

## **Does Timing Matter?**

### **Intertemporal Policy Choice and the Mass Public**

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Prepared for presentation at the Workshop on Experimental Methods at the Canadian Political Science Association Annual Conference, June 4-6, 2008, Vancouver, B.C.

The authors would like to thank the Social Sciences and Humanities Research Council of Canada (#410-2006-1174) and the UBC Hampton Fund for their support of this research. The authors would also like to thank a number of individuals for advice and assistance at various stages of the project. Paul Quirk's comments at the design stage were critical, as was the advice of Diana Mutz, Sunshine Hillygus, Fred Cutler and Richard Johnston. On a wide range of specific issues, we received helpful advice and assistance from Mick Couper, Brian Gaines, Simon Jackman, Jeffrey Mondak, Angela O'Mahoney, and Nicholas Winter. For research assistance, the authors would like to thank Nico Dragojlovic and Steven Klein. A previous version of this paper was presented at the Annual National Conference of the Midwest Political Science Association, April 3<sup>rd</sup> to 6<sup>th</sup>, 2008, Chicago, IL. For helpful comments on that paper, we thank our discussant, Donald P. Haider-Markel.

### **Abstract**

This paper examines how citizens reason about intertemporal policy tradeoffs. Using an experiment embedded in a nationally representative online survey of the US population, we address two questions. First, does the perceived timing of a policy's consequences affect citizens' willingness to support it? Second, if timing does affect levels of policy support, why and under what conditions do citizens discount the long run? Focusing on attitudes toward a hypothetical proposed reform to the Social Security system involving an intertemporal trade-off between costs and benefits, we find that subjects increasingly discount benefits as those benefits recede into the future, with all else held constant. We also find that uncertainty about the future – and, specifically, trust in government to use resources wisely – rather than pure time preferences largely explain temporal discounting. Finally, we find that citizens' bias toward the short term, and the effects of political trust on time-discounting, are strongest when subjects are encouraged to consider a policy's short-term costs to themselves. The findings suggest a distinct and important sense in which trust in government matters: it allows politicians to impose sacrifice on constituents today to invest in long-run social gains, with reduced risk of electoral punishment.

Many of the most important policy choices facing governments today involve long-term or slowly evolving problems. Challenges such as climate change, a rising pension burden, and diminishing supplies of oil and other natural resources are expected to generate their greatest social and economic impact decades from now. Many of the most plausible means of addressing these long-run problems, however, often require governments to act today – to impose tax increases, benefit cuts, or regulatory burdens on constituents in the near term. A wide range of policy predicaments, that is, confront governments with a stark intertemporal dilemma: whether to pay short-term social costs in order to invest in long-term social benefits.

For democratic governments, investment in the long run poses a distinctive political problem. However great the future benefits of investment, incumbents in a democracy must face electoral competition and seek voter approval at relatively short intervals. Prominent claims in the literatures on public policymaking and political economy suggest that politicians thus face strong incentives to make policy choices that favor the short run over the long – that they invest in the future at their electoral peril. Underlying many analyses of the politics of public policy is the assumption that voters are myopic, paying close attention to past and short-term outcomes while ignoring or heavily discounting temporally distant policy consequences. Government investment in the long term, in this common view, ought to be rare. Moreover, where governments do take farsighted action at short-run expense, such choices can only be the result of exceptional conditions that have insulated incumbents from the consequences of a broadly negative public response.

It is not at all obvious, however, that the conventional view of politicians' intertemporal incentives is right. Remarkably, decades of research on public opinion have left the *temporal* features of citizens' policy attitudes almost completely unexplored. Despite a wealth of insights into the determinants of mass opinion, we currently know little about whether or how the timing of a policy's costs and benefits affects voters' willingness to accept it. Meanwhile, what we do know about the origins and structure of mass opinion raises serious doubts about whether voters apply anything like a time-discount to future policy consequences. Citizens rarely seem to weigh policy costs and benefits in sophisticated ways or make egocentric calculations about policies and candidates, and many of the roots of policy attitudes seem to lie more in symbolic and affective association than in rational and deliberate calculation. In other words, while politicians and political analysts alike often assume a strong myopic bias in public attitudes, there is good reason to doubt that voters take into account the timing of a policy's consequences.

This paper seeks to answer three questions about the intertemporal structure of citizens' policy attitudes: First, does the perceived timing of a policy's consequences affect citizens' willingness to support it? Second, if timing does affect levels of policy support, why and under what conditions do voters discount the long run? Is it because the electorate cares less about more temporally distant outcomes, because voters pay less attention to the long term, or because more distant policy outcomes are less certain? Put another way, are voters' temporal orientations a function of impatience, bounded rationality, or uncertainty?

In addressing these questions, the paper reports the results of a unique survey experiment that allows us to isolate the effects of time on policy attitudes and the conditions under which it matters. In the survey, subjects were presented with a “policy brief” designed to manipulate factual beliefs about a major policy issue. The policy brief addressed the financial strains facing the U.S. Social Security system, describing a possible policy solution that would impose immediate and widespread costs. Randomizing respondents to alternative versions of the brief – including, most importantly, different timings of the policy benefits – the experiment allows us to test competing hypotheses about the existence and causes of temporal effects on citizens’ policy attitudes.

Our findings suggest that citizens’ policy attitudes are indeed sensitive to the timing of policy effects: as the benefits of an intertemporal tradeoff recede into the future, with all else held constant, support for the policy falls. Our results, however, locate the source of this effect less in citizens’ time preferences – that is, their preference for consumption now over consumption later – than in the uncertainty attached to the long term. Specifically, we find that political uncertainty is a crucial moderator of temporal effects: subjects with high levels of trust in government to use resources wisely apply no detectable time discount to policy benefits, while those with low levels of political trust are highly sensitive to timing. Finally, the results suggest that mass intertemporal reasoning is shaped by citizens’ cognitive limitations. While subjects prove able to reason in temporal terms about a relatively complex policy issue, temporal and trust effects are strongest when subjects are specifically encouraged to consider a policy’s short-term costs to themselves – that is, when the policy’s character as an intertemporal *tradeoff* is made especially salient. We thus conclude that citizens’ capacity to attend to multiple dimensions of an intertemporal choice is bounded: the effects of timing depend on the degree to which citizens allocate scarce cognitive resources to temporally relevant considerations.

### **1. Theoretical expectations**

Empirical scholarship on public opinion and political cognition has been strikingly silent on the role of time in citizens assessments of public policies, focusing instead on a range of other cognitive, affective, and informational determinants of policy attitudes at the mass level (see, e.g., Zaller 1992; Sniderman et al. 1991; Kinder and Sanders 1996). Even studies of public views on policy problems that manifestly implicate the long-term – issues, such as pension reform and climate change, in regards to which societies face stark intertemporal tradeoffs – have rarely explored the implications of temporality itself for opinion formation (Rhodebeck 1993; Ponza et al. 1988; O'Donnell and Tinios 2003; Chong et al. 2001; Dunlap 1998; Krosnick et al. 2000; Pellikaan and Veen 2002). Despite strong intuitions that the timing of policy consequences matters to citizens, we have little direct evidence of its effects on policy attitudes or of the mechanisms through which it might exert such influence.

In this section, we outline a set of competing expectations about the formation of mass intertemporal policy attitudes. We first consider a range of arguments from scholarship

on microeconomics, political economy, and public policy suggesting that the timing of future policy consequences has important effects on voters' judgments. We identify three distinct reasons why timing might matter: impatience, uncertainty, and salience. Drawing on findings about the nature of political cognition, we then point to two reasons to expect weak temporal effects. If citizens routinely engage in low-information, heuristic reasoning or think about policy largely in symbolic or socio-tropic terms, then the timing of consequences might play little role in the formation of mass opinion. Finally, we discuss briefly the potential impact of informational context in conditioning the role of temporal considerations in political attitudes.

### **Why timing might matter**

Studies of policymaking at the macro-level routinely suggest that the timing of policy consequences has important effects on voters' judgments. Scholars examining governments' choices about policy design frequently characterize politicians' electoral incentives as biased heavily in favor of short-run policy considerations. Elected officials, in the typical account, face pressures both to delay the costs of policy and to deliver benefits as quickly as possible. The assumption underlying such claims – sometimes explicit, sometimes only implicit – is that the electorate itself will weigh long-run consequences less heavily when forming policy preferences or choosing among parties and candidates.

In a seminal article on the politics of blame-avoidance, for instance, Weaver (1986) argues that politicians can take advantage of voter myopia to escape punishment for unpopular policy decisions. Confronting a potentially costly social problem or policy failure, politicians can minimize the risk of electoral backlash by delaying the imposition of direct losses on constituents for as long as possible. Analyzing loss-imposition in a substantive policy field, studies of welfare-state reform have particularly emphasized the benefits of postponing pain (e.g., Bonoli 2000; Huber and Stephens 2001). In his influential account of retrenchment politics in the United States and Britain, Pierson (1994) contends that conservatives could often avert electoral punishment for unpopular reforms by deferring the pain of adjustment. Margaret Thatcher and Ronald Reagan, for instance, mitigated the risks of cutbacks to their countries' public earnings-related pension schemes by ensuring that the deepest reductions were scheduled to first take effect more than a decade after enactment.<sup>1</sup> The literature on economic reform similarly conceives of governments' intertemporal incentives as biased toward the short run. Liberalization and fiscal consolidation in Latin America and post-communist states is often slow, partial, and politically risky, in part because its costs to constituents typically precede its benefits. Even if voters will gain from structural adjustment over the long term, they will vote at the next election based mostly on the painful sacrifices that reformist governments have imposed in the near term (Przeworski 1991; see also the review in Stokes 1996). Models of political business or budget cycles assume, in a similar vein, that voters worry only about the immediate effects of fiscal or monetary policy

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<sup>1</sup> For similar reasoning in a different context, see also (Pierson 1996).

decisions, ignoring the longer-term fallout from manipulation of the macroeconomy (e.g., Nordhaus 1975; Alesina and Roubini 1992).

