretation.

To keep the model tractable, I follow standard practice by assuming that workers and retirees vote directly on the tax. Since the annual social security budget is in balance, a vote on taxes is indirectly a vote on the size of the social security benefit itself. In particular, votes in period t determine the period $t + 1$ tax burden of workers' children and the benefits these workers receive when they retire. The delay in implementation reflects

the common understanding that significant changes in the social security program will be implemented with sufficient time for workers to adjust their retirement plans, which Galasso (2006, 55 and 192) interprets as a divide-and-conquer strategy across age groups. This approach reduces the choice to one policy dimension, the selection of the tax level, instead of including the timing of the tax or the retirement age as additional dimensions.

For the analysis of simple two-party majority-rule representative democracies, it is common to treat the position of the median voter as decisive in determining the tax level insofar as the Median Voter Theorem instructs parties to converge to her position. Translating different electoral rules such as proportional representation (PR) into a model of direct democracy may seem more complicated. However, Boix (2003, 189) argues that the median voter prevails in both plurality and PR systems. This holds true for programs engineered through social compacts between business and labor, such as in Sweden and Germany, since ultimately each compact must be implicitly sanctioned within the electoral framework.

The key issue, then, is how the median voters' utility functions respond to future tax increases. Differentiating W_t^i and R_t^i with respect to τ_{t+1} yields:

$$\frac{\partial W_t^i}{\partial \tau_{t+1}} = (1+n) \left[w + \delta^* \frac{\partial E_t W_{t+1}^i}{\partial \tau_{t+1}} \right], \quad (7a)$$

$$\frac{\partial R_t^i}{\partial \tau_{t+1}} = (1+n) \delta \frac{\partial W_t^i}{\partial \tau_{t+1}}. \quad (7b)$$

Observe that, after rescaling, the retiree's utility response to tax increases is identical to her children's. Therefore, the optimal tax rates within a family are identical. Using the equilibrium conditions, the law of iterated expectations to substitute for W_{t+1}^i and W_{t+2}^i , and differentiation yields:

$$\frac{\partial W_t^i}{\partial \tau_{t+1}} = (1+n)w \{ 1 - \delta^* [E_t(1 + e_{t+1}^{it})I_{t+1} + (1 - \tau_{t+1})E_t e_{t+1}^{it} U''(c_{t+1}^i)] \}. \quad (8)$$

Equation (8) can be simplified using the formula for the coefficient of relative risk aversion γ (see footnote 11):

$$\frac{\partial W_t^i}{\partial \tau_{t+1}} = (1+n)\{w[1 - \delta^* E_t(1 + e_{t+1}^{it})I_{t+1}] + \delta^* E_t I_{t+1} e_{t+1}^{it} \gamma\}. \quad (8')$$

This reformulation implies that increasing risk aversion among model workers and retirees moderates their preferences over social security. Risk aversion tempers opposition based on high-endowment expectations since endowment realizations can fall short; it also tempers support based on low-endowment expectations since they can turn out to be overly pessimistic.

Equation (8') also implies that each voter's expected utility decreases monotonically as her expected endowment increases. But in terms of utility levels, if her (grand)child's expected endowment is below average ($E_t e_{t+1}^{it} < 0$) and small enough, she will support more spending on social security. When that expected endowment is sufficiently large, she will vote for less spending. Since these responses are linear in expected endowment and equation (8') is otherwise identical for all voters, the resulting preferences are single-peaked and the second-order conditions for a voting optimum are satisfied (see Tabellini 2000, 530). In other words, in the simple majority-rule voting game played by an electorate consisting of workers and retirees, all of whom vote for one of two opportunistic candidates proposing alternative tax rates, there is an equilibrium determined by the median voter's preference.²²

²²The increased turnout associated with PR (Franklin 2002) tends to shift the income distribution of voters in PR systems downward and therefore lowers the income of the median voter relative to the population (Franzese 2002, 71-75). Shifting the expected median income relative to the mean broadens the coalition voting for a positive or a higher tax, since this coalition is formed from the bottom of the endowment distribution (cf. Iversen and Soskice 2006; 2009). This shift, of course, is reflected in the cumulative distribution function of time $t + 1$ endowments, $G(e_{t+1}^i)$.

