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SOCIAL SECURITY, RETIREMENT,  
AND THE SINGLE-MINDEDNESS OF THE ELECTORATE

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Social Security, Retirement, and the Single-Mindedness of the Electorate  
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**ABSTRACT**

We propose a positive theory that is consistent with two important features of social security programs around the world: (1) they redistribute income from young to old and (2) they induce retirement. We construct a voting model that includes a "political campaign" or "debate" prior to the election. The model incorporates "single-mindedness" of the groups that do not work: while the workers divide their political capital between their "age concerns" and "occupational concerns", the retired concentrate all their political capital to support their age group. In our model, the elderly end up getting transfers from the government (paid by the young) and distortionary labor income taxes induce the retirement of the elderly. In addition, our model predicts that occupational groups that work more will tend to have more political power. The opposite is true for non-occupational groups (such as the elderly). We provide some evidence that supports these additional predictions.

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## **Introduction**

The elderly are politically powerful because they are more single-minded. That is, while young citizens disperse their political capital among many issues, the old tend to vote with very few things in mind and, most prominently, the benefits they get from the government in terms of pensions and health care. This view is widely held by political scientists and pundits who have often emphasized the importance of single-mindedness as an ingredient for an interest group's or a voting block's political success. For example, Rhodebeck (1993) shows how the elderly are more likely than other voters to incorporate their opinions on Social Security and Medicare into their vote choices.

Political single-mindedness appears in a few places in the economics literature, but it is usually exogenous. Probabilistic voting models, for example, typically have an endogenous policy dimension and an exogenous dimension (sometimes interpreted as "candidate bias" – see Mueller 1989, p. 203). When voting blocks differ in the relative importance of the exogenous dimension, as in Coughlin et al 1990, it can be said that the blocks exogenously differ in their single-mindedness. Mulligan and Sala-i-Martin (2002 appendix), Profeta (2002) and Artadi and Sala-i-Martin (2002) assume that the elderly are more single minded than the young to construct positive theories of social security based on probabilistic voting models. In all these models, the political success of the old derives from their single-mindedness.

But where does their single-mindedness come from? Some political scientists (for example, Campbell [2003a,b]) argue that, for the elderly, single-mindedness is not only a determinant of their political power, but a response to Social Security. Our paper adds to this political science literature by emphasizing the role of retirement in the feedback effect of Social Security on single-mindedness, and using the economic models of labor supply and merit goods to model the first effect. In our model, the young divide their political capital among "age-related issues" and "occupational issues", while the retired elderly can concentrate on issues that relate only to their age such as the pension or the health system. Since retirement incentives are themselves affected by economic policies, the degree of single-mindedness not only affects policy outcomes but is itself affected by economic policy.

In order to endogenize single-mindedness, we need to have the political competition in two

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dimensions so that we can model a group focusing its attention on one policy issue or another rather than “dividing it” between two policy issues. In particular, our voters differ in terms of their age and their occupation. The cost of this is that we cannot, without a significant sacrifice of tractability, explicitly model other interesting and relevant phenomena, such as the aging process, life cycle savings, or income inequality within age groups. Our hope is that future research can bring together previous normative and positive analyses of these phenomena, which ignore political single-mindedness, with our single-mindedness model.

Both single-mindedness and public policy are endogenously and simultaneously determined in our model: age groups that enjoy more leisure (retire) tend to be more single minded (because they do not disperse their concerns across professions), and more single-minded groups tend to vote for larger social security programs that benefit them and induce further retirement. We model the electoral process in two stages. In the first stage there is a “political campaign” in which each group tries to convince the others of the desirability of having a “social concern” for their work/leisure. The “social concern” for the work/leisure is taken from the merit goods literature, where it is argued that citizens tend to be more concerned about the behavior of welfare recipients than about their happiness. In this sense, society may hate to see children or old people work. The question is where do these social preferences come from. We have them come from the first stage of the election, a stage that we call the political campaign. In the second stage, all agents vote for the candidate that offers them the best economic package which consists of a set of transfers and distortionary taxes which determine the size of the social security program and the incentives for retirement of each political group. In this way, we bring together a political science literature on elderly single-mindedness, which mainly treats the amount spent on Social Security without regard for *how* it is spent, with the normative public finance literature showing how public pension programs typically have strong retirement incentives, but with little explanation for the political support of those incentives.<sup>1</sup>

The rest of the paper is organized as follows. In the first section we document in more detail some of the important empirical facts about social security and the elderly. First, we show that social

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<sup>1</sup>We model “democratic failure” in the sense that policies do not fully reflect the personal preferences (as opposed to, say, social preferences) of voters, as does Wilson (1990) in his model of campaign spending. An alternative approach to modeling democratic failure is to have lobbying occur in a policy-making stage *after* the voting, as in Besley and Coate (2001).

security programs are large, and that their growth rates cannot be accounted for by demographics. The share of elderly benefits in GDP has grown more than the share of elderly in total population. We believe that this means that the political power of the elderly has been growing over time, and that this calls for a political economy model of social security. Second, we show that the vast majority of SS programs around the world induce retirement. And third, we argue that the elderly are more politically single-minded than the young.

In the second section we present our model of single-mindedness and public policy, and we derive implications related to Section I's empirical observations. In section III we derive model implications for occupational politics. In particular, we show that whereas the source of success for the elderly comes from the fact that they work little, the source of power for occupation-related groups (such as doctors, lawyers or firefighters) stems from the fact that they work a lot. In other words, our model of single-mindedness predicts that the occupational groups that work more will tend to have more political power. Section III provides some empirical evidence in support of this prediction. The fourth section concludes.

## **I. Three Observations about Social Security and Elderly Behavior**

Social Security is one of the largest, if not the largest, public program in very many countries in terms of amount spent and the growth of spending over time. This fact has motivated a number of positive theories of Social Security, including Browning (1975), Laitner (1988), Tabellini (1999), and Cooley and Soares (1999). The purpose of our paper is to add to this literature by considering two neglected, but potentially important, features of Social Security and elderly behavior. Those two features are that Social Security significantly induces retirement in many countries, and that the elderly are more politically single-minded than the young when it comes to policies subsidizing the elderly.

### *I.A. Spending on the Elderly Dominates Government Budgets and its Growth Cannot be Simply Attributed to Demographics*

Spending on the elderly dominates government budgets in the United States and other countries. The first two columns of Table 1 list the 12 largest federal programs in 1996 expressed as a percentage of fiscal year spending and as a percentage of GDP, respectively. The largest

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program is, by far, social security:<sup>2</sup> the elderly receive public pensions from this one program totaling 22.4% of federal outlays and almost 5% of GDP. The second largest program is National Defense, which takes 17% of total spending and 3.6% of GDP. Interest payments on government debt are the third largest category and represent 15.5% of total spending and 3.2% of GDP. Medicare is the fourth largest category and, together with Federal Employee Retirement and Social Security add to a total of 39.0% of the budget and 8.1% of GDP. Thus, three of the top six 1996 Federal government programs are almost exclusively for the elderly.

Furthermore, four more top federal programs are disproportionately, although not exclusively, enjoyed by the elderly - Medicaid and other Health, Veteran's Benefits, Food Stamps, and Housing Assistance. According to the U.S. House Ways and Means Committee (1996), citizens aged 65+ are 12% of Medicaid recipients, which is proportional to their representation in the overall population. However, they receive more than 31% of Medicaid expenditures. Roughly one third of Food Stamp and Housing Assistance beneficiaries and one half of Veterans beneficiaries are also Social Security and Medicare beneficiaries. If we add the expenditures on Social Security, Medicare, Federal Employee Retirement with one third of "other health", Food Stamps, and Housing Assistance and one half of Veteran's Benefits, we see that nearly 50% of the federal budget is used to either pay or subsidize services mainly used by the elderly (almost 10% of GDP).

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<sup>2</sup> The numbers for Social Security include Old Age Insurance as well as Disability Insurance. Old Age Insurance is 87% of the Social Security spending. We include both in a single category because most of the beneficiaries of the Disability Insurance are older people.

Table 1: Top Federal Programs in the U.S.	1996 <sup>a</sup>		1950 <sup>b</sup>	
	% of: outlays	GDP	% of: outlays	GDP
(1) Social Security	22.4	4.7	1.8	0.3
(2) Defense	17.0	3.6	32.2	5.2
(3) Interest on Debt	15.5	3.2	11.3	1.8
(4) Medicare	11.2	2.3	0	0
(5) Medicaid and other Health	7.7	1.6	0.6	0.1
(6) Federal Employee Retirement	5.4	1.1	4.8	0.8
(7) Transportation (highways, air traffic,...)	2.5	0.5	2.3	0.4
(8) Veteran's Benefits	2.4	0.5	20.8	3.3
(9) Food Stamps	1.7	0.4	0	0
(10) Unemployment Assistance	1.6	0.3	4.7	0.8
(11) Housing Assistance	1.6	0.3	0.0	0.0
(12) Supplemental Security Income	1.5	0.3	0	0
for elderly=(1)+(4)+[(5)+(9)+(11)]/3+(6)+(8) $\alpha^c$	43.8	9.1	7.9	1.3

*Source:* Office of Management and Budget (1997).