If long-term policy consequences do figure less prominently in citizen decision-making than do near term outcomes, why might they do so? A range of literatures on economic and political decision-making suggest at least three possible reasons why voters' judgments might be biased toward the short run.

### *1. Time preferences*

Standard micro-economic theories of intertemporal choice are grounded in the discounted utility (DU) model, originally proposed by Samuelson (1937). In the DU model, individuals are assumed to apply an exponential discount rate to the utility derived from future consumption. In the basic DU setup, this discount rate reflects pure *time preference*: the relative value that the individual places on her welfare at different points in time. Typically, individuals are assumed to have a *positive* time preference: that is, all else equal, people place greater value on temporally proximate future utility than on temporally distant future utility. Put another way, individuals display impatience with respect to welfare.

Applied to citizens' policy attitudes, the DU model would lead us to expect that citizens will prefer to receive policy benefits sooner and pay costs later simply because they care more about their nearer-term welfare. Indeed, if impatience largely explains the levels of citizen myopia suggested by macro-level studies of policymaking – in which politicians are deterred from enacting policies with substantial net long-term benefits – this implies that electorates prefer to face substantial long-term pain than to avoid much more modest near-term costs.

### *2. Salience*

Alternatively, voters' policy assessments may be skewed toward the present not because they are impatient but because the long term is less salient to them. As students of political and economic behavior have long pointed out, a defining feature of human reasoning is scarcity: individuals' limited capacity to process information from their environment or to attend to the many implications of their decisions (Jones 1994; Baumgartner and Jones 1993, 104-5; Simon 1985, 302). Cognitive limitations seem to be especially apparent in citizens' reasoning about politics and public policy. Setting aside the larger question of citizen competence, the literature on mass political cognition suggests that the average citizen is only minimally attentive to political events (Luskin 1991; Delli Carpini and Keeter 1997). Even optimistic accounts of voter competence usually depict an electorate that pays selective attention to policy issues and economizes on information and cognitive effort through the use of simple cues (Sniderman et al. 1991; Zaller 1992; Lupia and McCubbins 1998; Bartels 1996; Iyengar 1990). If the stock of citizen attention is bounded, then long-term consequences may be among the least

likely to draw public notice. Faced with limited cognitive resources, voters will presumably be most responsive to that information about policy outcomes which is clearest, most vivid, and easiest to process. Signals about more distant dangers, however, will tend to take less dramatic and interpretable form than information about social problems that are imminent or have already taken effect. In particular, longer-term outcomes are far less likely than current problems to produce “focusing events” (Kingdon 1984) – disasters or crises that aggregate and crystallize information about diffused outcomes and connect policy issues to vivid, emotionally interesting imagery. In other words, it is possible that the electoral problem of the long term derive less from the shape of citizens’ utility functions than from the scarcity of attention and the structure of policy-relevant information.

### 3. *Uncertainty*

A third possibility is that citizens discount long-term consequences because – however valued or salient they may be – distant policy outcomes are typically less certain than near-term ones. Expected policy consequences that lie further into the future typically rely on longer chains of cause and effect, and uncertainty about those consequences will be the product of uncertainty about each link in the chain. Moreover, the relevant policy effects may depend on prevailing social or economic conditions or on individual life circumstances, both of which are more likely to change over longer stretches of time. Hence, if two consequences have equal time-discounted utilities, the outcome that lies further in the future will (on average) yield a lower *expected* – or uncertainty-discounted – utility than the more proximate one (Von Neumann and Morgenstern 1944).

Among the sources of uncertainty specific to politics is the difficulty of credibly committing officeholders to a given course of action over time. Investment-oriented policies are particularly vulnerable to political uncertainty: while today’s officeholders can choose to impose the short-run costs of investment today, they will often have few credible means of binding themselves or their successors to the maintenance of the investment or to the payment of promised long-run benefits. Worse, many public investments provide future politicians with a positive *incentive* to renege: where policy of investment requires the accumulation of resources over time – for instance, in the state treasury or a dedicated trust fund – tomorrow’s officeholders may face a strong temptation to raid the investment for unrelated, short-term purposes. The more time that must pass between the payment of a policy’s costs and the delivery of its benefits, the more plentiful the opportunities and, possibly, the stronger the motive for future incumbents to revoke promises or redirect resources.

Intertemporal policy tradeoffs thus inherently invoke matters of *trust*: they ask citizens to trust governing institutions and officeholders to manage resources reliably and effectively over time. Voters’ levels of trust in government may, in fact, be crucial in conditioning their willingness to accept investment-oriented policies. As decades of survey research have demonstrated, levels of trust in government vary substantially across individuals and over time, and such dispositions seem to reflect a more generalized orientation than

attitudes toward specific current incumbents (Levi and Stoker 2000). There is also evidence that political trust has consequences for citizen attitudes, including evaluations of public policies that invoke questions of trust. Individuals with higher levels of trust in government, for instance, express greater support for public spending than do low-trusters (CHANLEY et al. 2000), and the more trusting are more willing to accept the citing of hazardous waste in their localities (Hunter and Leyden 1995). Studies of citizen compliance also suggest that trust in government may make individuals more likely to engage in political behavior that involves intertemporal tradeoffs, such as paying taxes owed in the expectation of future policy benefits (Scholz and Lubell 1998).

In short, intertemporal policy preferences may be partly or wholly a function of uncertainty. Even voters who cared equally about, and attended equally to, future and present consumption might discount future policy effects simply because they are less certain. Given that politics itself is a major source of policy uncertainty, the impact of timing on policy judgments may be substantially conditioned by confidence in government. And it may be the least trusting voters who are least willing to pay costs today for benefits tomorrow.

### **Why timing might *not* matter**

At the same time, there may be good reason to doubt that citizens will be strongly sensitive to the temporal features of public policies. Indeed, the DU model itself, though intuitively plausible, has not fared well under the light of empirical scrutiny. As a recent review of work in economic psychology concluded, “Virtually every assumption underlying the DU model has been tested and found to be descriptively invalid in at least some situations” (Frederick et al. 2002, 352).<sup>2</sup> The empirical literature also suggests that processes of intertemporal decision-making depend heavily on the domain in which they occur. Evidence of widely varying discount rates across studies suggests that intertemporal reasoning varies with the context and object of choice (Frederick et al. 2002). Accordingly, any theory of intertemporal policy choice must rest on logic and findings from within the domain of citizen political decision-making.

Studies of public opinion and political cognition suggest at least two distinct reasons to doubt that temporal considerations will exert a strong effect on policy attitudes. First, the bounds on citizen rationality may be as likely to dampen as to generate timing effects. If we think of timing as one feature of a policy’s consequences to be considered – alongside a range of others, such as the nature, size, and incidence of its costs and benefits – it is not at all obvious that a “cognitive miser” could afford to devote substantial attention to this particular consideration. Moreover, not all of the mechanisms described above

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<sup>2</sup> For instance, contrary to the DU assumption of constant discount rates, discount rates appear to vary depending on the distance into the future at which consequences are expected to occur. There is substantial empirical evidence to suggest that individuals’ discount functions take a hyperbolic form, with a negative relationship between the time horizon of the intertemporal bargain in question and the observed discount rate (Laibson 1997; Frederick et al. 2002).



impose equal cognitive demands. At one end of the spectrum, it may be easiest for citizens to simply ignore less vivid or dramatic information, and only somewhat more difficult to attend to the timing of policy consequences and react with impatience. In contrast, judging the uncertainty associated with governments' policy commitments – and, specifically, the dependence of that uncertainty on time – would seem to impose substantially greater computational demands. Once long-term consequences have passed a threshold of salience, therefore, the average citizen might display only modest discounting simply because she is unable to take timing and its implications fully into account.

Second, there is substantial evidence that citizens' political attitudes are only weakly driven by self-interest, understood as private, short-to-medium run well-being. The economic voting literature has generally found that sociotropic (or nationally-focused) economic perceptions exert stronger effects on vote intention than egocentric (or “pocketbook”) perceptions (Kinder and Kiewiet 1981; Kiewiet 1983; Mutz 1998; Lewis-Beck and Stegmaier 2000). Citizens may, of course, engage in sociotropic intertemporal reasoning, discounting more distant social consequences relative to more proximate ones – whether as a matter of time preference or because of uncertainty. Yet if voters attend more to social consequences than to personal gains and losses, at least one possible motive for discounting becomes less plausible: a sociotropic voter ought to be less likely to privilege the interests of her own generation (at root, an egocentric concern) over those of future generations.

Other scholarship on public opinion calls into question the very notion that citizens routinely engage in cost-benefit calculations when forming policy views. Findings in the literature on “symbolic politics” suggests that the evaluation of political objects — policies, candidates, governments, and so forth — is primarily a function of the symbolic associations that these objects evoke, including such enduring dispositions as political values and party identification (Sears et al. 1980; Sears and Funk 1991; Sears 1993). Where values and symbols eclipse consequentialist reasoning, neither impatience nor the uncertainty of the long run should figure prominently in the formation of mass policy attitudes.

### ***When timing might matter***

A final approach directs our attention away from the issue of whether timing, in general, does or does not matter and focuses instead on the question of *when*; that is, it directs us to the role of context, especially informational context, in public opinion. Zaller's (1992) “receive-accept-sample” (“RAS”) model, for instance, imagines a rather direct role for information environments in mass attitude formation, suggesting that dynamics in “information flows” originating with political elites largely account for opinion change on political matters. More recently, work on “framing effects” (Kinder and Sanders 1996; Nelson et al. 1997; Brewer 2001; Chong and Druckman 2007) has emphasized that the rhetorical construction of opinion objects—issues, events, candidates and so forth—can have a decisive impact on the nature of evaluative reasoning processes relevant to

those objects. In a classic study, for instance, Nelson et al. (1997) find that opinion toward permitting a Ku Klux Klan rally varies strikingly according to whether the issue is portrayed as a question of “civil liberties” or “public order,” with opinion much more supportive under the former than the latter condition. Of special relevance to the present paper are the conclusions of Chong et al. (2001), who find that the magnitude of rational, self-interested reasoning in mass politics is partially conditioned by the “clarity of the stakes” involved in political choices. The upshot is that the nature of reasoning concerning intertemporal policy choices may be partially a function of the presentation of the policy alternatives concerned, notwithstanding any enduring regularities in the impact (or not) of temporal considerations.