For empirically plausible population growth rates, $(1+n)\delta < 1$, so within each dynasty a retiree's view of social security will be more politically moderate than her children's even though their ideal points are identical to hers. This behavioral implication is clear if we assume that workers have higher absolute utility than their retired parents at any proposed tax rate, which is a safe assumption since workers enjoy two periods of life and therefore directly experience the benefits of the proposed tax regime. For voters who prefer more redistribution and therefore a higher tax, *ceteris paribus* there is a widening utility difference between workers and retirees as taxes are increased.²³ Conversely, for those who prefer less redistribution and therefore a lower tax there is a decreasing utility difference as taxes are increased. The intuition behind these results is that model retirees are only indirectly affected by the cost of the tax.

Designating the expected endowment of the children and grandchildren of the median voters by $E_t e_{t+1}^m$, the number of retirees by N^R , and noting there are $1+n$ as many workers as retirees, the definition of the median requires

$$(1+n)G[f^{-1}[E_t(e_{t+1}^m)]] + G[f^{-1} \circ f^{-1}[E_t(e_{t+1}^m)]] = 1 + \frac{n}{2}, \quad (9)$$

where $f^{-1}(\cdot)$, the inverse of the transition function, produces the endowment of the worker who is a median voter and a second application of $f^{-1}(\cdot)$ produces the endowment of a retiree who is a median voter.²⁴

By setting equation (8') to 0 and using the economic equilibrium condition

²³The integrals over marginal utility differ between retirees and workers by a factor of $(1+n)\delta$ and therefore there is an increasing absolute difference as tax rates increase.

²⁴Equation (9) follows from the definition of the median:

$$(1+n)N^R G[f^{-1}[E_t(e_{t+1}^m)]] + N^R G[f^{-1} \circ f^{-1}[E_t(e_{t+1}^m)]] = (1+n)N^R \{1 - G[f^{-1}[(E_t(e_{t+1}^m))]]\} + N^R \{1 - G[f^{-1} \circ f^{-1}[E_t(e_{t+1}^m)]]\}.$$

$I_{t+1} = U'(c_{t+1}^i)$, $E_t(e_{t+1}^m)$ can be associated with equilibrium consumption c_{t+1}^* such that

$$E_t(e_{t+1}^m) = \frac{w[\delta^* E_t U'(c_{t+1}^*) - 1]}{\delta^* E_t U'(c_{t+1}^*)(\gamma - w)}. \quad (10)$$

As a reminder, if $E_t e_{t+1}^m > 0$ the expected endowment of the median voters' descendants is above average and a majority may oppose redistribution through social security; $E_t e_{t+1}^m < 0$ carries the opposite implication.

From equation (10) and the fact that $\gamma < w$ and $U'(c_{t+1}^*)\delta^* = I\delta^* < 1$, $\partial E_t(e_{t+1}^m)/\partial c_{t+1}^*$ is strictly positive:

$$\partial E_t(e_{t+1}^m)/\partial c_{t+1}^* = \left\{ \frac{w\delta^* E_t U''(c_{t+1}^*) [\delta^* U'(c_{t+1}^*)(\gamma - w)]}{[\delta^* E_t U'(c_{t+1}^*)(\delta^* - w)]^2} - \frac{\delta^*(\gamma - w) E_t U''(c_{t+1}^*) w [\delta^* E_t U'(c_{t+1}^*) - 1]}{[\delta^* E_t U'(c_{t+1}^*)(\delta^* - w)]^2} \right\} > 0.$$