<sup>a</sup>1996 Total Federal Outlays=1.56 trillion (20.8% of GDP), GDP=7.48 trillion

<sup>b</sup>1950 Total Federal Outlays=0.042 trillion (16.0% of GDP), GDP=0.27 trillion

<sup>c</sup> $\alpha$  is the fraction of veterans who are in retirement age in respective years (see text).

Public expenditure on the elderly has grown dramatically since WWII. Columns 3 and 4 of Table 1 display the size of the same 12 programs in 1950. Back then, social security represented only 1.8% of total spending and 0.3% of GDP. If we add the numbers on Social Security, Medicare, and Federal Employee Retirement with one third of “other health”, Food Stamps, and Housing Assistance and 5% of Veteran's Benefits for 1950, the payments or subsidies to services used by the elderly was only 7.9% of federal spending (1.3% of GDP).<sup>3</sup>

<sup>3</sup>We include only 5% of 1950 veteran's benefits because, according to the U.S. Census Bureau (1975, Series Y 943-956), only 4.4% of veterans were aged 60+. As a result, we understate the growth of veteran's payments going to those aged 65+ because those payments

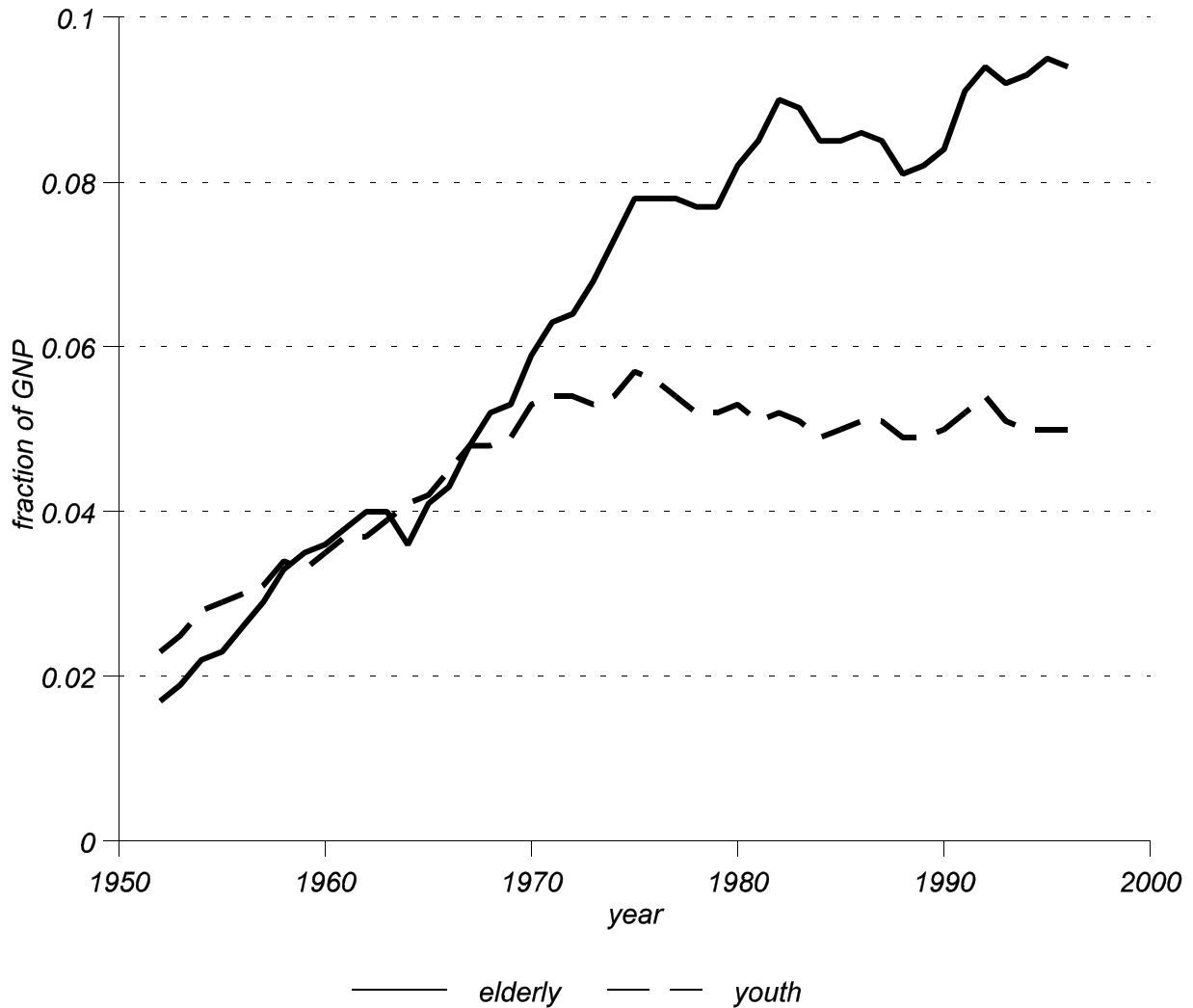
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The pattern is found for the sum of Federal, State, and Local government spending (net of intergovernmental transfers). The solid line in Figure 1 shows that the fraction of GNP spent by government at all levels on the elderly has more than quadrupled over the period 1952-96. We compute total spending on the elderly as the sum of Federal retirement expenditure, Medicare, state and local government employee retirement, one third of other medical spending at all levels, and one third of health and housing expenditures at all levels.

The dashed line in Figure 1 shows how spending on “youth” (we define “youth” to be those aged 24 and under and spending on them to be education and training spending at all levels) has also grown relative to GNP. However, there are four reasons why we find spending on the elderly to be extraordinary. First, the levels of spending are very different: more than \$21,000 per person aged 65+ were spent in 1996 by all levels of governments vs. less than \$4000 per person aged 0-24. Second, elderly spending has grown more rapidly. Third, spending “on youth” probably benefits the middle aged since the youth are dependent on them. If this is true, the appropriate metric of spending on those other than the elderly is total spending minus elderly spending, which has fallen as a fraction of government spending and unchanged as a fraction of GNP (government spending at all levels was 23 and 31% of GNP in 1950 and 1996, respectively; OMB 1997). Fourth, most spending on youth is at the state and local rather than Federal levels. Because it is easier for taxpayers to move across localities than across countries, perhaps youth spending is more like something all residents want rather than one group taking from another by force - which is how we model spending on the elderly.

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have grown more rapidly than the fraction of veteran's over age 65+ (U.S. Census Bureau, various issues, and House Committee 1996, Table 16-2).



**Figure 1** U.S. Government Spending (all levels) on Youth and Elderly

American government expenditures on the elderly are not representative of expenditures by the governments of other developed countries; the foreign old age public pension programs are substantially larger fractions of GDP. To name a few, Italy (13%), Sweden (16%), and Belgium (20%). Some less developed countries also have large SS budgets (Brazil's is 7% of GDP). Even larger shares are computed when medical and other old age subsidies are added to public pensions.

Substantial American government spending on the old is not entirely new. Programs at the state level were common before WWII, although they were not as large as Social Security eventually became (Costa 1998, p. 167). Pensions for Union Army veterans were very generous and, by the

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end of the 19th century, often replaced all of an unskilled laborer's salary (Costa p. 161) - as compared with typical Social Security replacement rates of 30% early in the program and 40-50% rates later in the program (House Committee 1996, Table 1-14). Union Army Pensions consumed 43% of the federal budget in 1893 (Costa p. 162) and 1.2% of GNP for beneficiaries who were only 1.5% of the population (Census Bureau series HS Y-457, A-7, and F-1).

