

Rational Exuberance: The Stock Market and Public Support for Social Security Privatization

Jason Barabas Harvard University

Some pundits argue that public support for Social Security privatization is unaffected by stock market downturns. Others worry that majorities might flip with each major market swing. Cross-sectional and longitudinal analyses support a third perspective, consistent with theories of a rational public, where citizens update their opinions in reasonable ways in response to changes in the Dow Jones Industrial Average, the Standard & Poor's 500 index, and an average of the major markets. Therefore, the stock market affects Social Security privatization attitudes, particularly when movements in the markets remind citizens of the risks inherent in investing. These findings open new possibilities and create new challenges for including the public in policy debates.

Few public policy reforms are more contested than Social Security privatization. This is an area where political elites diverge dramatically and publicly. Each side in the Social Security debate invokes public opinion (Cook, Barabas, and Page 2002), partly in an effort to persuade the public (Jacobs and Shapiro 2000), and partly to marshal the political capital needed to revamp a program with its own powerful constituency (Campbell 2003). In short, the highly visible nature of Social Security means that reformers recognize the need for public support.

A key part of the policy debate revolves around the dramatic rise of the stock market during the late-1990s and subsequent crash during the early 2000s. Many worry that while Social Security privatization might have seemed like a good idea when stocks were going up, enthusiasm could wane when stock markets perform poorly. The findings here reveal that changes in the stock market affect public support for privatization. In this two-part study, the first empirical analysis shows how an abrupt market decline in 1998 increased opposition to Social Security privatization even after controlling for individual-level factors. The second study documents a similar relationship over an eight-year period as support for Social Security gradually tracked changes in the stock market. Thus, the

public adjusts their preferences for privatization depending upon the direction of the domestic equity markets.

The empirical findings speak to the fundamental issue of opinion rationality, and ultimately, the role of citizens in a modern democracy. Democratic theorists advocate and scholars have found a relationship between public opinion and public policy (e.g., Monroe 1979; Page and Shapiro 1983; Stimson, MacKuen, and Erikson 1995). However, those publicly held opinions have long been questioned on grounds of stability and consistency (Converse 1964). A citizenry that prudently updates its policy reform views based upon stock market performance reaffirms faith in ordinary people, but it also complicates life for policymakers attempting to incorporate public preferences. Simply stated, support for Social Security privatization is conditional on satisfactory signals from the stock markets. If markets drop precipitously, my findings suggest that public support for market-based reforms will likely plummet too. Far from being normatively problematic, the public's sensitivity to policy-relevant events opens new possibilities and creates new challenges for achieving democratic representation. Context-dependent political preferences underscore the need for leaders to consult the public.

The Stock Market and Social Security Privatization

The link between economics and politics is well established. Evidence from the United States and abroad indicates that citizens reward or punish politicians based upon their economic fortune. Most of the academic debate revolves around whether citizens look forward or backward when they make political decisions and whether they consider the nation as a whole or their own personal situation (for a review, see Lewis-Beck and Stegmaier 2000). Often scholars look at how macroeconomic variables, like changes in the gross national product or inflation, affect voting behavior or presidential approval. However, recent works have explored other forms of economic activity, such as international trade (Burden and Mughan 2003), or the interconnected nature of economic and political indicators (Erikson, MacKuen, and Stimson 2002).

What has not been a focus of the literature is how stock markets affect political preferences. This is surprising because there has been a sharp increase in stock ownership during the 1990s. By the end of the twentieth century, nearly half of U.S. households owned equities through mutual funds or individual stocks (Investment Company Institute/Securities Industry Association 2002). Many suspect that the rapid rise and mass penetration of retail investing has political consequences. As with other politically potent subgroups that have achieved folklore status (e.g., “Soccer Moms” or “Nascar Dads”), commentators have labeled Americans who own stock as members of the “Investor Class” (Feldman 2004). Despite the popular fascination with investors, however, scholarly works showing that the stock market affects political behavior are rare.¹

The rise in mass stock ownership has roughly paralleled a growing interest in the idea of Social Security privatization. Social Security is one of the largest and most well-respected governmental programs in America (Baggette, Shapiro, and Jacobs 1995; Shaw and Mysiewicz 2004). Since the 1980s, support for maintaining or increasing Social Security spending has rarely dipped below 90% (Cook and Jacobs 2002, 90). Yet at the beginning of 2005, the most common response in a New York Times/CBS news poll conducted from February 24 to February 28 ($N = 1,111$)

was the *inaccurate* view that Social Security will pay no benefits in the future absent policy changes (47% selected this option).² Partially in response to these fears, political leaders have flirted publicly with the idea of allowing workers to invest part of their Social Security contributions in private investment accounts (e.g., Arnold, Graetz, and Munnell 2000; Diamond and Orzsag 2003). About half of the public supports partial privatization, although estimates vary.³

A linkage between stock performance and privatization support is widely assumed to exist by many policymakers and pundits. According to the logic, as stocks decline, so does support for Social Security privatization and vice versa. Conventional wisdom on the matter was perhaps best summarized by an *Associated Press* journalist who wrote that, “Public enthusiasm for investing in the stock market routinely drops as the market goes down, and increases when things turn around” (Lester 2001, 1). Even those who favor privatization alter their behavior on the assumption that such a relationship exists. According to one article written amid the stock crash in the early part of the twenty-first century, “Bush’s allies acknowledged that action on his partial Social Security privatization would have to wait until more favorable market conditions” (Morin and Milbank 2001, 1). By the 2004 presidential election, however, the U.S. stock markets had regained considerable ground. Sensing an opportunity and seizing on his political victory, President Bush put Social Security reform on the domestic political agenda (Hacker and Pierson 2004).