## 2. Method

### Study design

The present paper analyzes data from an online survey experiment, a design that allows us to combine the internal validity of random assignment with the external validity and large sample size of survey research. The essence of our design is an experiment embedded in the Intertemporal Policy Attitudes Study (IPAS), an online survey of a nationally representative sample of 1067 U.S. citizens, aged 18 years or over, conducted by the firm Knowledge Networks, Inc (KN). The survey was fielded from February 7 to 18, 2008.

The sample is drawn from KN’s household panel. KN first recruits this panel of approximately 30,000 households via random digit dialing (RDD), offering free web access to households that are not already online. The subjects for the present study were then randomly sampled from members of the KN panel households. A comparison of the distributions of demographic variables across the 2004 American National Election Study (ANES) and the present survey reveals only modest differences. The proportions of women, university degree-holders and high school dropouts across the two samples differ by fewer than three percentage points, and mean age across the samples differs by just over one year. The only significant difference is on race (8 percent of our sample, versus 15 percent in the ANES, identifies as African American), though we have little theoretical reason to suspect that ethnicity interacts with our variables of interest.

The IPAS centered on the financial problems facing the U.S. Social Security system. As will be familiar to most readers, the Social Security program is a retirement program financed by a dedicated payroll tax. The program relies solely on this tax for its revenues and holds any annual surpluses that it accumulates in a trust fund account, which is invested in short-term Treasury bills. Because the program receives no subsidy from the general federal budget, it can potentially run out of money if payroll tax income and resources in the program’s trust fund are insufficient to cover the cost of promised benefits. Currently, the program is taking in more in contribution revenues than it pays out in benefits, accumulating trust-fund surpluses for future use. Yet the retirement of the “baby boom” generation, and low fertility rates, are together expected to place enormous financial strains on the system at some point in the future (Board of Trustees 2007).

The IPAS's experimental stimulus took a form that we term a *policy brief*. We believe that a policy brief, as we describe it below, is a useful tool for delivering treatments in experimental contexts where the analyst seeks to isolate the effects of particular beliefs, perceptions, or features of a choice situation on policy opinions – that is, to explore the underlying structure of policy attitudes by manipulating elements of that structure. Our stimulus had to meet two challenges. First, in order to potentially reason about the intertemporal tradeoff before them, subjects needed a substantial amount of information. At a minimum, they needed to know the consequences of inaction, the consequences of action, and the relative timing of those consequences. Thus, the experiment required a relatively extended stimulus, delivering substantial information about the parameters of the choice – a task to which the online environment was well suited. Second, the information needed to be presented in a form that facilitated comprehension and absorption. The aim of the present study, however is to test for the effects of timing on attitudes, bracketing issues of how citizens process information or the effects of particular information sources. The treatment thus needed to maximize our chances of successfully conveying the relevant information, rather than maximizing the naturalism of the stimulus.

The policy brief, to this end, needed to have a few important features: it needed to present *only* information relevant to the choice; that information needed to be conveyed in a series of simple statements in a format that was easy to read; and the information needed to be organized according to the logically important elements of the choice. In the IPAS policy brief (see Appendix B), all subjects were informed about five features of the policy choice in the field of Social Security:

1. **Policy context:** a basic definition of the Social Security program.
2. **Cause of policy problem:** the nature and timing of the financial problem that Social Security faces.
3. **Costs of policy problem:** the consequences of this problem for citizens if nothing is done. These costs were specified as broad-based tax increases of \$300/year and benefit cuts of \$300/year starting at a future date.
4. **Nature of the solution:** the outlines of a possible solution that would involve a clear intertemporal tradeoff. The reform plan provided for an immediate but much smaller tax increase and benefit cut that would allow the program to accumulate a surplus that would be saved to help pay future benefits.
5. **Benefits of the solution:** Such action, subjects were told, would avoid the much larger tax increase and benefit cut that would otherwise be required at a future point in time. This solution resembles actual reforms to Social Security enacted in 1977 and 1983.

To reflect the likely prominence of reform costs in real-world policy debates, the discussion of benefits was followed by a reminder that the policy would mean sacrifice for workers and senior citizens in the present. The brief concluded with a bullet-point summary of the key parameters of choice.

Three experimental factors were embedded within the content of the policy brief (the 3 X 2 X 4 factorial design is represented in Appendix A)<sup>3</sup>:

1. **Timing of benefits:** The timing of Social Security's future financial problems and, hence, of the benefits of reform varied across three conditions: 5 years from now (2013), 10 years from now (2018), and 40 years from now (2047). This variation, it should be noted, lies roughly within the bounds of public debate over the timing of Social Security's financial troubles. The Board of Trustees' most recent annual report projects that the trust fund will run dry in 2041 if policy remains unchanged (Board of Trustees 2007). Critics of the scheme's financial structure, however, have argued aggressively in recent years that the trust fund is an accounting fiction and that the scheme will therefore run into difficulty as soon as current benefit outlays exceed current payroll tax intake, roughly a decade from now (Schieber and Shoven 1999).
2. **Uncertainty:** In the control condition, respondents received no information about the likelihood that the reform would succeed. In the "Low Uncertainty" condition, respondents read additional statements, citing expert consensus that the plan would be easy to carry out and that similar plans had been successfully implemented before.
3. **Benefits:** The expression of the benefits of reform (the losses avoided) and their relationship to timing varied across four conditions. In two of the conditions, the benefits of inaction are constant at all levels of timing. In Benefit Condition 1, the benefits are expressed verbally as being "much larger" than the costs at all timing levels. In Benefit Condition 2, those benefits are expressed numerically as double the costs at all timing levels.

By implication, the rate of return to the policy tradeoff in these first two conditions is highest at timing = 5 and lowest at timing = 40. Because we wanted to isolate the effects of rates of return on temporal sensitivity, we also set up conditions under which the benefits vary jointly with timing, so as to hold the policy's intertemporal rate of return constant across levels of timing. Specifically, in order to hold the rate of return constant, the benefit size had to increase with the temporal distance of the benefits. Calculations of rates of return are complex, especially when the principal and the payouts are streams of payments, as they are for this reform, rather than lump sums. In order to maximize our chances of

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<sup>3</sup> Two other experiments were included in the design, but are not analyzed in this paper: a question-order experiment concerning the elicitation of attitudes toward the reform; and an experiment involving the complexity of the presentation of the information in the policy brief.

controlling for rate-of-return effects, we thus introduced both a cognitively simple and a cognitively complex version of this part of the experiment. In Benefit Condition 3, we held the rate-of-return constant across the timing conditions in a simple (if mathematically inaccurate) sense: Condition 3 treats the short-term cost of the reform as though it were a one-time, lump sum investment of capital and the future benefit as though it were a one-time payout, holding the implicit interest rate constant at all levels of timing. In Condition 4, we hold the rate of return constant in the mathematically accurate sense by treating the costs and benefits as streams.<sup>4</sup>

## Measurement

For most analyses below, our dependent variable is a scale comprised of responses to a series of three questions. Table 1 reports the question wordings<sup>5</sup> and distributions of these measures. In every case, a majority of respondents oppose the reform, though support dips further when the question is pitched in terms of one's "willingness to pay" for the costs of the reform. The items are highly inter-correlated<sup>6</sup> and form a very reliable index ( $\alpha=0.94$ ). The mean and standard deviation of this *reform support index* are 0.40 and 0.29, respectively.<sup>7</sup>

To evaluate the success of our experimental treatments, we measure perceptions of the timing of Social Security's looming financial crisis (*timing perceptions*) and of the likelihood that the proposed reform to Social Security will "work," that is, "solve Social Security's financial problems" (*uncertainty perceptions*). With regard to the former, respondents are asked – following presentation of the policy brief and reform support questions – to indicate the number of "years from now" that they think the Social Security "system will run into financial trouble," allowing the entry of any real number.<sup>8</sup> To measure uncertainty perceptions, respondents are asked to indicate the reform's likelihood of success on a scale ranging from "not at all likely" to "very likely."<sup>9</sup>

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<sup>4</sup> In all cases, we assume the rate of return on the Social Security trust fund's assets assumed by the Board of Trustees (2006): a 2.9 percent real interest rate, with semi-annual compounding.

<sup>5</sup> Complete question wordings for all items analyzed are included in Appendix C.

<sup>6</sup> All pairwise correlation coefficients ( $r$ ) exceed 0.80.

<sup>7</sup> Note that, unlike its constituent measures, the reform support index implies that the average respondent is moderately opposed to the Social Security reform proposal. The reason is, in short, that reform opponents are more consistent in their opposition than supporters are in their support. Indeed, while almost 23 percent of respondents expressed the highest level of opposition to the reform on each of the three measures, just under 4 percent consistently expressed the highest level of support.

<sup>8</sup> The mean timing perception, after adjustments for obviously nonsensical responses and apparent response error, is 16.6 years.

<sup>9</sup> The mean of the item, when coded to vary along the (0,1) interval, is 0.577 (standard deviation=0.263).

The final key variable of interest, *political trust*, is measured using a slightly adapted version of the standard ANES battery on trust in government.<sup>10</sup>

All models estimated in the paper include controls for income, age, education, egalitarianism, Congressional support, and current personal economic perceptions. *Income* is measured on a nineteen point scale, which is coded to vary along the (0,1) interval. *Education* is captured with a pair of dummy variables: degree-holders and those with less than high school credentials are contrasted with high school graduates holding something less than a university-level degree. *Age* is a scalar variable. The survey items on which the remaining controls are based are presented in Appendix C.