The government spending on the elderly (hereafter “SS”) cannot be accounted for by demographics.<sup>4</sup> To see this, notice that if demographics were changing while political influence per beneficiary were held constant, one would expect the fraction of GDP devoted to government programs for the elderly to increase with their fraction in the population. However, the effect should be *less than one-for-one* because the deadweight losses associated with SS taxes presumably increase at an increasing rate. It is interesting that in 1950 the number of citizens aged 65+ was 12.4 million (8.1% of the population) while in 1996, they were 33.9 million (12.8% of the population). The population share of those aged 65+ has therefore grown by a factor of 1.6. Without changing political influence, therefore, the fraction of SS would have increased by less than a factor of 1.6. However, Table 1 shows that the share of SS (narrowly defined) in GDP (Row 1) has grown by a factor of 15.6 while the share of all federal programs devoted to the retired (last row) has grown by a factor of 7. Figure 1 shows that government elderly spending at all levels has grown by more than a factor of 5. Hence, the fraction of GDP devoted to the elderly through public programs has grown more than one would have predicted by the evolution of the demographics. We interpret this as an increase in the political power enjoyed by those citizens (see also Preston 1984 and, for an earlier period, Lindert 1994), which needs to be explained by a good positive theory of SS.<sup>5</sup> Compare

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<sup>4</sup>Whenever possible, our study defines “Social Security” to be government transfers to the elderly which, in the U.S., includes old age public pension payments, some disability, Medicare, some Medicaid, some Veteran's benefits, some Food Stamps and some housing assistance. Another measure - the “generational accounting” of Auerbach et al (1992) - is superior in many respects, but would be very difficult to construct for many countries and many time periods. As we occasionally note in the paper, data availability has sometimes required us to utilize definitions of “SS” that are inferior to either of these.

<sup>5</sup>Since the share of the population under age 25 fell somewhat, Figure 1 also shows that spending on youth cannot be accounted for by demographics. Does this mean that we also need a theory of the political power of youth? Perhaps not, since spending on youth may primarily benefit the middle aged at the expense of the old. And, as noted in the text, the level and growth of spending on the elderly is much greater.

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Union Army pensions with modern elderly programs. The former consumed 1.2% of GNP for beneficiaries who were 1.5% of the population - a ratio of 0.80 - while the latter consume 9.4% of GNP for beneficiaries who are 12.7% of the population - a ratio of 0.74. The order-of-magnitude demographic changes over the century may not have produced an important change in government spending per elderly beneficiary.

Turner (1984), on the other hand, reports some results suggesting an inverse relationship between the fraction of the population over age 65 and OASI benefits per beneficiary. Other specifications suggest the opposite.<sup>6</sup> His analysis is for the period 1947-77 and holds constant a number of other variables including the national employment rate, participation rate, and the share of the population under age 16. Parsons (1982) found no cross-state relationship between the fraction of the population over age 65 and 1930's state old age assistance benefits per beneficiary.

*1.B. The Majority of SS programs around the world induce the retirement of the elderly*

Despite a large cross-country variation in the size of social security programs, there are certain design features that are fairly common across countries. To investigate how different countries design their social security programs, Mulligan and Sala-i-Martin (2002) use the publication *Social Security Programs throughout the World*, published by the U.S. Social Security Administration (various issues). This publication reports the “main” rules and regulations governing the SS programs of 144 countries for a number of years. Mulligan and Sala-i-Martin (2002) use the data for 1995 and for those 89 countries with government finance data reported by the International Monetary Fund to establish a number of interesting regularities on the way SS programs are designed (see also Sala-i-Martin (1996)). One of the most striking regularities of SS programs around the world is that the majority of them tend to induce retirement.<sup>7</sup>

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<sup>6</sup>We have unsuccessfully attempted to replicate Turner's study. Our replications never suggest an inverse relationship.

<sup>7</sup> Other interesting regularities reported in Mulligan and Sala-i-Martin (2002) are that 97% of the programs are financed with special payroll taxes (a feature not shared by any other type of public program), that 91% of the programs have part of the tax paid by workers and half by employers, that 98% of the programs are pay-as-you-go (and 85% are entirely PAYG without any funding component), that, in 89% of the programs, benefits are independent of asset income and that in 85% of the programs benefits increase with taxes paid (although the relation between payments and benefits is far from perfect in most countries).

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Table 2's first row shows that the overwhelming majority of the programs throughout the world *induce* retirement in one way or another. Of the 73 countries for which this information was available, 55 (75%) induce the elderly to retire in order to collect their pensions. When considering the retirement incentives implicit in benefit formulas, four criteria are considered. First, we consider whether benefits in a given year at or after the earliest retirement age decline with labor income - a policy known as a “retirement” or “earnings” test. Second, for those countries with a retirement or earnings test, we consider whether benefits lost due to the test were credited towards benefits received after full retirement - a policy known as a “delayed retirement credit” (DRC). If there is a delayed retirement credit, we judged whether it was actuarially fair (namely, whether it was close to or greater than 8% per year).<sup>8</sup> Countries with fair DRC's we judged not to induce retirement regardless of their use of a retirement or earnings test. Third, in countries with substantial and recent reforms, we attempt to assess whether retirees after the reform are covered by current formulas or formulas from previous laws. Two countries, Berundi and Peru, had prereform formulas inducing retirement and their reforms have formulas which do not induce retirement, but have not retired many people under the new formulas. Fourth, we classify the Netherlands as inducing retirement because, according to Kapteyn and de Vos (1999), the “unemployment” portion of SS is used as an old age pension. We suspect there may be other countries satisfying the final two criteria for induced retirement (eg., Chile, Iceland, Singapore), but we do not tabulate them as such in Table 2.

While, according to these three criteria, Table 2 shows 75% of countries inducing retirement, we believe we have understated the prevalence of retirement inducing government policy. For instance, governments (like the Swiss) may require employers to provide pensions that induce retirement. Or union rules applying to all or a substantial fraction of the labor force may mandate retirement (eg., Sweden - see Palme and Svensson (1999), p. 18). Gruber and Wise (1999) emphasize how European “disability” and “unemployment” programs are often induced retirement

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<sup>8</sup>For countries whose SS systems looked like retirement savings accounts (“Provident Fund” systems), we judged whether the rate of return paid on the fund was comparable to a market return. Countries with both a retirement test and, in our judgement, “unfair” returns are: Nepal, Sri Lanka, Tanzania, and Zambia. India has a Provident Fund which may pay a fair return, but it is only part of its SS system. Only Malaysia has a Provident Fund with a retirement test but paying apparently fair returns (and thereby not inducing retirement). Other Provident Funds do not have a retirement or earnings test and hence were judged not to induce retirement regardless of the fairness of the return.

programs in disguise. Or formulas for crediting the earnings of those near retirement age toward future SS benefits may also act as an implicit tax on work by the elderly (Palme and Svensson (1999) suggest this is the case for Sweden). Government policies for providing health insurance may also induce retirement (Rust and Phelan 1997). A more detailed study might therefore show that 85 or 90% of governments induce retirement with SS and other policies.

**Table 2:**  
**Social Security and Retirement**

	<b>%Countries</b>
Social Security Benefits Induce Retirement	75%
<i>of which:</i> - retirement required (no DRC)	- 47%
- retirement required (unfair DRC)	- 12%
- tax incentives for retirement (no DRC)	- 11%
- tax incentives for retirement (unfair DRC)	- 3%
- current retirees covered by previous law inducing retirement	- 3%
Social Security Benefits Do Not Induce Retirement	25%
<i>of which:</i> - benefits paid at fixed age regardless of labor force status	- 22%
- “fair” credits paid to those delaying retirement	- 3%
- current retirees covered by previous law not inducing retirement	- 0%
Benefits largely independent of asset income	89%
<i>of which:</i> - small means-tested portion of program	- 11%
- entire benefit independent of asset income	- 77%

Notes: (1) Constructed from 88 individual country data provided in *Social Security Programs Throughout the World 1995*.

(2) 15 countries had missing data regarding the inducement of retirement.

(3) “DRC” = delayed retirement credit

44 of the 73 (60%) countries with available data do not pay any SS benefits to somebody

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employed and do not fairly credit the benefits lost due to employment to future retirement years. Among these, 35 countries pay no DRC at all. Nine countries pay SS benefits to elderly workers, but the benefit is reduced according to the amount of the beneficiaries earnings and not fairly credited towards future years. The 1995 United States formulas for those aged 65-69 is one of these nine countries, although current law *plans* to pay actuarially fair credits in the next ten years or so. For 1995 U.S. retirees, a 33% marginal tax rate is levied on the public pension of someone aged 65-69 earning more than \$12,500. If he is ineligible for any old age pension or chooses not to collect one, then he earns some credit for later years when he does retire, but those credits are actuarially unfair enough that the U.S. earnings test is still an implicit tax on work (Myers (1993), pp. 98-99).<sup>9,10</sup> The interesting fact is that the same person can make millions of dollars in the stock market and no taxes on his pension are imposed. He loses (part of) his pension only if he works!<sup>11</sup> This kind of regulation is so overwhelmingly common across countries that we feel it ought to be part of any satisfactory theory of SS. Hence, a simple look at social security regulations around the world seems to indicate that the elderly are being discouraged from working.