By definition $G_j(\cdot)$ is strictly increasing, so c_{t+1}^* is unique. Finally, since the equilibrium conditions require

$$c_{t+1}^i = (1 - \tau_{t+1})w,$$

the equilibrium tax rate is defined by

$$\tau_{t+1}^* = 1 - \frac{c_{t+1}^*}{w}. \quad (11)$$

Thus the social security program survives when the optimal tax creates a wedge between the wage and equilibrium consumption of a median voter's children or grandchildren, that is, when $c_{t+1}^* < w$. To determine whether this condition is in fact satisfied, define $E_t(e_{t+1}^w)$ as the result of substituting w for c_{t+1}^* in the right-hand-side of equation (10). Using equations (9) - (11) and the fact that $\partial G/\partial c_{t+1}^* > 0$, there is a positive tax when this level of tax-free consumption pushes the left-hand side of equation

(9) beyond the voting equilibrium, that is, when

$$(1 + n)G[f^{-1}[E_t(e_{t+1}^w)]] + G[f^{-1} \circ f^{-1}[E_t(e_{t+1}^w)]] > 1 + \frac{n}{2}.$$

Whether a social security program is politically sustainable, in short, depends on the expected distribution of endowments. However, even when the tax is positive the logic of the POUM hypothesis puts downward pressure on the actual rate. Specifically, since $\partial\tau_{t+1}/\partial E_t(e_{t+1}^m) < 0$, social security taxes decline when the expected endowment of descendants of the median voter increases. Whether this implies ever declining social security taxes and eventually a corner solution dictating $\tau_{t+s}^* = 0$ for some s depends on technical features of the income transition process (Bénabou and Ok 2001). As for the rate of decline, because of differences in their underlying economies and intragenerational redistribution policies, some countries, independent of social security policy, have more concave income transition functions than others.²⁵

Even though net benefits decline with declining tax rates, the interests of workers and their children do not diverge in the voting booth since dependent children do not vote and the workers and retirees who do vote cannot know the actual endowments their (grand)children will bring to the workplace. So voters with below-average incomes can still support future reductions in net social security benefits to the extent they expect their descendants to have above-average incomes.

When taxes decline, the new generation of retirees has paid a higher tax in support of their parent's generation than the tax now supporting them. Strictly speaking, within the model these declining social security taxes do not *imply* that the new retirees experience a negative net lifetime return on social security taxes paid. The qualifier is necessary since,

²⁵Strictly speaking, I mean country j 's transition function is more concave *in expectation* (\triangleright) than is country k 's, i.e., $E_t(f_j(e_t^i)) \triangleright E_t(f_k(e_t^i))$, when for identical parental income distributions the expectation that a child will have below-mean income is lower in j than in k (see Bénabou and Ok 2001, 462).

theoretically, population and productivity growth could offset the impact of declining tax rates. But this is not a serious empirical restriction: for the countries studied here the positive impact of growth has been trumped by the increasing longevity of retirees.²⁶

Within the model, the situation in which fertility does not offset longevity can be represented by $-1 \leq n_j < 0$. True, at the limit this kind of society disappears: $(1 + n_j)^t \rightarrow 0$ as $t \rightarrow \infty$. However odd, disappearance in fact is the projection for countries like Italy should its current population trend continue. One way to describe the implication of this demographic trend for social security is that maintaining the existing program in countries like Italy represents a much more substantial challenge than in countries like the U.S. (e.g., Galasso 2006).

Given actual economic and demographic trends, the key political variable is income mobility: a larger *expected* children's endowment is associated with support for lower payroll taxes and therefore lower benefits. At first sight, the median voter should still support any redistributive payroll tax since median income is consistently below mean income. Yet, as illustrated by the Italian data, the median endowment can remain perpetually below the mean while, due to income dynamics, the median and *expected* mean reverse their customary relative positions. In that case, *median voters will support social security reductions for their descendants, altruism notwithstanding*. Moreover, the distribution of endowments implies that what applies to median voters will apply to voters whose endowments lie within some finite interval below the median endowment.