### 3. Analysis

#### Manipulation check

The focus of our experimental design is to manipulate two variables arising from the theoretical discussion above: perceptions of the timing of Social Security’s “financial trouble” (*timing perceptions*) and perceptions of the likelihood that the proposed reform to the Social Security system will “work” (*uncertainty perceptions*). The assumption that such perceptions exist and, moreover, that they correspond roughly to objective features of the choices they concern is critical to accounts of temporal discounting that hinge on, respectively, time preference (or impatience) and uncertainty. Accordingly, the first step in the analysis is to assess the effectiveness of our experimental manipulations.

Table 2 compares median and mean timing perceptions across levels of the timing factor. In general, the timing manipulations were highly effective. At the 5- and 10-year levels of the timing factor, median perceptions of the number of years into the future when Social Security will run into financial trouble are, respectively, 6 and 10 years. Mean perceptions at these levels of timing are roughly 4 years above their respective medians, but – most importantly – the difference in perceptions across levels remains 4 years. At 40 years, the timing treatment did not move perceptions as close to the target, producing a median perception of 20 years and a mean perception between 25 and 26 years. Although timing perceptions at the most distant level of the timing factor are subjectively closer than they “should” be, they are, on average, an order of magnitude more distant than perceptions in either of the other timing conditions. Moreover, the difference between perceptions at the 10-year level and perceptions at the 40-year level is more than double the gap between perceptions at 5 and 10.

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<sup>10</sup> The adaptations concern the nature of the response categories on two of the items in the standard three-part battery. First, on item V045198, “run for the benefit of all the people” becomes “run for the benefit of most of the people.” Second, on item V045200, “quite a few are crooked” and “not very many are crooked” become “many are crooked” and “some are crooked.”

Table 3 reports a parallel analysis for the uncertainty factor, albeit with different results. The experimental factor varies between a “low uncertainty” condition, in which respondents are told that experts “agree the plan would work,” and a control condition, in which respondents are exposed to no statement about the likelihood of success. We reasoned that those in the control condition should, on average, be less certain about the reform’s benefits than those in the low uncertainty condition. As it happens, responses to our uncertainty perception question vary minimally with the uncertainty treatment: with perceptions coded on a 0,1 scale, those in the low uncertainty condition are only 0.04 units more certain of reform success than those in the control condition ( $p=0.025$ ). This finding counsels caution in interpreting any effect of the uncertainty factor on support for the hypothetical reform.<sup>11</sup> Furthermore, our results in this regard can not be treated as decisive on the question of uncertainty’s role in the mediation of timing effects. As discussed below, we must pursue this issue through alternative means.

### **Time and support for Social Security reform**

The most basic question in the analysis, of course, is *does timing matter?* Specifically, does support for the hypothetical reform to the Social Security system fall as the timing of the system’s “financial trouble” recedes into the future?

Model I in Table 4 addresses the issue. The model regresses the reform support index on the timing factor, which is represented here as a pair of dummy variables, one each for the 5- and 10-year levels of the timing factor. Estimation is by ordinary least-squares, and the model is estimated only within benefit levels 1 and 2 (in which benefit size is held constant). As noted above, all models estimated in the paper include controls for income, age, education, egalitarianism, Congressional support, and current personal economic perceptions, measured as described in the preceding section (coefficients not reported).<sup>12</sup> Predicted values for Model I are plotted in Figure 1.

The regression estimates and associated plot suggest that, indeed, subjects do apply positive time preferences to public policy outcomes: that is, *timing matters*. Respondents

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<sup>11</sup> At the same time, there is reason for caution in interpreting our manipulation check for uncertainty. On the one hand, our check was a relatively blunt instrument: as compared with our check for the timing factor, which allowed respondents to enter any positive number, the uncertainty check asked people how likely they thought it was that the reform would solve Social Security’s financial troubles, and asked them to fit their response into one of four closed-ended categories; nearly all of the responses, moreover, are crowded into three of the categories. More generally, we strongly suspect that perceptions about the efficacy of government action are far more difficult to manipulate than are perceptions about the timing of a policy’s consequences (see discussion below).

<sup>12</sup> This set of controls was culled from a much larger set that included demographic variables (employment status, retired status, gender, race, number of children), long-term political predispositions (an alternative egalitarianism measure, support for “less government”), indicators of political and economic knowledge, need for cognition, support for Social Security spending, interview start and completion dates, Presidential approval, and a range of economic perceptions (personal prospective, national current, national prospective). None of these proved significant in a fully saturated model of the reform support index, estimated for the whole sample.

in the 5 year condition are significantly more supportive of the reform proposal than those in either the 10 or 40 year conditions. The difference in predicted support between the 5 and 40 year conditions is 0.101 on a scale from 0 to 1, a difference that is significant at the 99 percent level.<sup>13</sup> Between the 5 and 10 year conditions this difference is 0.053 (significant at the 90 percent level). The 0.048 difference between the 10 and 40 year conditions, on the other hand, fails to achieve statistical significance at conventional levels ( $p < 0.170$ ). Even so, the neatly monotonic pattern depicted in Figure 1—of increasing support from the 40 to the 10 to the 5 year condition—conforms with the view that the electorate discounts long-run benefits in the evaluation of public policy.

Two other points bear noting here. First, the scale of time's impact is non-trivial, but also relatively moderate. By way of comparison, the gap in support between the 5 and 40 conditions is of roughly the same magnitude as that of having a college degree, or being 10 years older; and the effect is just half as large as a unit shift in congressional approval ratings (coefficients on controls not reported in table). The implication is that, although the effect of timing is substantively significant, the pattern does not suggest radical discounting. Second, these effects survive despite the high and equal salience of benefits in all conditions. In all conditions, the benefits of reform were stated multiple times and in diverse ways, including in a summary that remained on screen as respondents were probed for their attitudes toward the reform. Consequently, it can not be the case that temporal discounting turns *exclusively* on the relatively lower salience of the future in comparison with the present. Holding salience constant, timing still matters.

### *Controlling rate-of-return*

One potential confound in the foregoing analysis is the implicit rate-of-return associated with the hypothetical reform at different levels of time. As discussed above, in benefit levels 1 and 2, the size of the future benefits of the reform is constant across the 5, 10 and 40 year conditions (as are the near-term costs). Consequently, the rate-of-return associated with the reform – the implicit interest rate at which its short-run costs are to be traded for long-term benefits – declines as our timing variable increases. Moving from the 5-year to the 40-year condition, the real rate of return on the proposed intertemporal tradeoff falls from about 15 percent per annum to about 2 percent. It is thus possible that respondents favor the conditions in which the benefits arrive sooner because the reform has a higher implicit rate of return under such conditions, not because of timing itself.

To disentangle rate-of-return effects from the unique effect of time, we add to Model I interactions between timing and benefit conditions 3 and 4. The two conditions hold the hypothetical reform's real implicit rate-of-return constant – at 2.9 percent, compounded twice annually<sup>14</sup> – in two different ways: benefit condition 3 treats the reform's costs and

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<sup>13</sup> Predicted support levels simulated using the *CLARIFY* add-on to Stata (Tomz et al. 2003).

<sup>14</sup> This is the rate of return on Social Security's assets assumed in the program trustees' most recent annual report.



benefits as one-time payments or “lump sums”; benefit condition 4 treats costs and benefits as realized in “streams.” If the timing effects in Model I hinge on the correlation with rate-of-return, the interactions in Model II (“Lump sum”) and Model III (“Streams”)<sup>15</sup> should be negative and comparable in size to the main effects of time.

As it happens, this is not the case. Respondents show no sensitivity to the differential rates of return across our experimental conditions, whether rate-of-return is computed in terms of cognitively simple “lump sums” or cognitively complex “streams.” All interaction coefficients are far from conventional statistical significance thresholds. The experimental effects of timing, thus, do not hinge on a correlation with rate-of-return. Accordingly, all remaining models are estimated only within benefit conditions 1 and 2—the “constant benefit” levels.

### **Timing effects and uncertainty**

As discussed above, mere salience effects can not account for temporal discounting in our design, which holds salience constant across levels of the timing factor. It remains, however, to distinguish between pure time preference (impatience) and uncertainty as mediators of timing effects. The rest of the section focuses on this task. We proceed in a series of analytical steps, moving from less to more precise indicators of the effects of uncertainty. Our general strategy is to examine the interaction of uncertainty and timing, to see whether the effect of timing increases with uncertainty and to see how much of the timing effect can be accounted for by uncertainty alone. With each step, our measures of uncertainty become more precise, and we zero in on the conditions under which uncertainty is most likely to matter.

#### *Uncertainty manipulation*

We begin by reporting the results of a test for an interaction between the uncertainty manipulation and the timing manipulation in the experiment. Model IV (Table 4) adds interactions between the timing and uncertainty factors, along with uncertainty’s main effect, to the basic set-up in Model I. In principle, if uncertainty about distant policy outcomes fully accounts for the timing effects observed in Model I, then the coefficients on the interaction terms should be negative and roughly as large as the main effects of the timing factor. As discussed above, however, the uncertainty manipulation did not appear to shift subjects’ perceptions of the likelihood of reform success. We thus expected to find little or no interaction effect with time.

Indeed, the estimates for Model IV suggest that our uncertainty design variable does not mediate the effect of time on support for the proposed Social Security reform. The

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<sup>15</sup> Note that Model III is estimated only within the low uncertainty condition and the 10- and 40-year levels of the timing factor, as the other levels of timing and uncertainty at benefit condition 4 were excluded from the design.

coefficients on both of the interaction terms are far from conventional levels of statistical significance. Moreover, timing's main effects are undisturbed, although perhaps a little larger than in Model I. One imaginable implication is that timing effects do not reflect uncertainty (or, as suggested above, salience effects), but rather time preference—that is, pure impatience. However, the minimal variance in uncertainty perceptions across levels of the uncertainty factor does not permit any conclusion with much confidence.