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<sup>9</sup>Until recently, the Social Security “earnings test” was in place in the United States and had the following features. In 1999, a worker age 62-65 could earn up to \$9,600 without the loss of any benefits, then benefits would be reduced \$1 for each \$2 of earnings above this amount; for workers age 65-69, the earnings test floor was \$15,500 and benefits were reduced at a rate of \$1 for each \$3 in earnings. In April 2000, the earnings test was lifted for workers sixty-five and over in the United States. However, Social Security still has a work disincentive for older workers, because like younger workers they must pay the payroll tax but unlike younger workers they do not receive credit toward average indexed monthly earnings; Diamond and Gruber (1999) show how this disincentive was just as large as the earnings test even prior to 2000. Furthermore, our data for the period 1957-95 (see Mulligan, Gil, and Sala-i-Martin 2002) show that slightly more countries have added retirement or earnings tests in recent years than have dropped them. Retirement incentives have been, and continue to be, and important part of Social Security around the world.

<sup>10</sup>There is substantial amount of evidence in the labor literature showing that SS regulations induce retirement (for micro studies see Pechman, Aaron and Taussig (1968), Boskin (1986), Boskin and Shoven (1987), Kotlikoff and Wise (1987) and the extensive survey on empirical results in Atkinson (1987). For cross-country studies, see Gruber and Wise (1999) and Modigliani and Sterling (1983).)

<sup>11</sup>Beginning in 1984 (Myers 1993, p. 147), some U.S. SS benefits are taxable for those in roughly the top decile of personal taxable income distribution. This provision produces a system similar to one where benefits are not taxable but are subject to a slight asset income test.

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This finding from Table 2 is important enough to reiterate with some examples of countries taxing the labor income of the elderly at 100% rates (a dollar of pension is lost per dollar earned). As of 1995, elderly Spaniards and Belgians are not allowed to collect their government pension if they earn any labor income at all (Boldrin et al (1999) p. 16, SSA (1997) p. 330, Pestieau and Stijns (1999), p. 9) and those benefits are typically close to or more than what the pensioner would have earned after taxes if he had kept working (Boldrin et al (1999).) France allows pensioners to receive labor income, but not from their preretirement occupation (Blanchet and Pele (1999), p. 9, SSA (1997), p. 130). No Austrian under age 65 earning more than 3740 schillings/month may collect a public pension (= \$349/month, SSA (1997) p. 21). Furthermore, the size of the public pension benefits in these and other countries are nearly the size of the average worker's earnings (Gruber and Wise (1999)) – and therefore the range of income to which the 100% implicit tax applies is very large.

At least in the U.S., government spending on the elderly has historically taxed labor income more than asset income (if asset income were taxed at all). “The 1935 report of the Committee on Economic Security appointed by President Franklin D. Roosevelt recommended that no benefits be paid before a person had 'retired from gainful employment.'” (House Committee (1996) p. 31) Before 1950, U.S. Social Security mandated retirement (ie, monthly earnings less than \$15) for SS beneficiaries but did not have asset income tests. Although relaxed slightly, earnings limits were still effectively a “retirement mandate” until 1972 (U.S. Ways and Means Committee (1996), Section 1, page 31; Myers (1993) pp. 271-4). Prior to the 1970s, state administered old age assistance programs typically (implicitly) taxed earnings at a 100 percent rate, although they also had asset income tests (Myers (1993) pp. 827). Union army pensions did not have an asset income test (Costa (1998) p. 198). Nor did the Union Army pension have explicit earnings and employment tests, although nonemployment was probably “viewed by employees of the Pension Bureau as evidence of an inability to perform manual labor”, and such evidence was required to obtain a pension (Costa (1998) p. 44).

The bottom part of Table 2 shows that in 89% of the countries, asset income is largely irrelevant for computing benefits (a few of them means-test a small portion of the old age benefit). At least in the U.S., government spending on the elderly has historically taxed labor income at higher rates than they have taxed asset income. Sometimes asset income was not taxed at all. In other words, most programs are not designed as antipoverty programs (see Mulligan and Sala-i-

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Martin (2002) for a more careful analysis of this point). SS programs seem to be willing to give money to the elderly depending on whether they work and independent of how rich they are. A good theory of SS ought to explain why the elderly are either forced or induced to stop working before they can collect their pensions and why they are not related to how rich is the recipient.

### *1.C. Elderly Public Pensions and Political Single-Mindedness Reinforce Each Other*

When it comes to making political decisions, the elderly seem to be a more focused group than others. Rhodebeck (1993) shows how the elderly are more likely than other voters to incorporate their opinions on Social Security and Medicare into their vote choices. As *Fortune* magazine recently put it, “No lawmaker or President would dare to propose changes in Social Security or Medicare without consulting the 34.8-million-member AARP”<sup>12</sup>.

*Fortune* magazine recently conducted a poll of 329 Washington “insiders”, “including members of Congress, their staffs, and senior White House officials.”<sup>13</sup> Respondents were asked to rank the clout in Washington of 120 interest groups, labor unions, and trade associations and to assess the importance of a list of lobbying techniques.<sup>14</sup> The ranking has been published in the last four years. AARP ranked the most powerful in the first three and second most powerful in the last year.

One interesting aspect of this survey is that they ask experts about the best lobbying techniques. The top rated methods for getting political clout were “having *active* allies in a Congressman’s district” and “mobilizing *grassroots* action, such as phone calls and letters” (p. 146, italics added). A successful group has “large numbers of geographically dispersed and politically *active* members who focus their energies on a *narrow range of issues*” (p. 146, italics added).<sup>15</sup>

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<sup>12</sup> The AARP is the American Association of Retired People, the main lobby for the elderly in the United States.

<sup>13</sup> *Fortune* publishes the list of the “Washington Powerful” every year in its December issue starting in 1997.

<sup>14</sup> Each list presented to the respondents was chosen by a panel of experts which included “members of Congress, professional lobbyists, academics, congressional staff, and pollsters” (p. 158).

<sup>15</sup> Interestingly, three of the worst four techniques involved expenditures of *money* rather than time: “buying TV, radio, and print ads to promote your cause,” “spending lots of money on

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If we look at the list of 87 lobbies reported by *Fortune* in its 2001 issue, we find that there were only two groups representing the interests of the elderly: the AARP and the National Committee to Preserve Social Security and Medicare. This contrasts with the 48 lobbies representing special interest of workers (among those, some of the most powerful are the Association of Trial Lawyers, American Medical Association, the National Brotherhood of Teamster, AFL-CIO, the American Auto Workers Union, and the National Union of Municipal Employees). Thus, while the old citizens of the United States seem to support just a couple of lobbies that have very narrow interests (and one of these turns out to be very powerful), younger people divide their effort across many different professions.<sup>16</sup> This issue-concentrated lobbying by the elderly is what we call single-mindedness.<sup>17</sup>

Recent empirical work by Andrea Louise Campbell (2003a,b) supports the proposition that the elderly are single-minded when it comes to Social Security and Medicare policies, and this single-mindedness derives in part from the policies themselves. She describes a simultaneous and reinforcing relationship between a group's political activity and the public subsidies it receives "... mass [political] participation influences policy outcomes – the politically active are more likely to achieve their policy goals ... their ability to do so is in part a legacy of existing public policy..." (Campbell 2003b, Chapter 1). This relation is readily seen with regards to Social Security and the elderly, where there is a "distinctive message behind [elderly political] participation ... do not tamper with Social Security and Medicare" (Campbell 2003b, Chapter 1).

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issue-oriented ads for or against a Congressman," "retain high-priced, gun-for-hire lobbyists."

<sup>16</sup> Of course there are lobbies that are neither related to age nor to profession. Some of them are related to industries (like the National Beer Wholesalers of America, Blue Cross Blue Shield, the American Insurance Association, the National Retail Federation). Others are (arguably) not related any industry. Among those, the NRA, the American Israel Public Affairs Committee, the National Right to Life Committee, the Christian Coalition, the Sierra Club, etc.

<sup>17</sup> As we mentioned above, the last survey puts the NRA ahead of the AARP. It is interesting to see that the explanation put forth by *Fortune* magazine is that the AARP now allows any person above age 50 to be a member. This has, according to the magazine, divided the vote of the AARP: "Retirees, for example, tend to favor keeping Social Security just as it is. Boomers generally support changes to ensure that the program will be there when they retire". *Fortune* seems to indicate that, as the AARP loses part of single-mindedness, it loses its political power.

## II. Single-Mindedness and Gerontocracy in a Voting Model

In this section we propose a model which emphasizes how the politics and economics of SS and retirement interact with other political and economic forces. People in our model differ in two dimensions: their age ( $a = y$  or  $o$ , young or old) and their potential occupation (1 or 2; we can think of them as lawyers and doctors). Thus, there are four groups in our model and, for simplicity, we assume that all of them have the same number of people. Individuals can choose, among other things, whether they want to be actively employed in their occupation. These choices affect, and are affected by, government policy.