Finally, note the crucial role played by altruism in generating these results. For the limiting case of no altruism—when $\delta = 0$ —equation (8) says that workers' utility increases with increases in taxes on their children, while equation (7b) says that retirees are indifferent to taxes that will not change their own benefits.

²⁶PAYG financing also makes each subsequent generation pay for the windfall experienced by the first generation of retirees.

5 Empirical Analysis

The POUM-based model explains why the financial structure associated with so many social security programs has been politically acceptable despite the fact that their future retrenchment is a foregone conclusion. Beyond this aggregate-level result, however, it is important to determine whether, on the margin, individuals take into account the kinds of forces identified by the POUM-based model: relative income, age, and mobility.

Unfortunately, we do not know how individuals would assess a fully articulated set of reform proposals, let alone how they would vote for them. Moreover, many considerations factor into any individual's decision, not the least of which are the decision maker's degree of risk aversion and how her discount rate interacts with the projected time when descendants' incomes exceed the mean. Accordingly, I frame the appropriate inferences about expressed support for redistribution through social security in terms of relative probabilities.

Although the model embeds individuals in a closed political economy yielding general equilibrium outcomes, available data are insufficient to estimate the key political parameters of such a model.²⁷ This means it is not possible to explain fully the *level* of support for redistributive social security programs and thereby predict their political future. Fortunately, available individual-level data are sufficient to confirm whether POUM-based forces affect individual support as hypothesized. The resulting model is structural in the sense that it is rooted in the individual's fundamental preferences and opportunities. As a result, the *structure* of the individual's decisions about social security can be assumed to be invariant to macro-level forces influencing the decision's outcome so

²⁷Strictly speaking, there would be a general equilibrium model if fertility decisions were endogenized and the model were supplemented with a labor market to generate the wage. Or the wage could be treated as part of each agent's endowment, so mean endowment would equal w instead of 0.

long as their impact is channeled through endowments or wages.²⁸

While the distribution of endowments is a key driver in the model, they are unobservable. Fortunately, endowments are positively associated with income and income is observable (see, for example, Cigno, Luporini, and Pettini 2003). The resulting distribution of income has implications for political behavior since social security in the model, as in practice, is redistributive: the tax burden is a positive function of endowment but, in the model, benefits are distributed in equal lump-sum amounts. Accordingly:

Hypothesis 1: The higher individuals' incomes, the less likely are they to support social security redistribution.

But:

Hypothesis 2: The greater the degree of income mobility the less likely are individuals with below-mean income to support redistribution through social security.²⁹

Hypothesis 3: Retirees with low incomes and therefore low income expectations for their grandchildren will have lower support for redistribution than will low-income workers.³⁰

²⁸The following, however, represents a reduced form, not structural, estimation of equation (8), the model's first-order condition for workers and, rescaled, the first-order condition for retirees. Ultimately the key issue is whether the reduced form is identified. Although relevant structural parameters are missing, there is good reason to believe that the reduced form estimators are consistent: (i) if there is causation in this case the causal direction is unambiguous, and (ii) in light of the model's equilibrium conditions (5), the key regressors in the estimation are indeed associated with the first-order conditions.

²⁹Those who already enjoy above-average incomes will also be inclined to oppose redistribution. However, the income mobility process is characterized by an increasing concave function. Expected decreases in income for those at the upper end are relatively larger than expected increases for those at the lower end. Empirically, income is positively associated with support for social insurance (e.g., Moene and Wallerstein 2003). But it is important to distinguish redistributive insurance protecting current high income against future losses and redistributive insurance when predicting (children's) income in the future.

³⁰Hypotheses 3 and 4 focus on the income extremes since the expected endowments of their

Hypothesis 4: Retirees with high incomes and therefore high income expectations for their grandchildren will have lower support for redistribution than will high-income workers.³¹

Intuition suggests that surveyed support for a particular way of organizing a *current* social security program should be associated with support for the same organization in the future. What makes this inference tricky, however, is the model's demonstration that support for current benefits does not imply support for the same level of future benefits. This is the altruism puzzle. In principle, then, elicited support for one kind of pension scheme could disguise support for a very different scheme for the future.