Accordingly, we pursue the question through other means, by examining a more direct measure of subjects' uncertainty about government action: political trust.

### *The impact of political trust*

The minimal impact of the uncertainty factor on uncertainty perceptions, although unexpected, nonetheless comports with general findings concerning orientations toward political institutions, especially work on political trust. The dominant image of political trust is of a generalized, stable orientation toward government (Levi and Stoker 2000). Consequently, attitudes and beliefs concerning the likelihood of success of policy reform in a given domain may be largely impervious to minor experimental manipulations. Even so, the *interaction* between these beliefs and temporal considerations may, nonetheless, be significant. An important implication is that political trust *itself* may serve as an important moderator of timing effects. In short, the impact of time on uncertainty perceptions may be greatest among those with the lowest *ex ante* level of confidence in government.

Table 5 reports estimates of a series of models including interactions between the timing factor and multiple representations of political trust. Model I contains interactions between the 5 and 10 year conditions and a slightly modified version of the standard ANES political trust scale, but is otherwise identical to Model I in Table 4, including the same controls. If uncertainty mediates the relationship between time and support for the hypothetical reform to Social Security, then these coefficients should be negative (assuming political trust conditions timing's impact on uncertainty perceptions).

Estimates for Model I support no such conclusion; the coefficients on the interaction terms are dwarfed by their standard errors. The ANES political trust scale as a whole, then, does not moderate timing effects.

It is possible, however, that the trust scale's various components are not all equally relevant to intertemporal policy choice. Analysis of the semantic content of the three items is suggestive (see Appendix C for complete question wordings). Only one item in the political trust scale is addressed to perceptions of government's capacity to manage resources effectively and responsibly: "Do you think that people in government waste a lot of the money we pay in taxes, waste some of it, or don't waste very much of it?"<sup>16</sup> Two other elements of the battery, by contrast, concern beliefs that are far less relevant to

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<sup>16</sup> Note that, in the analysis, we group together responses at the two most trusting levels of the measure ("don't waste very much" and "waste some"), as only 19 respondents gave the most trusting response.

the problem of political commitment over the long-term: perceptions of the degree to which government is “run for the benefit of most of the people” versus those of special interests, and beliefs about the moral quality (the “crookedness”) of public office-holders. Consequently, the different items may capture unique components of citizens’ orientations toward government. Moreover, these components may be differentially implicated in reasoning about the long-term.

Models II, III and IV broadly confirm this possibility. The models are constructed along the same lines as Model I, with the exception that each contains a different component of the political trust scale: Models II and III interact the timing factor with the “benefits” and “crookedness” items, respectively, while Model IV interacts time with the “waste taxpayer money” item – which we herein term *resource-use trust*. None of these interactions rises to conventional levels of statistical significance. However, appropriately, the item with the strongest results is the only one of the three that directly concerns how government uses resources extracted from citizens—resource-use trust. Indeed, the interaction terms in Models II and III are eclipsed by their standard errors and, perversely, positively-signed. The interactions between the timing factor and resource-use trust (Model IV), however, are negatively-signed and, in the case of the interaction with the 5 year condition, nearing conventional significance thresholds ( $p=0.206$ ).

#### *Timing, uncertainty and trust: context effects*

The final step in the analysis is to identify conditions under which the interaction between timing and political uncertainty may be at their strongest. Our design varies two features of the decision context that may be important: the wording of the measure of support for the proposed Social Security reform and the rhetorical status, or framing, of uncertainty considerations.

Consider first the impact of question wording. Recall that our reform support index sums response on three items: a general “support” question, a “willingness-to-pay” (WTP) item, and a question that asks if the reform is “a good idea.” While the items are highly correlated,<sup>17</sup> the semantic content of the items varies in potentially significant ways, and each component contains unique variance. In particular, the WTP item directs respondent attention to the personal, material stakes of the reform to a greater extent than either the “support” or “good idea” measures. Following Chong, Citrin and Conley (2001), we reason that the greater “clarity of the stakes” in the WTP item may enhance attention to components of the self-interested, rational decision-making calculus, including the temporal schedule of costs and benefits and, critically, uncertainty about these decision elements.

This intuition is confirmed in Model V, which duplicates Model IV -- employing the resource-use measure of political trust – excepting that the dependent variable in this case is the WTP item, rather than the reform support index. The main effects of timing

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<sup>17</sup> See above, fn. 6.

increase by roughly twenty percent over estimated effects in Model IV, and by more than half over effects in the basic timing model in Table 4 (Model I). The negative interaction between resource-use trust and the 5-year level of timing is now clearly significant and roughly equal in size to its corresponding main effect. The trust interaction at the 10-year level fails to achieve statistical significance but is correctly signed and comparable in size to the main effect of the 10-year condition. Moreover, once again, only resource-use trust appears to matter: neither trust with respect to crookedness nor trust with respect to who benefits from government action have statistically significant interactions with timing (results not reported). Overall, the pattern indicates that timing effects are powerfully moderated by political trust and, by extension, that the impact of time on policy choice depends crucially, if not entirely, on the increasing relationship between uncertainty and time.

The final model leverages the uncertainty manipulation that proved insufficient to significantly influence uncertainty perceptions. Recall that the manipulation varies between a low uncertainty condition, in which subjects are told the reform “would work” and that past such reforms have “worked smoothly,” and a control condition, in which subjects are told nothing directly relevant to uncertainty about policy outcomes. Although the treatment failed to move uncertainty perceptions themselves, it may have had an indirect effect in framing subjects’ calculations. In an instance of what (Matthews 2007) calls “implicit counter-arguing,” the uncertainty treatment – assuring subjects that the reform is “a simple matter of bookkeeping” – may have *discouraged* respondents from considering matters of efficacy and uncertainty in reasoning about the proposal.

In Model VI, we thus re-estimate the interactions in Model V only in the condition under which respondents were told nothing about the likelihood of reform success—that is, at the control level of the uncertainty factor. The results fully support the implicit-counterargument conjecture. Timing’s main effects swell yet again, by more than fifty percent in the case of the 10-year timing condition. Furthermore, the coefficients on the interactions between timing and resource-use trust are greatly increased in magnitude—by more than half at the 5-year level—and the interaction with the 10-year condition now approaches statistical significance at conventional levels ( $p=0.200$ ). The interactions with our other trust dimensions are again insignificant. And, note that other imaginable proxies for political uncertainty can not stand in for resource use trust: interactions between time and measures of approval of the current Congress and current President are far from significance (not reported).

The massive interaction with resource-use trust is depicted in Figure 2, which plots marginal timing effects when trust is low (i.e. equals zero) and high (i.e. equals one). The figure is striking in two respects. First, timing effects are indistinguishable from zero among high-trusters: those who trust politicians to manage taxpayer money appear insensitive to a 35-year difference in the timing of policy benefits. Second, for low-trusters, timing is potentially decisive to support for the hypothetical Social Security reform, moving attitudes 18.4 points across the willingness-to-pay scale as benefits move from 5 to 40 years into the future. The results suggest that uncertainty about the future,

rather than time preferences themselves, accounts for the effect of time on mass policy attitudes.

#### 4. Discussion and Implications

Does the timing of a policy's consequences affect citizens' willingness to support it? And, to the extent that it does, why? We find little support for a number of possible expectations about citizens' intertemporal policy reasoning. First, neither cognitive limitations nor an insensitivity to "self-interest" appear to prevent citizens from noticing information about the timing of policy consequences and taking this information into account. Despite a relatively complex treatment, at least by the standards of survey research, and the focus on a program to which many Americans have strong symbolic attachments, subjects' attitudes displayed significant sensitivity to the distance of benefits into the future.

At the same time, the analysis suggests that citizens do not strictly obey the dictates of economic logic in thinking about intertemporal tradeoffs. Two important deviations from a fully rational calculus emerged. First, subjects seemed strikingly insensitive to the varying rates of return that they were offered over the time horizon of the tradeoff. It made no detectable difference to timing effects whether the rate of return fell steeply from the 5-year to the 40-year condition or was held constant across timing conditions. Put another way, subjects chose as though they had paid attention to only *part* of the relevant intertemporal calculation: they discounted benefits that were more distant in time, but did not demand *larger* benefits to compensate for the opportunity costs of waiting. Rates of return – a three-way relationship among costs, benefits, and time – either did not draw subjects' attention or were too complex for them to cognitively manage.

Second, respondents appear to have reasoned differently about logically equivalent, but differently framed, versions of the intertemporal tradeoff before them. The reform, as described in the proposal, would necessarily impose costs – in the form of either tax increases or benefit cuts – on nearly all subjects. Yet specifically asking subjects whether they would be "willing to pay" for the reform elicits different responses, subject to different causal relationships, than merely asking subjects whether they support the reform or think it is a good idea. Invoking the costs of the reform strengthens both the effects of timing itself and its interactions with political trust. On one level, this result lends further support to the hypothesis that important components of intertemporal policy choice run up against voters' cognitive limits: citizens are more likely to think temporally when their attention is directed toward relevant considerations. A further potential implication is that the consideration of benefit timing is itself motivated by the costliness of policy. Citizens think carefully about the temporal distance of benefits when they view a policy specifically as a *tradeoff*: as their attention turns to today's costs, voters apply stricter scrutiny to tomorrow's benefits.

Taken together, these results suggest that temporal reasoning is not beyond the reach of the mass public, but that citizens' capacity to reason simultaneously about multiple features of a policy's consequences are limited and dependent on the locus of attention. At the same time, it is also clear that voters' tilt toward the short run is not *simply* a matter of salience. Substantial timing effects emerged in the experiment even though the salience of the benefits was high and constant across timing conditions. The results suggest that the reduced salience of the long run may be *sufficient* to produce electoral myopia, but the public's interest in the short run cannot be *solely* a function of attention. Even when benefits are concrete and attended to, more distant benefits are less attractive than more proximate ones, for reasons that must have something to do with the way in which citizens reason about the future.