Elections are held at regular intervals, at which time citizens cast votes for one of two candidates,  $d$  and  $r$ , who offer a policy vector  $\Pi$ , the elements of which are *marginal tax rates* and *net transfers* for each type of citizen. Each citizen votes for one candidate, the candidate with the most votes wins the election (ties resolved with a coin flip), and the winning candidate implements the policy he promised.

Our model is like many others in political economics in that each citizen is concerned about his personal utility  $v$  and is precisely aware of how public policies affect his personal utility. We suppose that  $v$  has the usual properties of an indirect utility function of the marginal tax rate and the net transfer:  $\partial v / \partial T > 0$ ,  $\partial^2 v / \partial T^2 < 0$ ,  $\text{sign}(\partial v / \partial \tau) = \text{sign}(-\tau)$ , and  $\partial^2 v / \partial \tau^2 < 0$ , where  $\tau_{ai}$  is the marginal tax rate and  $T_{ai}$  is the net transfer which applies to citizens of age  $a$  and potentially working in occupation  $i$ .

Where we depart from many economics studies is that, when it comes to deciding how to cast a vote, our model's citizens care not only about personal utility, but also about personal characteristics of the politicians on the ballot and about the *economic behavior of other citizens*. We formalize this process of voter preference formation in a model of “the political campaign” preceding each election. Formally, voter  $m$ , who is of age  $a$  and potentially works in occupation  $i$  votes for candidate  $r$  if:

$$v(\tau_{ai}^r, T_{ai}^r) + B(\Pi^r) \geq v(\tau_{ai}^d, T_{ai}^d) + B(\Pi^d) + \delta_m \quad (1)$$

where  $\delta_m$  is voter  $m$ 's bias toward candidate  $d$  (ie, when both candidates propose the same policy,  $m$  votes for  $d$  if and only if  $\delta_m > 0$ ). A term like  $\delta_m$  can be found in models of probabilistic voting, and it is important for those models and ours that transfers cannot be made conditional on  $\delta_m$ . With

this in mind, we assume for simplicity that  $\delta_m$  is completely unobserved by the government, but that political candidates know the distribution of  $\delta_m$ . That distribution is normal with mean zero and variance  $\sigma^2$  within each age-occupation cell, and for the entire population.

The term  $B(\Pi)$  reflects the “social concern” of the voter about the behavior of other citizens. Governments rarely provide unconditional transfers to the poor or other beneficiaries to be spent by them on whatever they choose. Instead, governments usually provide “necessities” such as health care, food, or housing. The reason, one could argue, is that “society” (or the government that represents it) does not want the beneficiaries to spend the transfer on alcohol, drugs or prostitution. For some reason, society cares more about the behavior of the beneficiaries than about their welfare.<sup>18</sup> We introduce a similar idea in our model by assuming that the citizenry has a “social concern” about the economic behavior of other citizens. There is only one economic decision in our model – to work or not – so the social concern is about who works and how much they work. For example, people may not like to see older citizens (or children or women) work too much (or maybe too little). We believe it more important to explore the determinants of these social concerns on behavior in a voting context than in more traditional market applications of economic theory because: (a) from a voter’s point of view, actions which do not necessarily promote one’s personal utility are cheaper in the political sector than in the market sector,<sup>19</sup> since any one vote is unlikely to affect policy determination and hence have no feedback on the personal life of the person who cast the vote, and (b) the importance of nonpersonal voter concerns has been documented by a number of studies in the political science literature.<sup>20</sup>

Our notation  $B(\Pi)$  emphasizes the effect of policy proposals on voter choice, an effect which is there because voters know that the vector of taxes and transfers affects the amount worked by each

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<sup>18</sup>For some other economic studies of “paternalism” or “merit goods,” see Musgrave(1957), Brennan and Lomansky (1983), Besley (1988), or Mulligan and Philipson (1999).

<sup>19</sup>This is the argument of Becker and Mulligan (1999). Related arguments have been made by Schumpeter (1942, p. 262), Downs (1957), Citrin and Green (1990) and, in a application closely related to ours, Brennan and Lomansky (1983).

<sup>20</sup>That literature, succinctly summarized by Brennan and Lomansky (1983, p. 188) as “...given [voter] turnouts, we cannot explain the direction of individuals’ votes in terms of bringing about a personally profitable outcome” includes Citrin and Green (1990), Sears and Funk (1992), and Sears et al (1979).

group. Formally, we have equation (2) for  $B(\Pi)$ :

$$B(\Pi) \equiv \sum_{\substack{a \in \{y, o\} \\ i \in \{1, 2\}}} b_{ai} w_a l_a(\tau_{ai}, T_{ai}) \quad (2)$$

where  $l_a(\tau_{ai}, T_{ai})$  is the fraction of age-occupation group  $a, i$  that is unemployed, which of course depends on public policy and  $b_{ai}$  is the weight that society attaches to the leisure of group  $a, i$ . For example, if society does not like the old citizens to work, we would put a positive weight on their leisure in Eq. (2) so  $b_{o1} > 0$  and  $b_{o2} > 0$ . We suppose that the function  $l_a(\tau_{ai}, T_{ai})$  exhibits the usual wealth and substitution effects:  $\partial/\partial T > 0$ ,  $\partial/\partial \tau > 0$ .

An important point of our model is that, while personal utility *functions*  $v$  are stable and unaffected by political affairs, the direction and the intensity of these social concerns can be affected by the political process in what we call the “political campaign,” which we describe below. Hence, although fixed parameters *at the time of the election*, the parameters  $\{b_{ai}\}$  are determined by a political campaign. We now solve the model backwards: first we solve the election stage, where politicians take the parameters,  $b_{ai}$ , (which are outcomes of the campaign stage) as given, and then solve for the campaign stage.

### Stage 2: Election and Policy Determination

The candidates know the cross-sectional distribution of biases  $\delta$ , and that the biases are uncorrelated with occupation and age, but (perhaps because individual biases cannot be identified) they cannot adopt policies that treat citizens according to their bias. The expected votes for the  $r$  candidate are, as a function of the policies  $\Pi^r$  and  $\Pi^d$ :

$$\sum_{\substack{a \in \{y, o\} \\ i \in \{1, 2\}}} \Phi \left( \frac{v(\tau_{ai}^r, T_{ai}^r) + B(\Pi^r) - v(\tau_{ai}^d, T_{ai}^d) - B(\Pi^d)}{\sigma} \right) \quad (3)$$

Expected  $d$  votes are one minus expected  $r$  votes. We use  $\phi$  and  $\Phi$  to denote the standard normal density and CDF, respectively.

Candidate can choose any policy vector  $\Pi$  in the set  $P$ , which includes the zero vector, and

each element of which satisfies budget balance:

$$\sum_{\substack{a \in \{y,o\} \\ i \in \{1,2\}}} T_{ai} = 0 \quad (4)$$

Candidate  $r$ 's first order conditions<sup>21</sup> maximizing expected votes<sup>22</sup> are:

$$b_{ai} w_a \frac{\partial l_{ai}}{\partial \tau} \sum_{\substack{a' \in \{y,o\} \\ i' \in \{1,2\}}} \varphi \left( \frac{v(\tau_{a'i'}, T_{a'i'}^r) + B(\Pi^r) - v(\tau_{a'i'}, T_{a'i'}^d) - B(\Pi^d)}{\sigma} \right) =$$

$$- \varphi \left( \frac{v(\tau_{aj}, T_{aj}^r) + B(\Pi^r) - v(\tau_{ai}, T_{ai}^d) - B(\Pi^d)}{\sigma} \right) \frac{\partial v_{ai}}{\partial \tau}$$

$$b_{ai} w_a \frac{\partial l_{ai}}{\partial T} \sum_{\substack{a' \in \{y,o\} \\ i' \in \{1,2\}}} \varphi \left( \frac{v(\tau_{a'i'}, T_{a'i'}^r) + B(\Pi^r) - v(\tau_{a'i'}, T_{a'i'}^d) - B(\Pi^d)}{\sigma} \right) =$$

$$\lambda - \varphi \left( \frac{v(\tau_{aj}, T_{aj}^r) + B(\Pi^r) - v(\tau_{ai}, T_{ai}^d) - B(\Pi^d)}{\sigma} \right) \frac{\partial v_{ai}}{\partial T}$$

for any  $\{a,i\}$  pair.  $\lambda$  is the multiplier on the government budget constraint. The left hand side of each of the equations reflects the effect of policy on the social concerns, which in turn affects the votes obtained by the candidate proposing the policy. The sign of this effect depends on the

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<sup>21</sup>To ensure that second order conditions hold (ie, to avoid “tyranny by the majority”) we follow the probabilistic voting literature (eg., Coughlin et al 1990, p. 686) and assume that the space of feasible policies  $P$  is small enough and utility functions concave enough that a candidate's expected votes is a concave function of his policy proposal.