Fortunately, one of the questions in the 2001 Eurobarometer survey on pensions addresses the basic redistributive dimension of social security:

Q. 62.7 (V389): "A good pension system should contribute to greater equality in income and living conditions among the elderly." The coding is: Strongly disagree, 1; Slightly Disagree, 2; Slightly Agree, 3; Strongly Agree, 4.³²

This question allows us to determine whether the key factors identified by the model—relative economic position, mobility, and age—affect views on distributive principles in the appropriate way. Obviously, the question is posed normatively, which (grand)children are most likely to remain below and above the mean respectively.

³¹Because the positive utility differential between rich workers and rich retirees increases with decreasing taxes, the probability mass of rich retiree's redistributive preferences will shift, relative to rich workers, *away* from greater redistribution.

³²There are two other plausible questions. Q. 62.6 (V388): "Older people who have wealth or sufficient income from other sources should not receive a pension from the state." and Q. 62.10 (V392): "The amount of one's pension should be strictly based on the amount of contributions one has paid into the pension scheme." A factor analysis of responses to the three questions suggests there is at most one underlying factor with two components (the third question makes almost no statistical contribution). But all three components are only weakly related. In particular, the respective "uniqueness" values are 0.70, 0.91, and 1.0. Similarly Cronbach's alpha is 0.28, 0.18 with all three questions.

generally suggests (anticipated) stability in responses over time. Moreover, normative responses are not detached from material interests. Accordingly, in interpreting responses to this question I treat the model as implying that lower income respondents experiencing higher mobility will tend to respond at the margin less favorably toward redistributive principles than lower income individuals with worse prospects. Of course, these effects at the margin do not imply an explanation for the *level* of support for social security principles. Here the pure insurance function of social security is surely very important.

I test the four hypotheses using a two-level hierarchical ordered logit model. The level-one variable measuring support for redistributive social security is regressed on the set of variables listed below.³³

The level one exogenous variables are: *Income* (D.29), after-tax household income in quartiles coded 1-4 and centered around its mean; *BelowMean*, coded 1 if income is below the national mean income, 0 if not;³⁴ *Age* (D.11); *Age*²; *Male* (D.10), to control for social

³³The estimation model does not include a random coefficient on the *BelowMean* variable described in the text, but retains a level-two additive disturbance term. This gives qualitatively identical results to a model with a random coefficient, but it provides a substantially better fit. The obvious explanation for the better fit is the small number of level-two units. Since maximum likelihood estimation has dubious small sample properties I use penalized quasi-likelihood (Breslow and Clayton 1993) yielding generalized least squares estimates of level-two coefficients and approximate maximum likelihood estimates of the (co)variance parameters. This is not a perfect solution, but Breslow (2004) indicates that potential biases are limited when cluster sizes are large. Nonetheless, robust standard errors and bootstrapped standard errors are slightly higher (although see footnote 38).

³⁴Mean household income is based on pre-tax values provided by the Luxembourg Income Study 2000 (Portugal data are from Rodrigues, Albuquerque, and Fernandes 2004). For each country, all incomes below the lower bound of one of the twelve Eurobarometer country-specific income categories can be classified as below the mean. If the highest pure below-mean income is category n , $n < 12$, this procedure misclassifies some number of households in category $n + 1$. The choice of which category to use as the cut point was pragmatic depending on the relation between the mean and the category bounds. As a practical

security's negative actuarial impact on men relative to women, coded 1 if male, 0 if female; and *Ideology* (D.1.1), to control for independent regard for redistributive programs, coded 1-10 Left-Right and centered around its mean.³⁵ Education is a natural variable to include, but the data indicate only the last year education ended, which is quite different. Also, the effects of education could well confound the effects of income as a measure of endowment (see Fong 2006, 10).