Most importantly, the results help disentangle potential *reasons* why voters might discount the future. To a striking degree, subjects' preference for nearer-term over longer-term policy benefits seems to be a function of *uncertainty* about future outcomes rather than *impatience* for more proximate gain. Our findings imply that, particularly when policy costs are made salient, citizens discount long-run policy benefits specifically because of *political* uncertainty – uncertainty about whether governments can be trusted. Not only were timing effects on willingness-to-pay stronger for those with less trust in governments than for the sample as a whole, but *the timing of policy benefits had no detectable effect among the high-trusters.*

Moreover, timing effects were not sensitive to generic attitudes toward elected officials: perceptions of politicians' moral qualities or of governments' responsiveness to narrow versus broad interests and approval of current officeholders did not move our timing coefficients. Rather, temporal discounting depended specifically on whether subjects trusted government to make good use of taxpayer dollars – that is, on the kind of trust that is logically implicated by a plan that would raise taxes and cut benefits today in order to shore up a public program tomorrow. To state these findings another way, considerations of political trust appear to be time-sensitive: the further into the future that government action had to extend, the more that it mattered whether subjects viewed government as capable of using resources wisely.

For elected officials seeking to address long-term social problems while maintaining their hold on office, these findings ought to be sobering but not discouraging. If our experimental results are portable to real-world electoral settings, then there are potentially votes to be lost in investing in long-term rather than near-term social goods, even when the goods in question are broadly valued by constituents. Conversely, citizens will be more likely to support investment in solving future social problems to the extent that those problems threaten to impose costs in the relatively *near* rather than the distant future. These temporal incentives, moreover, ought to be sensitive to the visibility of the costs of investment, or to their prominence in elite discourse and competition. Where such costs can be obscured – or where cross-party consensus on reform mutes elite discussion of those costs – investment in distant policy goods may involve far less electoral risk.

Yet the findings also suggest that the magnitude of the electoral problem of investment will vary in certain systematic ways. In particular, a chief challenge of the long term appears to be political uncertainty. Politicians' capacity to invest with electoral safety will depend substantially on how credible citizens find their governments' commitments. In recent years, political analysts have pointed to the importance of trust in generating a wide range of valued social outcomes and policymaking capabilities. The results reported here suggest a distinctive and enormously important sense in which trust in government matters: greater levels of public trust may lend governments temporal room for maneuver, allowing them to impose sacrifice on constituents today in order to invest in long-run social gains. The results also suggest that trust may not be equally decisive for public attitudes toward all forms of state activity: rather, it is specifically when governments ask constituents to pay today for the promise of long-deferred benefits that political trust matters most.

Table 1. Support for Social Security reform proposal

	Do you support or oppose the reform plan?	“I would be willing to pay the costs of the Social Security reform plan described in the presentation.”	“It would be a good idea for the government to adopt the Social Security reform plan described in the presentation.”
Oppose/Disagree strongly	26.99	28.58	28.30
Oppose/Disagree somewhat (Refused)	31.77	27.37	30.93
Support/Agree somewhat	0.37	0.37	0.47
Support/Agree strongly	34.68	36.36	34.68
	6.19	7.31	5.62

Note: Cell entries are percentages. N=1067.



Table 2. Perceptions of timing of Social Security's "financial trouble"

Timing of "financial trouble" (years from now)	Median	Mean	SD	<i>N</i>
5	6	9.89	13.31	320
10	10	13.89	14.66	382
40	20	25.46	19.43	365

Note: Differences of means significant at 0.001 or better.

Table 3. Perceptions of uncertainty regarding proposed reform

	Uncertainty Condition	
	Control	Low
If the reform is adopted, how likely is it that the reform would solve Social Security's financial problems? (percentage)		
Very likely	1.60	4.50
Somewhat likely	38.75	41.53
(Refused)	0.44	0.00
Not very likely	39.33	37.04
Not at all likely	19.88	16.93
Mean	0.59	0.55
SD	0.26	0.27
<i>N</i>	689	378

Note: For computation of means and standard deviations, the measure was coded to vary from 0 to 1. Difference of means across uncertainty conditions significant at 0.025.

Table 4. Timing and support for Social Security reform

	I. Timing	II. Timing and Rate of Return (Lump sum)	III. Timing and Rate of Return (Streams) <sup>a</sup>	IV. Timing and Uncertainty
T5	0.0999*** (0.0347)	0.0987*** (0.0344)		0.1173** (0.0489)
T5*Low uncertainty				-0.0361 (0.0690)
T5*ROR cons. (Lump sum)		-0.0601 (0.0577)		
T10	0.0460 (0.0346)	0.0483 (0.0344)	-0.0224 (0.0549)	0.0837* (0.0478)
T10*Low uncertainty				-0.0813 (0.0695)
T10*ROR cons. (Lump sum)		-0.0418 (0.0572)		
T10*ROR cons. (Streams)			-0.0839 (0.0950)	
Low uncertainty				0.0179 (0.0481)
ROR constant (Lump sum)		-0.0071 (0.0407)		
ROR constant (Streams)			0.0397 (0.0661)	
Constant	0.4034*** (0.1365)	0.3544*** (0.1019)	0.3496 (0.2135)	0.3892*** (0.1385)
Observations	374	582	180	374
R-squared	0.15	0.14	0.16	0.15

Standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Coefficient estimates for controls not reported.

<sup>a</sup> Estimated for Low Uncertainty condition only.

Table 5. Timing, trust and support for Social Security reform

Dependent variable / Trust indicator:	Index				Willingness-to-pay	
	Scale (I)	Benefits (II)	Crooked (III)	Resource- use (IV)	Resource- use (V)	Resource- use <sup>a</sup> (VI)
T5	0.1132** (0.0491)	0.0878** (0.0399)	0.0940* (0.0554)	0.1286*** (0.0402)	0.1538*** (0.0439)	0.1829*** (0.0630)
T5*Pol. trust scale	-0.0394 (0.1234)					
T5*Pol. trust (Benefits)		0.0498 (0.0831)				
T5*Pol. trust (Crooked)			0.0118 (0.1194)			
T5*Pol. trust (Waste)				-0.1019 (0.0804)	-0.1675* (0.0878)	-0.2498* (0.1304)
T10	0.0457 (0.0482)	0.0351 (0.0395)	0.0110 (0.0555)	0.0687* (0.0395)	0.0784* (0.0432)	0.1258** (0.0616)
T10*Pol. trust scale	0.0250 (0.1243)					
T10*Pol. trust (Benefits)		0.0457 (0.0823)				
T10*Pol. trust (Crooked)			0.0989 (0.1221)			
T10*Pol. trust (Waste)				-0.0677 (0.0843)	-0.1100 (0.0921)	-0.1658 (0.1289)
Political trust scale	0.1175 (0.0818)					
Political trust (Benefits)		0.0470 (0.0555)	0.0789** (0.0366)	0.0649* (0.0363)	0.0631 (0.0397)	0.1181** (0.0557)
Political trust (Crooked)			-0.0502 (0.0838)			
Political trust (Waste)				0.0885 (0.0544)	0.1203** (0.0594)	0.1282 (0.0848)
Constant	0.4021*** (0.1383)	0.4100*** (0.1372)	0.4171*** (0.1384)	0.3810*** (0.1379)	0.1709 (0.1507)	0.1462 (0.2087)
Observations	374	374	374	374	374	193
R-squared	0.15	0.15	0.15	0.15	0.15	0.16

Standard errors in parentheses. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Coefficient estimates for controls not reported.

<sup>a</sup> Estimated for Uncertainty control condition only.