<sup>22</sup>Similar first order conditions could be derived if  $\delta$  were the same for all voters (but unknown to candidates) and candidates maximized the probability of winning the election.

direction of the social concerns. The right hand side of each of the equations reflect the effect of policy on personal concerns, which in turn affects the votes obtained by the candidate proposing the policy. The sign of these terms is unambiguous, because a voter selfishly wants to have a large net transfer and to have an undistorted labor-leisure choice.

Since these conditions are symmetric for  $r$  and  $d$ , it is expected that vote maximizing candidates would choose the same policy satisfying<sup>23</sup>:

$$4b_{ai}w_a \frac{\partial l_{ai}}{\partial \tau} = - \frac{\partial v_{ai}}{\partial \tau} \tag{5}$$

$$4b_{ai}w_a \frac{\partial l_{ai}}{\partial T} + \frac{\partial v_{ai}}{\partial T} = \frac{\lambda}{\varphi(0)}$$

We can now show the following two lemmas:

Lemma 1 The marginal tax rate for group  $ai$  is positive if and only if  $b_{ai}$  is positive.

Proof The proof follows immediately from the top condition (5), and our assumptions  $\partial l/\partial \tau > 0$  and  $\text{sign}(\partial v/\partial \tau) = \text{sign}(-\tau)$ .

In other words, voters will tend to favor retirement or unemployment incentives for a particular group if that group has managed to “convince” everyone to care for their leisure at the “campaign stage.” Notice also that if voters tend to vote in favor of work disincentives of a particular group, the politically successful policy will also tend to make a transfer to that group, because voters who anticipate unemployment are relatively sensitive in their voting behavior to transfer policies.<sup>24</sup>

Notice also that lump sum taxes and transfers (ie,  $\tau$ 's equal zero and  $T$ 's nonzero) are feasible

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<sup>23</sup> Here we use the fact that the median voter in each group is indifferent between  $r$  and  $d$  when the two are proposing the same policy.

<sup>24</sup>In other words, voters have convex preferences over their own consumption and the characteristics of political candidates – a well-known property of probabilistic voting models (of which ours is analytically similar – see Mulligan and Sala-i-Martin (2002).

for the candidates, but they choose them if and only if voters care only about their utility and not the behavior of other citizens (ie, if and only if the  $b$ 's are zero).

Lemma 2 If indirect utility and “leisure demand” functions derive from a logarithmic direct utility function, then group  $ai$ 's post election utility is improved when  $b_{ai}$  is larger.

Proof See the appendix.

### *Stage 1: Political Debate*

The candidates and policies are debated before the election, and the result of this debate are voter preferences (namely, the function  $B(\cdot)$ ).<sup>25</sup> There are three notable properties of the function  $B$ : first, it is the same for all voters. Since we interpret  $B$  as “social” concern for policy, it makes sense that this concern have some common component across voters, and we take the analytically simple case that the function is identical for all voters. Second, its magnitude and shape depend on the “parameters”  $\{b_{ai}\}$ . Third, given those parameters  $B$  is determined by the time allocation of each type.

In the political campaign, each person issues one “*message*” or “*advertisement*” which has the effect of manipulating the political preferences of others – in particular, their preferences for other citizen’s economic behavior. We assume that those anticipating being employed tend to issue messages in the occupation dimension and, relatively speaking, those anticipating leisure tend to issue messages in the age dimension.<sup>26</sup> For example, a young lawyer will send the campaign message “*doctors need to work harder; lawyers are working too hard*” if he expects to be employed, and send the message “*the old need to work more; the young are working too hard*” if he expects

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<sup>25</sup>In this sense, our approach is a political application of Becker and Murphy (1993) advertising model, where advertising appears in the utility function. Other models of advertising keep the utility function fixed and let advertising provide “information”.

<sup>26</sup> We do not have citizens exerting an influence in order to, say, maximize post-election expected utility. This is partly for analytical simplicity – we show above how the message assumed to be issued by any type is better (in terms of post-election utility) than the message assumed to be issued by any other type and better than no message at all – but is also an attempt to capture the reality that the typical person’s effect on the political debate, let alone public policy, is small and hence there is little incentive to exert influence with a precise eye toward improving the election’s outcome.

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unemployment. These messages will determine the parameters  $b_{ai}$ . Table 3 models the direction, and average magnitude, of that influence. The first row shows the messages issued by the young-unemployed. Because they are unemployed, they issue message in the age direction (“*young people need more leisure and old people need to work harder*”). This is represented in Table 3 as a positive  $b$  for the first two columns (representing the young of profession 1 and young of profession 2), and a negative  $b$  for the last two columns (which represent the old of both occupations). The second row represents the messages issued by the young employed in sector 1. Since they are employed, they issue messages in the occupational dimension (the message is “*workers -of all ages- employed in sector 1 should enjoy more leisure, and workers of sector 2 should work harder*”). This shows up in Table 3 as a positive  $b$  in columns 1 and 3 (which represent the young and old of sector 1 respectively) and a negative  $b$  in columns 2 and 4 (which represent the young and old of sector 2 respectively). All citizens view the same debate, so that the outcomes  $\{b_{ai}\}$  are the same for each voter, while each voter contributes to the debate according to his type.<sup>27</sup>

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<sup>27</sup>For example, all voters have the same concern for the time allocation of the young in occupation 0, and all voters the same concern for the time allocation of the young in occupation 1, but more weight might be placed (by all voters) on, say, the former.

Table 3: The direction of influence on the debate, by age, occupation, and employment status

age	occupation, employment	population density	debated parameters			
			$b_{y1}$	$b_{y2}$	$b_{o1}$	$b_{o2}$
young	not employed	$(l_{y1} + l_{y2})/4$	$b$	$b$	$-b$	$-b$
young	employed 1	$(1-l_{y1})/4$	$b$	$-b$	$b$	$-b$
young	employed 2	$(1-l_{y2})/4$	$-b$	$b$	$-b$	$b$
old	not employed	$(l_{o1} + l_{o2})/4$	$-b$	$-b$	$b$	$b$
old	employed 1	$(1-l_{o1})/4$	$b$	$-b$	$b$	$-b$
old	employed 2	$(1-l_{o2})/4$	$-b$	$b$	$-b$	$b$
Aggregate		1	$b(l_{y2}-l_{o1})/2$	$b(l_{y1}-l_{o2})/2$	$b(l_{o2}-l_{y1})/2$	$b(l_{o1}-l_{y2})/2$

### Single-Mindedness

Although the outcome of the debate is four dimensional ( $b_{y1}, b_{y2}, b_{o1}, b_{o2}$ ), notice from Table 3 that each individual has only a one dimensional influence on the debate. Namely, the unemployed push for a policy preference for the leisure time of their age group and against the other age group (regardless of occupation) while the employed push for a policy preference for the leisure time of their occupation and against the other occupation (regardless of age). This is a simple way of capturing the political potency of “single-mindedness,” a phenomenon that we documented in section one, whose importance has been emphasized by political observers.

We do not have citizens exerting an influence in order to, say, maximize post-election expected utility. This is partly for analytical simplicity – we show above how the direction of influence assigned to each type in the table is better (in terms of post-election utility) than the direction assigned to any other type and better than no influence at all – but is also an attempt to capture the reality that the typical person’s effect on the debate, let alone public policy, is small and hence there is little incentive to exert influence with a precise eye toward improving the election’s outcome.

The last row of the Table 3 aggregates the influence of each of the six groups, and the aggregation shows the importance of single-mindedness. To see this, use the last row of the Table to calculate the aggregate debate parameter for the old ( $b_{o1} + b_{o2}$ ) and the aggregate parameter for

the young ( $b_{y1} + b_{y2}$ ):

$$b_{o1} + b_{o2} = b \left( \frac{l_{o1} + l_{o2}}{2} - \frac{l_{y1} + l_{y2}}{2} \right) = - (b_{y1} + b_{y2}) \quad (6)$$

Equation (6) shows that the *age group* with more average leisure is the one more successful in the debate and, as we show, enjoys higher utility and a larger transfer from the government. Work tends to take attention away from age-related issues so that when a group (say, the elderly) enjoys a lot of leisure, its members will tend to concentrate their effort on age related issues. That is, they will be more single minded if they work less. This contrasts with what happens to the occupational groups. If we add up the debate parameters for occupation 1, we would get:

$$b_{y1} + b_{o1} = b \left( \frac{l_{y2} + l_{o2}}{2} - \frac{l_{y1} + l_{o1}}{2} \right) = - (b_{y2} + b_{o2}) \quad (7)$$

Notice from equation (7) that the *occupation group* with *less* average leisure is the one more successful in the debate. In other words, whereas the probability of success of age (or non-occupational) groups increases with the amount of leisure the group enjoys, the success of the occupation groups decreases with leisure. We will present some empirical evidence providing some support for this prediction in Section III.