The level-two variable is *Immobility*, a measure reflecting each country's pre-tax income mobility based on parent-child income elasticities.³⁶ The country units are Belgium, France, Germany, Ireland, Italy, Portugal, and Spain.³⁷ The mixture of the two models matter, the empirical analysis reveals little difference between using the two categories.

³⁵ *Income* and *Ideology*, have significant missing data in the form of "refusal to answer" or "don't knows." This problem was addressed using the Amelia II missing data imputation program developed by James Honaker, Gary King, and Matthew Blackwell. The extensiveness of the missing data suggested the use of a ridge prior to induce convergence. In any event, data imputation does not substantially affect the results.

³⁶The *Immobility* measure averages Comi's (2004) estimates of father-son and father-daughter income elasticities. Since smaller elasticities imply higher mobility and this variable is interacted with *BelowMean*, the "immobility" interpretation is the most straightforward. I use estimates that reflect earnings averaged over multiple years to reduce selection bias due to variable unemployment rates across countries and the association between unemployment and the level of earnings. Only countries with statistically significant mobility estimates for sons and daughters are included. Theoretically, these exclusions are problematic because 0 values have a direct substantive interpretation as instances of very high mobility. In the actual cases, however, the estimated values were negative, suggesting counterintuitively that parental income is a burden in those countries. Finally, mobility rates do not incorporate parents' private information about future prospects. Yet as noted above, familial clues about the impact of effort on success may be self-sustaining (Piketty 1995). If so, the family income control attenuates this problem. Moreover, using societal rates obviates the endogeneity problem: attitudes toward redistribution may color perceptions of mobility (Fong 2006, 7-8).

³⁷The financial structure of social security and its redistributive elements vary across the sampled countries (see <http://www.ssa.gov/policy/docs/progdesc/ssptw/2008-2009/europe/index.html>). By the same token, the possibility of labor and capital mobility imposes pressures toward consistency (Feldstein

produces *ImmobilBlw*, which is formed by the interaction of *Immobility* with *BelowMean*.

The model assumes that the coefficients β_{ij} on the level-one intercept and variable *BelowMean_{ij}* are given by $\beta_{ij} = \gamma_{0j} + \gamma_{1j}Immobility_j$, where i and j designate individuals and countries respectively. The cut points are designated by c_k , $k = 1, 2, 3$, with $c_1 = 0$.

The resulting model is:

$$Pr(SocSec_{ij} > k) = \text{logit}^{-1}(b_{0j} + b_{1j}Income_{ij} + b_{2j}BelowMean_{ij} + b_{3j}Immobility_j + b_{4j}ImmobilBlw_{ij} + b_{5j}Age_{ij} + b_{6j}Age_{ij}^2 + b_{7j}Male_{ij} + b_{8j}Ideology_{ij} - c_k).$$

Regression results for the model are presented in Table 1.

Table 1: Ordered Logit Analysis of Support for Social Security Redistribution

| | Coef. | Std. Err. | P > z | 95% Conf. Interval | |
|---|--------------|--------------------|-------------------|---------------------------|----------|
| Income | - 2.0* | 0.063 | 0.001 | - 1.388 | - 1.085 |
| BelowMean | - 0.62 | 0.274 [†] | 0.03 | - 3.171 | - 1.082 |
| Immobility | - 7.45 | 3.00 [†] | 0.05 | - 1.29X10 ⁶ | - 2.286 |
| ImmobilBlw | 3.31 | 1.64 [†] | 0.04 | - 0.906 | - 0.001 |
| Age | 0.028* | 0.010 | 0.007 | 0.954 | 0.992 |
| Age ² | - 0.00028* | 0.00010 | 0.01 | - 0.0001 | - 0.0001 |
| Male | - 0.03 | 0.062 | 0.664 | - 1.161 | 0.909 |
| Ideology | - 0.06* | 0.017 | 0.000 | - 1.098 | - 1.029 |
| Constant | - 4.46* | 0.484 | 0.000 | 0.004 | 0.034 |
| c_2 | - 1.61* | 0.098 | 0.000 | - 6.084 | - 4.146 |
| c_3 | - 4.37* | 0.111 | 0.000 | - 98.299 | - 63.631 |
| pseudo-R ² = 0.02; N = 3953; * p < 0.05; [†] see footnote 38 for a discussion of statistical significance | | | | | |