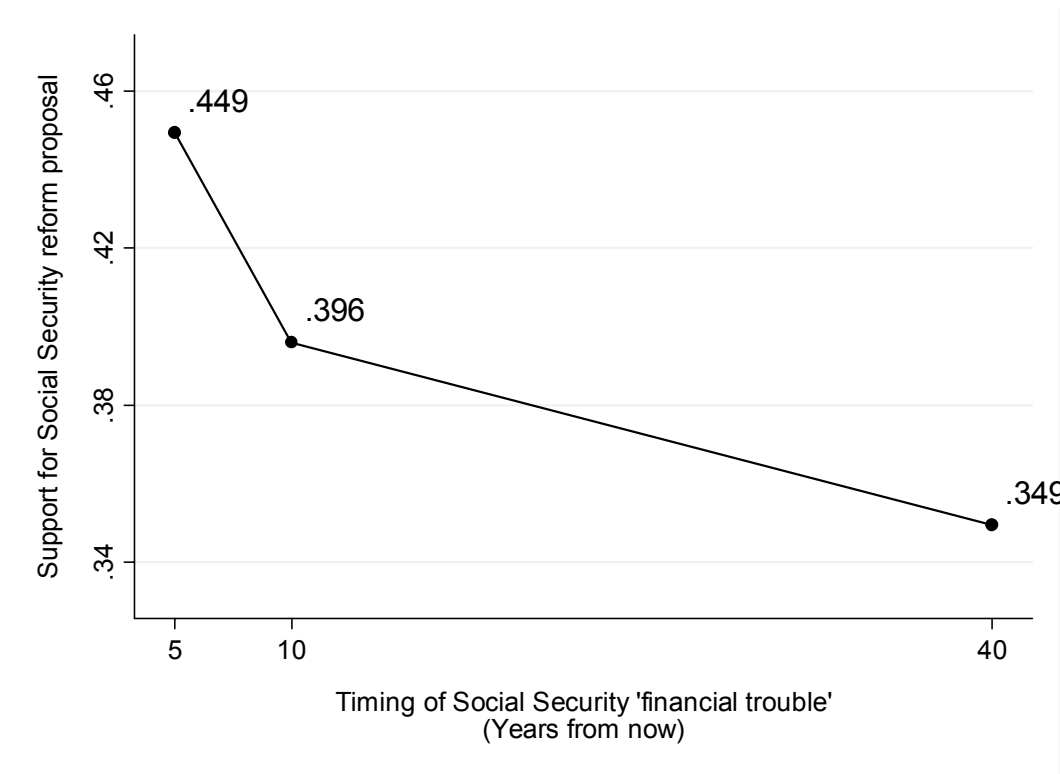


Figure 1. Timing and Support for Social Security Reform

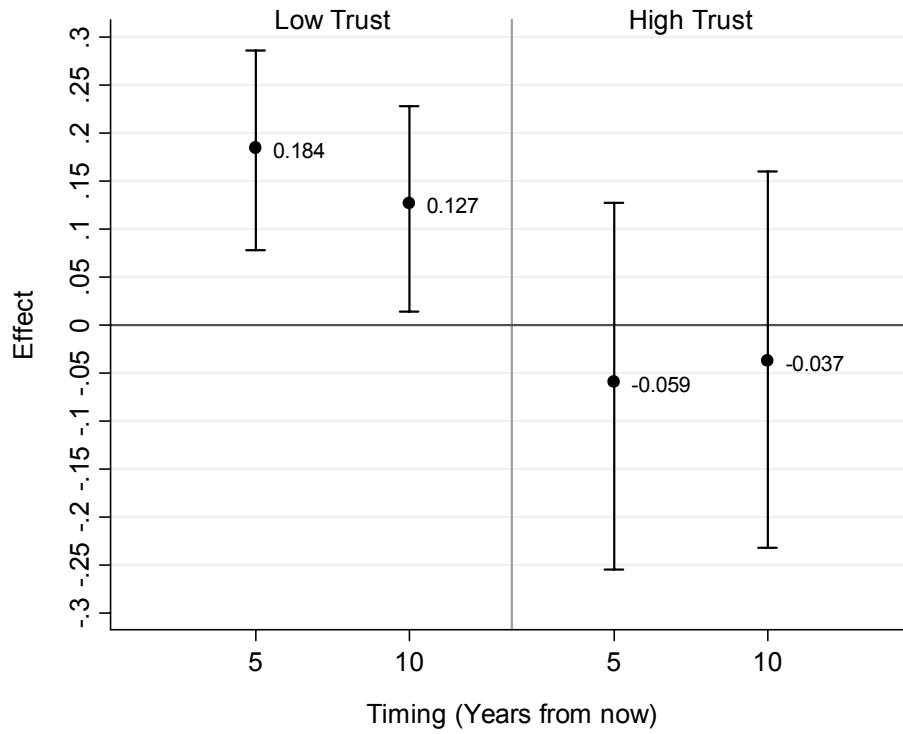


Figure 2. Timing and Willingness to Pay for Social Security Reform by Resource-Use Trust  
(Note: Error bars indicate 90 percent confidence intervals.)

Appendix A:  
Experimental Design

		Timing of benefit					
		5 years (2013)		10 years (2018)		40 years (2048)	
Benefit		Uncertainty					
		Control	Low Uncertainty	Control	Low Uncertainty	Control	Low Uncertainty
1	Constant, verbal	X	X	X	X	X	X
2	Constant, numerical	X	X	X	X	X	X
3	Rate-of-return constant (lump sums)	X	X	X	X	X	X
4	Rate-of-return constant (streams)				X		X

Note: “X” indicates that the factorial combination was included in the experiment.

**Appendix B:  
Policy Brief with Experimental Conditions**

**Root Policy Brief**

**Screen 1**

THE FUTURE OF SOCIAL SECURITY:

PREPARING FOR [Time: date]

**Screen 2**

**HOW DOES SOCIAL SECURITY WORK?**

The Social Security system supports millions of senior citizens when they retire from work.

All workers pay payroll taxes to fund the system.

But at some point in the future, the Social Security system is expected to run into trouble.

**Screen 3**

**WHAT IS THE PROBLEM?**

The problem is that the number of senior citizens receiving Social Security benefits is growing quickly.

But the number of workers paying into the system is growing slowly.

So Social Security's expenses are growing faster than its income.

**Screen 4**

**WHAT IS THE PROBLEM?**

By the year [Time: date], the system will run into financial trouble.

The system will continue to pay benefits to seniors.



But [Time: number of years] years from now, seniors will see their benefits go down while workers will see their payroll taxes go up.

### **Screen 5**

#### **WHAT CAN BE DONE?**

Many proposals are under discussion in Washington.

One plan for reform would save money by raising taxes and reducing retirement benefits today.

By acting now, this plan could avoid more drastic measures in [Time: number of years] years' time.

### **Screen 6**

#### **HOW WOULD THE REFORM PLAN WORK?**

For the average worker, the plan would immediately increase payroll taxes by \$300 a year.

For the typical senior citizen, the plan would immediately cut benefits by \$300 a year.

These tax increases and benefit cuts would stay in place for the next [Time: number of years] years.

The savings would build up in the Social Security system until we need the money in [Time: date].

### **Screen 7**

#### **HOW WOULD THE REFORM PLAN WORK?**

By saving this money today, the plan aims to avoid a [Benefit: prose]

[SCREEN 8]

[Uncertainty: prose]

### **Screen 8/9**

#### **A DIFFICULT CHOICE**

Social Security's problems are [Time: period] away. But the reform plan would have real costs in the present.

Many seniors and workers face financial difficulties today.

This plan would make it even harder for them to make ends meet right now.

The question is: Are Americans willing to pay the costs of this reform plan?

### Screen 9/10

#### SUMMARY OF REFORM PLAN

Here are the key points to keep in mind:

- Social Security faces financial trouble in [Time: date]
- Reform plan would immediately raise payroll taxes \$300 a year and cut benefits \$300 a year
- Savings now could avoid a [Benefit: bullet]
- [Uncertainty: bullet]

#### Experimental Conditions

#### Question Order

	Question order
1	9, 10
2	10, 9

#### Time

This variable is represented in three different ways in the policy brief: numerically as a *date* and *number of years*, and verbally as a *period*.

	Date	Number of years	Period
1	2018	10	a decade
2	2048	40	decades
3	2013	5	a few years

#### Uncertainty

This variable is represented in two different ways in the policy brief: as *prose* and as a *bullet*.

The *prose* is inserted as an additional screen at screen 8.

	<b>Prose</b>	<b>Bullet</b>
<b>1 (control)</b>		
<b>2</b>	<p>HOW WOULD THE REFORM PLAN WORK?</p> <p>Many experts have examined the reform plan, and they agree that it would be easy to carry out.</p> <p>Similar reforms have been adopted in the past and worked smoothly.</p> <p>Commenting on the plan, Dr. Gerald Tickner of the Institute for Social Insurance has remarked: “We know how to solve this problem. It’s a simple matter of bookkeeping, balancing the program’s income against its expenses.”</p>	<ul style="list-style-type: none"> <li>• Experts agree the plan would work</li> </ul>

**Benefit**

This variable is represented in two different ways in the policy brief: as *prose* and as a *bullet*.

The *prose* and *bullet* treatments vary jointly with Time at levels 3 and 4 of Benefit.

	<b>Prose</b>	<b>Bullet</b>
<b>1</b>	much larger payroll tax increase and a much larger benefit cut in [Time: date].	much larger payroll tax increase and benefit cut in [Time: number of years] years
<b>2</b>	payroll tax increase of \$600 a year and a benefit cut of \$600 a year in [Time: date] (all figures in today’s dollars).	payroll tax increase of \$600 a year and a benefit cut of \$600 a year in [Time: number of years] years
<b>3</b>	<p>[If Time=5]</p> <p>payroll tax increase of \$350 a year and a benefit cut of \$350 a year in 2013 (all figures in today’s dollars).</p> <p>[If Time=10]</p>	<p>[If Time=5]</p> <p>payroll tax increase of \$350 a year and a benefit cut of \$350 a year in 5 years</p> <p>[If Time=10]</p>

	<p>payroll tax increase of \$400 a year and a benefit cut of \$400 a year in 2018 (all figures in today's dollars).</p> <p>[If Time=40]</p> <p>payroll tax increase of \$950 a year and a benefit cut of \$950 a year in 2048 (all figures in today's dollars).</p>	<p>payroll tax increase of \$400 a year and a benefit cut of \$400 a year in 10 years</p> <p>[If Time=40]</p> <p>payroll tax increase of \$950 a year and a benefit cut of \$950 a year in 40 years</p>
<p><b>4</b></p>	<p>[If Time=10]</p> <p>permanent payroll tax increase of \$150 a year and a permanent benefit cut of \$150 a year in 2018 (all figures in today's dollars).</p> <p>[If Time=40]</p> <p>permanent payroll tax increase of \$2600 a year and a permanent benefit cut of \$2600 a year in 2048 (all figures in today's dollars).</p>	<p>[If Time=10]</p> <p>permanent payroll tax increase of \$150 a year and a permanent benefit cut of \$150 a year in 10 years</p> <p>[If Time=40]</p> <p>permanent payroll tax increase of \$2600 a year and a permanent benefit cut of \$2600 a year in 40 years</p>

## Appendix C: Survey Items

### Reform support index components

Now we would like to know what you think about the proposed reform to the Social Security system described in the presentation.

9. Do you support or oppose the reform plan?

- (a) Strongly support
- (b) Somewhat support
- (c) Somewhat oppose
- (d) Strongly oppose

Now, please indicate how strongly you agree or disagree with the following statement.

10. [Cost question]: “I would be willing to pay the costs of the Social Security reform plan described in the presentation.”

- (a) Agree strongly
- (b) Agree somewhat
- (c) Disagree somewhat
- (d) Disagree strongly

Now, please indicate how strongly you agree or disagree with the following statement.

11. “It would be a good idea for the government to adopt the Social Security reform plan described in the presentation.”