Notice that marginal tax rates increase leisure in the usual way, but that leisure affects social concerns according to the parameter  $b$ , and that social concerns determine the marginal tax rate. In other words we have single-mindedness affecting policy and a feedback effect of policy on single-mindedness. As in many models with feedback effects, we need to limit the parameters to insure stability of the system, which we do by supposing that the magnitude of  $b$  is sufficiently small.

### *Political Equilibrium Defined and Characterized*

Notice how policy, and then time allocation, are determined by Stage 2's election *given* the outcome of the debate  $\{b_{ai}\}$ . But Stage 1's debate depends on the anticipated allocation of time after Stage 2's election! Our definition of political equilibrium fits the two stages together more precisely:

**Definition** A political equilibrium is a pair of policy proposals  $(\Pi^r, \Pi^d)$ , an allocation of time  $\{l_{ai}\}$  and a set of voter preferences  $\{b_{ai}\}$  so that:

(i) Labor is willingly supplied:

$$l_{ai} = l_a(\tau_{ai}, T_{ai})$$

(ii) Expected time allocations affect the debate, and the expectations are fulfilled:

$$b_{y1} = b(l_{y2} - l_{o1})/2, \quad b_{y2} = b(l_{y1} - l_{o2})/2, \quad b_{o1} = b(l_{o2} - l_{y1})/2, \quad b_{o2} = b(l_{o1} - l_{y2})/2$$

(iii) Each candidate's budget-balancing policy proposal maximizes his expected votes, given his opponent's proposal and given voter preferences, for some (candidate-specific) multiplier  $\lambda$ :

$$4b_{ai}w_a \frac{\partial l_{ai}}{\partial \tau} = - \frac{\partial v_{ai}}{\partial \tau} \tag{8}$$

$$4b_{ai}w_a \frac{\partial l_{ai}}{\partial T} + \frac{\partial v_{ai}}{\partial T} = \frac{\lambda}{\varphi(0)}$$

(iv) The winning candidate implements his policy ( $\Pi = \Pi^r$  or  $\Pi^d$ )

(v) Each policy proposal balances the government budget (4).

Algebraically, an equilibrium is eight policy scalars and a multiplier for each candidate, four amounts of leisure (one for each age-occupation group), and four preference parameters solving twenty-six equations (four appearing in each of (i) and (ii), sixteen appearing in (iii) – two for each candidate-age-occupation – and two appearing in (v)).

The following propositions are intuitive, and easy to prove when the direct utility function is logarithmic ( $u(c, l) = \ln c + \gamma \ln l$ ).

**Proposition 1** If the old have a lower wage, but the same preferences as the young, then there exists a political equilibrium in which the old receive a net transfer, face a positive marginal tax rate, and are more likely to retire.

**Proof** Our Appendix gives a detailed mathematical proof, but its steps are intuitive. First, given that the comparative static considered treats all persons the same who are the same age, we focus on an equilibrium where behavior and policies vary by age but not potential occupation. We point out that an equilibrium can involve no transfers

or distortions if old and young are the same, and cannot if they have different wages. If the old had a slightly lower wage, and policy had no distortions or transfers, then all persons would (in the log direct utility case) have the same labor supply, but the old have less consumption and higher marginal utility of transfer. In such a case, a politician would gain votes by transferring from young to old, which would create a leisure difference between age groups, and make the old single-minded. The elderly single-mindedness would make all voters concerned with elderly retirement, so the elderly would face a positive marginal tax rate (see Lemma 1).

Proposition 2 If the old have a stronger preference for retirement, but the same wage as the young, then there exists a political equilibrium in which the old receive a net transfer, face a positive marginal tax rate, and are more likely to retire.

Proof Our Appendix gives a detailed mathematical proof, but its steps are as above. The difference from Proposition 1 is that it is leisure preference, rather than low wages, that (in the neighborhood of a zero-transfer-distortion policy) makes the old have a higher marginal utility of transfers. So we expect a transfer from young to old, which reinforces the leisure difference, and single-mindedness for the elderly.

### III. Single-Minded Occupation Groups

We argue above that retirement focuses the political attention of the old on age-related policies, whereas the opposite is true for occupational groups. In other words, we showed that the *occupation group* with *less* average leisure is the one more successful in the debate and enjoys higher utility and a larger transfer from the government. This political success may show itself in explicit on-budget tax and subsidy programs for the winning occupation, or perhaps as regulatory policy erecting barriers to occupation entry and thereby raising the incomes of those practicing the occupation.

Regardless of whether occupations obtain their favors on- or off-budget, our model implies that the low leisure occupations are the more successful occupational lobbies (via occupational single-mindedness). Do empirical observations support this theoretical prediction? As mentioned above, there are a number of political science studies looking at the single-mindedness of the elderly,

but we are unaware of any study either stating this occupational proposition or putting forward some data to test it. Careful testing of this proposition is beyond the scope of our study, but here we make a first attempt to rank occupations by their hours worked, and their potency as a political interest group. We use the 1990 Census to rank groups according to hours worked, and show the results in Table 4. The ten three-digit occupations working the most hours in 1989 were physicians (median = 2600, mean = 2709), veterinarians (median = 2600, mean = 2667), farmers (median = 2600, mean = 2664), farm managers (median = 2600, mean = 2523), clergy (median = 2600, mean = 2402), restaurant and lodging managers (median = 2500, mean = 2420), lawyers and judges (median = 2500, mean = 2420), firefighters (median = 2496, mean = 2468), firefighting supervisors (median = 2496, mean = 2398), and funeral directors (median = 2400, mean = 2429).

Table 4: The 10 3-digit Occupations with the Largest Work Hours in 1989

Occupation	Annual Hours		Some Top Lobbies ( <i>Fortune Rank</i> )
	Median	Mean	
physicians	2600	2709	American Medical Association (8) American Hospital Association (21) American Cancer Society (61)
veterinarians	2600	2667	
farmers	2600	2664	American Farm Bureau Federation (17) National Cattlemen's Beef Association (76)
farm managers	2600	2523	
clergy	2600	2402	Christian Coalition (7) National Right to Life Committee (10)
restaurant and lodging managers	2500	2420	National Restaurant Association (24) Hotel Restaurant Employees Int'l Union (85) Nat'l Federation of Independent Business (4) Chamber of Commerce of the U.S.A. (15) National Retail Federation (28) National Association of Realtors (11)
lawyers and judges	2500	2420	Association of Trial Lawyers of America (5) American Bar Association (46) Congress!
firefighters	2496	2468	
firefighting supervisors	2496	2398	
funeral directors	2400	2429	
<i>all other</i> occupations and industries	NA		<ul style="list-style-type: none"> <li>• only one lobby ranked in the top 10 (National Education Association)</li> <li>• only nine lobbies ranked in the top 25</li> <li>• average rank of 63, if represented at all</li> </ul>

It is difficult to measure political influence, but we can go back to the study by *Fortune* magazine. We argued in Section 1 that elderly groups were prominent in the *Fortune* list. Doctors were also well represented by the top lobbies including the American Medical Association (ranked

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8th), the American Hospital Association (ranked 21st), and the American Cancer Society (ranked 61st). Veterinarians did not appear to be represented by any of the top 120 lobbies, but this may be because their absolute numbers are quite small.<sup>28</sup> Not surprisingly, farmers were well represented including the American Farm Bureau Federation (ranked 17th), and the National Cattlemen's Beef Association (ranked 76th). It may even be argued that lobbies such as the Christian Coalition (ranked 7th) and the National Right to Life Committee (ranked 10th) represent the clergy. Restaurant and food workers were represented by the National Restaurant Association (ranked 24th), Hotel Restaurant Employees International Union (ranked 85th), and perhaps even by the National Federation of Independent Business (ranked 4th), the Chamber of Commerce of the U.S.A. (ranked 15th), and the National Retail Federation (ranked 28th).