Before unpacking the full quantitative implications of Table 1, it is worth noting that the qualitative results are broadly consistent with the first two hypotheses.³⁸ Regarding and Siebert 2002, 85-108).

³⁸Standard t -tests for statistical significance and marginal effects calculations are inappropriate for interactions in the context of logistic regression (Ai and Norton 2003). A likelihood ratio test in which the restricted model does not contain the interaction term yields $\chi^2(1) = 3.50$ with $Prob > \chi^2(1) = 0.06$. This is a reasonably strong rejection of the null of no difference given the multicollinearities associated with

Hypothesis 1, income is negatively associated with support for redistribution. Regarding Hypothesis 2, in a society with complete mobility ($Immobility = 0$), respondents with below-mean incomes are less likely to support redistributive social security programs. Conversely, to the extent societies are immobile ($Immobility > 0$) those with below-mean incomes are more likely to support redistribution. To analyze the remaining two hypotheses it is necessary to condition on the two income extremes.

I simulate first differences to estimate the quantitative implications of the model's four hypotheses. Table 2 reports the results of increasing each of the key variables from its mean to one standard deviation above, holding all other variables at their means, or age from 45 to 65 alternatively conditioned on being in the lowest income category and the highest. I use age rather than work status since the key distinction in the model between workers and retirees is the immunity of retirees to changes in the social security program, which essentially is a function of age.³⁹ The percent change in probability represents the change from the base probability with all variables at their means.

interactions.

³⁹Mobility might affect workers' *selfish* attitudes toward social security insofar as children with better prospects will better able to care for their elderly parents. Although subsetting the data by age reduces the precision of estimates, it does not alter the qualitative pattern found for the comprehensive data set.

Table 2: First Differences

| Change in Probability of Support for Redistribution | Standard Error | % Change in Probability | |
|--|-----------------------|--------------------------------|-------|
| Income↑ | | | |
| Pr(SocSec = 1) | 0.005* | 0.0018 | 25% |
| Pr(SocSec = 2) | 0.02* | 0.005 | 29% |
| Pr(SocSec = 3) | 0.03* | 0.008 | 6% |
| Pr(SocSec = 4) | - 0.05* | 0.02 | - 13% |
| BelowMean↑ | | | |
| Pr(SocSec = 1) | 0.02* | 0.009 | 75% |
| Pr(SocSec = 2) | 0.05* | 0.023 | 66% |
| Pr(SocSec = 3) | 0.06* | 0.025 | 12% |
| Pr(SocSec = 4) | - 0.12* | 0.056 | - 33% |
| Immobility↓ | | | |
| Pr(SocSec = 1) | 0.004* | 0.0023 | 20% |
| Pr(SocSec = 2) | 0.01 | 0.007 | 14% |
| Pr(SocSec = 3) | 0.02 | 0.009 | 4% |
| Pr(SocSec = 4) | - 0.03* | 0.018 | - 8% |
| Age + Age ² (45-65) | | | |
| | | Low Income | |
| Pr(SocSec = 1) | 0.0008* | 0.0004 | 4% |
| Pr(SocSec = 2) | 0.003 | 0.0015 | 5% |
| Pr(SocSec = 3) | 0.01 | 0.006 | 2% |
| Pr(SocSec = 4) | - 0.01* | 0.008 | - 2% |
| Age + Age ² (45-65) | | | |
| | | High Income | |
| Pr(SocSec = 1) | 0.001* | 0.0012 | 4% |
| Pr(SocSec = 2) | 0.004 | 0.0037 | 7% |
| Pr(SocSec = 3) | 0.006 | 0.0052 | 1% |
| Pr(SocSec = 4) | - 0.01* | 0.009 | - 3% |
| * $p < 0.05$; one-tailed test for SocSec = 1 and 4 | | | |