- (a) Agree strongly
- (b) Agree somewhat
- (c) Disagree somewhat
- (d) Disagree strongly

### Timing perceptions

13. If Social Security continues as it is now, WHEN do you think the system will run into financial trouble? Please complete the sentence below by typing your answer into the box.

If Social Security continues as it is now, I think the system will run into financial trouble \_\_\_\_\_ years from now.

Uncertainty perceptions

15. Do you think the reform would work? If the reform is adopted, how likely is it that the reform would solve Social Security's financial problems?

- (a) Very likely
- (b) Somewhat likely
- (c) Not very likely
- (d) Not at all likely

Trust in government (Question 27 is "political trust" in analysis)

Now some general questions about government.

People have different ideas about the government in Washington.

These ideas don't refer to Democrats or Republicans in particular, but just to the government in general.

We want to see how you feel about the government in general.

26. Would you say the government is pretty much:

- (a) run by a few big interests looking out for themselves; or,
- (b) run for the benefit of most of the people?

27. Do you think that people in government waste a lot of the money we pay in taxes, waste some of it, or don't waste very much of it?

Remember, these ideas don't refer to Democrats or Republicans in particular, but just to the government in general.

- (a) Waste a lot
- (b) Waste some
- (c) Don't waste very much

28. Do you think that many of the people running the government are crooked, some are crooked, or hardly any of them are crooked?

Remember, these ideas don't refer to Democrats or Republicans in particular, but just to the government in general.

- (a) Many are crooked
- (b) Some are crooked
- (c) Hardly any are crooked

## REFERENCES

- Alesina, Alberto, and Nouriel Roubini. 1992. "Political Cycles in OECD Economies." *The Review of Economic Studies* 59:663-88.
- Bartels, Larry M. 1996. "Uninformed Votes: Information Effects in Presidential Elections." *American Journal of Political Science* 40 (1):194-230.
- Baumgartner, Frank R., and Bryan D. Jones. 1993. *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.
- Board of Trustees. 2006. "Annual Report of the Board of Trustees of the Federal Old-age and Survivors Insurance and Disability Insurance Trust Funds." Washington, D.C.: U.S. Government Printing Office.
- . 2007. "Annual Report of the Board of Trustees of the Federal Old-age and Survivors Insurance and Disability Insurance Trust Funds." Washington, D.C.: U.S. Government Printing Office.
- Bonoli, Giuliano. 2000. *The Politics of Pension Reform: Institutions and Policy Change in Western Europe*. Cambridge: Cambridge University Press.
- Brewer, Paul. 2001. "Value Words and Lizard Brains: Do Citizens Deliberate about Appeals to Their Core Values?" *Political Psychology* 22 (1):45-64.
- CHANLEY, VIRGINIA A., THOMAS J. RUDOLPH, and WENDY M. RAHN. 2000. "The Origins and Consequences of Public Trust in Government: A Time Series Analysis." *Public Opinion Quarterly* 64 (3):239-56.
- Chong, Dennis, Jack Citrin, and Patricia Conley. 2001. "When Self-Interest Matters." *Political Psychology* 22 (3):541-70.
- Chong, Dennis, and James Druckman. 2007. "Framing Public Opinion in Competitive Democracies." *American Political Science Review* 101 (4):637-55.
- Delli Carpini, Michael X., and Scott Keeter. 1997. *What Americans Know About Politics and Why It Matters*. New Haven: Yale University Press.
- Dunlap, Riley E. 1998. "Lay Perceptions of Global Risk: Public Views of Global Warming in Cross-National Context." *International Sociology* 13 (4):473-98.
- Frederick, Shane, George Loewenstein, and Ted O'Donoghue. 2002. "Time Discounting and Time Preference: A Critical Review." *Journal of Economic Literature* 40 (2):351-401.
- Huber, Evelyne, and John D. Stephens. 2001. *Development and Crisis of the Welfare State: Parties and Policies in Global Markets*. Chicago: University of Chicago Press.
- Hunter, Susan, and Kevin M. Leyden. 1995. "Beyond NIMBY: Explaining Opposition to Hazardous Waste Facilities." *Policy Studies Journal* 23 (4):601-19.
- Iyengar, Shanto. 1990. "Shortcuts to Political Knowledge: The Role of Selective Attention and Accessibility." In *Information and Democratic Processes*, ed. J. Ferejohn and J. H. Kuklinski. Urbana, IL: University of Illinois Press.
- Jones, Bryan D. 1994. *Reconceiving Decision-Making in Democratic Politics: Attention, Choice, and Public Policy*. Chicago: University of Chicago Press.
- Kiewiet, D. Roderick. 1983. *Macroeconomics & micropolitics: the electoral effects of economic issues*. Chicago: University of Chicago Press.

- Kinder, Donald R., and D. Roderick Kiewiet. 1981. "Sociotropic Politics: The American Case." *British Journal of Political Science* 11 (2):129-61.
- Kinder, Donald R., and Lynn M. Sanders. 1996. *Divided by Color: Racial Politics and Democratic Ideals*. Chicago: University of Chicago Press.
- Kingdon, John W. 1984. *Agendas, Alternatives, and Public Policies*. New York: Harper/Collins.
- Krosnick, John A., Allyson L. Holbrook, Laura Lowe, and Penny S. Visser. 2000. "The Origins and Consequences of Democratic Citizens' Policy Agendas: A Study of Beliefs and Attitudes about Global Warming." *Climatic Change* 77 (1-2):7-43.
- Laibson, David. 1997. "Golden Eggs and Hyperbolic Discounting." *Quarterly Journal of Economics* 112:443-77.
- Levi, Margaret, and Laura Stoker. 2000. "Political Trust and Trustworthiness." *Annual Review of Political Science* 3 (1):475-507.
- Lewis-Beck, Michael, and Mary Stegmaier. 2000. "Economic Determinants of Election Outcomes." *Annual Review of Political Science* 3:183-219.
- Lupia, Arthur, and Mathew D. McCubbins. 1998. *The Democratic Dilemma: Can Citizens Learn What They Need to Know?* New York: Cambridge University Press.
- Luskin, Robert C. 1991. "Explaining Political Sophistication." *Political Behavior* 12 (4):331-61.
- Matthews, J. Scott. 2007. "Framing and Affective Sources of Political Judgment." In *Annual General Meeting of the Canadian Political Science Association*. Saskatoon, SK.
- Mutz, Diana C. 1998. *Impersonal influence: how perceptions of mass collectives affect political attitudes*. New York: Cambridge University Press.
- Nelson, Thomas, Rosalee Clawson, and Zoe Oxley. 1997. "Media framing of a civil liberties conflict and its effect on tolerance." *American Political Science Review* 91:567-83.
- Nordhaus, William D. 1975. "The Political Business Cycle." *The Review of Economic Studies* 42 (2):169-90.
- O'Donnell, Owen, and Platon Tinios. 2003. "The Politics of Pension Reform: Lessons from Public Attitudes in Greece." *Political Studies* 51 (2):262-81.
- Pellikaan, Huib, and Robert J. van der Veen. 2002. *Environmental dilemmas and policy design*. Cambridge ; New York: Cambridge University Press.
- Pierson, Paul. 1994. *Dismantling the Welfare State? Reagan, Thatcher, and the Politics of Retrenchment*. New York: Cambridge University Press.
- . 1996. "The Path to European Integration: A Historical-Institutionalist Analysis." *Comparative Political Studies* 29 (2):123-63.
- Ponza, Michael, Greg J. Duncan, Mary Corcoran, and Fred Groskind. 1988. "The Guns of Autumn?: Age Differences in Support for Income Transfers to the Young and Old." *Public Opinion Quarterly* 52 (4):411-66.
- Przeworski, Adam. 1991. *Democracy and the Market: Political and Economic Reforms in Eastern Europe and Latin America*. New York: Cambridge University Press.
- Rhodebeck, Laurie A. 1993. "The Politics of Greed? Political Preferences among the Elderly." *Journal of Politics* 55 (2):342-64.



- Samuelson, Paul A. 1937. "A Note on Measurement of Utility." *The Review of Economic Studies* 4 (2):155-61.
- Schieber, Sylvester J., and John B. Shoven. 1999. *The Real Deal: The History and Future of Social Security*. New Haven: Yale University Press.
- Scholz, John T., and Mark Lubell. 1998. "Adaptive Political Attitudes: Duty, Trust, and Fear as Monitors of Tax Policy." *American Journal of Political Science* 42 (3):903-20.
- Sears, David. 1993. "Symbolic politics: A socio-psychological theory." In *Explorations in political psychology*, ed. S. Iyengar and W. J. McGuire. Durham, N.C.: Duke University Press.
- Sears, David, and Carolyn Funk. 1991. "The role of self-interest in social and political attitudes." *Advances in Experimental Social Psychology* 24:1-91.
- Sears, David, Richard Lau, Tom Tyler, and A. Allen. 1980. "Self-Interest vs. Symbolic Politics in Policy Attitudes and Presidential Voting." *American Political Science Review* 74:674-84.
- Simon, Herbert A. 1985. "Human Nature in Politics: The Dialogue of Political Science with Psychology." *American Political Science Review* 79 (2):293-304.
- Sniderman, Paul M., Richard A. Brody, and Philip Tetlock. 1991. *Reasoning and Choice: Explorations in Political Psychology*. New York: Cambridge University Press.
- Stokes, Susan C. 1996. "Public Opinion and Market Reforms: The Limits of Economic Voting." *Comparative Political Studies* 29 (5):499-.
- Tomz, Michael, Jason Wittenberg, and Gary King. 2003. "Clarify: Software for Interpreting and Presenting Statistical Results." *Journal of Statistical Software* 8 (2).
- Von Neumann, John, and Oskar Morgenstern. 1944. *Theory of games and economic behavior*. Princeton,: Princeton university press.
- Weaver, R. Kent. 1986. "The Politics of Blame Avoidance." *Journal of Public Policy* 6 (4):371-98.
- Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.