Of course, lawyers were well represented by the top lobbies. For example, the Association of Trial Lawyers of America ranked 5th and the American Bar Association ranked 46th. That's not to mention all of the lawyers in Congress! Firefighters and funeral directors do not appear to be represented by a top lobby. Of course, there are many occupations and industries whose workers are not represented in the top ten occupations (in terms of hours worked). Among *all of these others*, only one has a lobby ranked in the top ten – the ninth ranked National Education Association (teachers' lobby). Only eight others are even represented in the top 25 – bankers, manufacturers, municipal employees, the motion picture industry, home builders, and broadcasters.

Since the few longest hours occupations dominate *Fortune's* list of top lobbies, it may be the case that the long hours occupations have the more politically successful interest groups. Furthermore, the *Fortune* study reports that these groups are successful because they have “large numbers of geographically dispersed and politically *active* members who focus their energies on a *narrow range of issues*” (p. 146, italics added).

#### IV. Conclusions

We put forward a first mathematical economic model of endogenous political single-

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<sup>28</sup>Only 154 veterinarians appear in the 1990 Census PUMS (among men aged 30-59) – an order of magnitude less than any of the other occupations listed in Table 4, except funeral directors (of which 147 appear). See Mulligan and Shleifer (2002) for more analysis of absolute group size, lobbying, and regulation.

mindedness among the elderly. The model is necessarily about voting on multiple dimensions, because the old idea of “single-mindedness” has no meaning when there is only one political issue, and allows single-mindedness to affect policy and vice versa. From the mathematical model we derive three important implications: retirement helps political single-mindedness by the elderly, distortionary Social Security benefits encourage retirement and thereby elderly single-mindedness, and leisure time hurts occupational single-mindedness. While single-mindedness has received some attention in economics and political science, these three implications are novel and important derivatives of the basic propositions that voters are different in terms of their concern for one policy dimension rather than another, and that devoting resources to one dimension necessarily withdraws resources from other dimensions.

Further progress can be made with modeling single-mindedness. We foresee two potentially novel implications that might be forthcoming. First, we have modeled the non-age dimension of policy as a mere two categories: “occupation 1” and “occupation 2.” Certainly there are more than two occupations, and that the occupational diversity of a country varies cross-sectionally and over time. We expect occupational diversity to enhance the relative single-mindedness of the elderly, and hence the amount spent on Social Security and the degree to which Social Security benefits induce retirement. Perhaps that is part of the reason why Social Security’s fraction of GDP is positively correlated with economic development across countries, and over time.

Kotlikoff and Sachs (1998), Feldstein and Samwick (1997), Gramlich (1996), and others have proposed forced retirement savings policies as a way to alleviate intergenerational redistribution by the public sector. To the extent that retirement savings encourages retirement, a second implication of our approach, perhaps derived by extending the mathematical model in this study to explicitly represent the life cycle, is that retirement savings enhances elderly single-mindedness and thereby intergenerational redistribution. In other words, retirement savings programs may enhance the political power of the elderly, rather than reduce it.

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**Appendix: Proof of Lemma 2, Propositions 1 & 2**

Rational private behavior implies a leisure demand function  $l(\tau, T; w, \gamma)$  which, as indicated in the text, depends on the policy. We also include the arguments after the semicolon, rather than subscripting with  $a$  as in the text, to remind the reader that the shape of the demand function depends on the wage rate  $w$  and the preference for leisure  $\gamma$  which may vary by age. The effect of parameters on policy on utility can also be summarized, as in the text, with the indirect utility function  $v(\tau, T; w, \gamma)$ , except that we are using the semicolon notation rather than subscription. The properties assumed in the text –  $\partial v / \partial T > 0$ ,  $\partial^2 v / \partial T^2 < 0$ ,  $\text{sign}(\partial v / \partial \tau) = \text{sign}(-\tau)$ ,  $\partial^2 v / \partial \tau^2 < 0$ ,  $\partial l / \partial T > 0$ , and  $\partial l / \partial \tau > 0$  – hold when the direct utility function is logarithmic.

In the neighborhood of the policy with zero transfers and zero marginal tax rates, we can readily calculate various derivatives of these functions:

$$\begin{aligned}
 l_a &= \frac{\gamma}{1 + \gamma}, \quad \frac{\partial l_a}{\partial w} = 0, \quad \frac{\partial l}{\partial \gamma} = \frac{1}{(1 + \gamma)^2} \\
 \frac{\partial l_a}{\partial \tau} &= \frac{\gamma}{(1 + \gamma)^2}, \quad \frac{\partial l}{\partial T} = \frac{1}{w} \frac{\gamma}{1 + \gamma} \\
 \frac{\partial v_a}{\partial \tau} &= 0, \quad \frac{\partial^2 v_a}{\partial \tau^2} = -\frac{\gamma}{1 + \gamma}, \quad \frac{\partial^2 v_a}{\partial \tau \partial w} = 0, \quad \frac{\partial^2 v_a}{\partial \tau \partial T} = 0, \\
 \frac{\partial v_a}{\partial T} &= \frac{1 + \gamma}{w}, \quad \frac{\partial^2 v_a}{\partial T^2} = \frac{\partial^2 v_a}{\partial T \partial w} = -\frac{1 + \gamma}{w^2}, \quad \frac{\partial^2 v_a}{\partial T \partial \gamma} = \frac{1}{w} \\
 a &\in \{o, y\}
 \end{aligned}$$

Given that equilibria involve  $r$  and  $d$  candidates' promising the same policy, and the two propositions propose only to change wages or tastes in the age dimension in the neighborhood of an equilibrium with zero transfers, we can reduce the 26 equilibrium conditions to six conditions with six unknowns. The six unknowns are  $b_o, l_o, l_y, \tau_o, \tau_y, T$  (where  $T$  is the net transfer from young to old), and the six equations are two leisure demand equations (equilibrium condition (i)), the equation determining social concerns (equilibrium condition (ii), as aggregated in equation (6)), the vote maximizing first order conditions with respect to  $\tau_o$  and  $\tau_y$ , and the vote maximizing first order condition with respect to  $T$ . The comparative statics for the system, in the neighborhood of  $w_o = w_y$ ,

and  $\gamma_o = \gamma_y$ , are below, ordered as described above:

$$\begin{aligned}
 dl_o &= \frac{\gamma}{(1+\gamma)^2} d\tau_o + \frac{1}{w} \frac{\gamma}{1+\gamma} dT + \frac{1}{(1+\gamma)^2} d\gamma_o \\
 dl_y &= \frac{\gamma}{(1+\gamma)^2} d\tau_y - \frac{1}{w} \frac{\gamma}{1+\gamma} dT + \frac{1}{(1+\gamma)^2} d\gamma_y \\
 2db_o &= b(dl_o - dl_y) \\
 4w \frac{\gamma}{(1+\gamma)^2} db_o &= \frac{\gamma}{1+\gamma} d\tau_o - \frac{1}{w} d\gamma_o \\
 -4w \frac{\gamma}{(1+\gamma)^2} db_o &= \frac{\gamma}{1+\gamma} d\tau_y - \frac{1}{w} d\gamma_y \\
 8w \frac{\gamma}{(1+\gamma)^2} db_o + \frac{1}{1+\gamma} (d\gamma_o - d\gamma_y) &= \frac{1}{w} (2dT + dw_o - dw_y)
 \end{aligned}$$

The solution to this system, together with the stability assumption that  $b$  is sufficiently small, gives us the proofs of Propositions 1 and 2. The system solution includes:

$$\begin{aligned}
 \frac{1}{1+\gamma} \left[ 1 - 4wb \frac{\gamma}{(1+\gamma)^2} \left( \frac{2}{1+\gamma} - \frac{1}{w} \right) \right] (d\gamma_o - d\gamma_y) &= \frac{2}{w} \left[ 1 - 4wb \frac{\gamma}{(1+\gamma)^2} \right] dT + \left[ 1 - 4wb \frac{\gamma}{(1+\gamma)^3} \right] \frac{dw_o - dw_y}{w} \\
 \left[ 1 - 4wb \frac{\gamma}{(1+\gamma)^2} \right] (d\tau_o - d\tau_y) &= \frac{1+\gamma}{\gamma} \left[ 1 - 4wb \frac{\gamma}{(1+\gamma)^2} \right] (d\gamma_o - d\gamma_y) - 4wb \frac{\gamma}{(1+\gamma)^2} \frac{dw_o - dw_y}{w}
 \end{aligned}$$

which means that a greater elderly preference for leisure or a lesser elderly labor productivity leads to a higher marginal tax rate for the elderly and a transfer from young to old. From the labor supply functions, when then have that the elderly take more leisure.

Lemma 2 states that the messages are in the “right direction” from the point of view of the interest group members. To prove this in the age dimension, we eliminate the third equation in the system and treat  $db_o$  as exogenous. The solution to the five equation system shows that more  $b_o$  raises the utility of the old by raising the transfer  $T$  from young to old.

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