Income↑, a one standard deviation increase in *Income* from its mean, strongly shifts preferences against redistribution. Although the shift is not perfectly monotonic, the probability of strongly opposing redistribution increases by 25% and in the next strongest category by 29%. The probability of offering the strongest support for redistribution declines by 13%. It is worth bearing in mind that only probabilities for the extreme categories of the social security response are unambiguously affected by a change in the relevant variable, while probabilities for the middle categories are sensitive to specific densities of the social security variable. In any case, the results regarding income are not as obvious as they might first appear (e.g., see Fong 2001 for some contrary theoretical as well as empirical considerations).

BelowMean↑ shifts a typical above-mean income individual (*BelowMean* = 0) in a perfectly mobile society (*Immobility* = 0) to below mean. As predicted this simulated change pushes respondents strongly toward opposition to redistribution: those at the bottom half of the income ladder are now more likely to see redistribution as a break on expected success. For those in the upper half, by contrast, mobility is less likely to work in their favor.

Immobility↓ shifts a typical below-mean individual from a society with mean mobility to a society whose mobility is one standard deviation above the mean. This interaction variable is statistically significant with a one-tailed test (with caveats already noted) and the substantive results are consistent with theoretical predictions. Indeed the percentage changes are fairly large, particularly for those categories reflecting explicit opposition to redistribution.

Finally, although data limitations make it impossible to separate out cohort from life-cycle effects, the *Age* variable behaves as theoretically expected.⁴⁰ As hypothesized *both*

⁴⁰If anything, cohort effects should work against Hypotheses 3 and 4 since those who were 65 in 2001 lived through part of the Great Depression.

low-income and high-income respondents who through simulation age from 45 to 65 experience a small statistically significant shift *away* from support for redistribution.

In sum, the data provide consistent support for the four hypotheses, which are designed to capture the kinds of POUM forces affecting the intergenerational politics of social security. Although income per se drives respondent preferences in a rationally self-interested fashion, we see that mobility considerations temper their calculations.

6 Conclusion

The great social insurance programs initiated in western industrial nations in the late nineteenth century and brought to maturity in the twentieth were designed to pool risk and thereby attenuate the impact of individual misfortune. Yet the shifting of risk went even further. Typically, much of the financial burden of these programs was imposed on later generations. This shift has been politically reaffirmed for many decades, along with the program retrenchment it now requires. How is this possible if parents genuinely care for their children?

The same period in which social insurance programs developed also witnessed an extraordinary increase in public spending on education and public health, as well as a general decline in the impact of social caste. While broadly part of the same political movement, this rise in economic mobility may have had an unintended impact on social insurance. For rising mobility increases the likelihood that key insurance programs of the welfare state will impose net losses on a majority of the next generation. The rational expectation of above-average financial outcomes may in fact have motivated support for current programs and implicit acceptance of their future retrenchment.

In light of this phenomenon, this paper has explored a model of public pension programs whose existence and size are determined by altruistic parent-voters. Several

testable hypotheses emerge from the model. One, those with higher incomes will be less inclined to support redistribution through social security. Two, the greater the degree of income mobility, the more likely are those with below-average incomes to *reduce* their support. Three, whether rich or poor, the elderly will exhibit relatively *lower* support for redistribution through social security than will their younger counterparts, an implication foreign to models of intergenerational political conflict. Put another way, the elderly may not deserve the moral censure that diagnoses of social security financing often apply to them.

An analysis of data from a 2001 survey of European attitudes toward pension programs provides consistent support for these hypotheses. In other words, in expectation the Lake Wobegon effect extends far beyond Minnesota.

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