According to some observers, Bush’s decision to wait for favorable market conditions was unnecessary and based upon flawed conventional wisdom. Andrew Biggs of the Cato Institute, a pro-privatization think tank, reviewed poll data and claimed, “Although politicians may have grown nervous as an election-year bear market gave their opponents ammunition for attack, the public appears to have remained strong and steady in support of Social Security reform incorporating personal retirement accounts” (2002, 14). Biggs’s conjecture confirms the results of a nationwide poll conducted by Princeton Survey Research Associates during July of 2002 where a majority of the

²Even if no changes are made and the trust fund “runs out of money,” Social Security can still pay approximately three-quarters of benefits due to incoming payroll tax revenues (e.g., Aaron and Reischauer 2001, 2; Gramlich 1998, 33).

³The long-run average level of privatization support for nearly 100 polls analyzed later in the second study is 54%, but only 43% of respondents in the February 24–28, 2005 poll by the *New York Times* and CBS said it was a “good idea.”

¹For more on how political developments affect stock markets, see Roberts (1990), Herron et al. (1999), Herron (2000), Leblang and Mukherjee (2004), or Jayachandran (N.d.).

respondents claimed that their support of Social Security privatization would be unaffected by the sagging stock market.⁴ Thus, many elites and even some citizens deny the linkage between stock performance and privatization preferences.

Public opinion frames the Social Security privatization policy debate. Perhaps more here than on most issues, policymakers anticipate (Arnold 1990), invoke (Cook, Barabas, and Page 2002), or fear public retribution if they jeopardize Social Security (for more, see Derthick 1979; Light 1995; Marmor and Mashaw 1988). The program has long been considered the proverbial “third rail” of American politics in reference to its political potency (Patashnik 1997, 451). Perhaps not surprisingly then, the Social Security reform debate during the first few months of Bush’s second term has been overwhelmingly cast in terms of public support. Most of the Social Security news coverage in major papers or on television references the public.⁵ Headlines like “Bush Holds Forum in D.C.; President Will Try to Build Public Support for Changes in Social Security, Tax Code” (Hutcheson 2004) or “GOP Leaders Postpone Social Security Vote; They Say They Need Time to Gain Public Support” (Martinez and Levine 2005) are common. As I expand upon next and return to later, evidence of an opinion-updating public transcends typical trustee versus delegate models of democratic representation (for the distinction, see Geer 1996).

Rationality in Public Opinion Responses

Whether or not stock markets affect support for Social Security privatization is a study in opinion rationality. Stock markets are notorious for their bubbles, crashes, and manias (Paulos 2003). Few have voiced these con-

⁴The public was asked, “Now looking ahead over the next year or so . . . As a result of what’s been happening with the stock market and economy, please tell me if you will be less likely to do any of the following. . . . Will you be less likely to support the idea of changing Social Security to allow individuals to invest some of their Social Security taxes in the stock market?” A majority, 51%, claimed they would not alter their support of privatization while 38% said they would be less likely to support Social Security privatization and the remainder said they did not know.

⁵In a Lexis-Nexis search of the post-election reform debate (11/3/04 to 3/6/05), the words “public” or “Americans” or “poll” or “survey” were mentioned in 81% of *USA Today* articles (160 of 198) that also mentioned “Social Security,” 75% of *Washington Post* articles (501 out of 666), 68% of *New York Times* stories (478 out of 707), 59% of *NBC* broadcasts (69 of 116), 95% of *CNN* broadcasts (279 of 295) and 91% of *Fox News* broadcasts (169 of 185).

cerns better than Alan Greenspan, the Chairman of the Federal Reserve, who warned against “irrational exuberance” when markets were rising rapidly during the 1990s (Greenspan 1996). Evidence of a relationship between market performance and support for Social Security privatization could easily be characterized as overly emotional or, in a word, irrational. After all, financial experts urge investors to focus on the long-term and to avoid impulsive decisions (Siegel 2002). The calculus of political support suggests the same.

Thus, one could envision three possible perspectives, each supporting a distinct view of citizen rationality. The first might be evidence of no effect, suggesting that citizens are insensitive to variations in the market. This is the view adopted by proponents of Social Security privatization who want to reassure nervous policymakers and citizens (Zogby 2004). However, evidence of no relationship between the stock market and privatization preferences would be odd and inconsistent with prior research on the relationship between economics and politics (e.g., Erikson, MacKuen, and Stimson 2002; Lewis-Beck and Stegmaier 2000).

A second scenario, which corresponds to Greenspan’s irrational exuberance statement, is one where citizens overreact to each market change. In this view, privatization preferences gyrate wildly every time the market moves. Majorities might flip with each significant downturn or upswing. America’s Founding Fathers worried about public sentiments for this very reason (Hamilton, Madison, and Jay [1787–88] 1961). Such a scenario would make it hard for policymakers to satisfy citizens assuming markets eventually experience sustained declines.

A third perspective predicts subtle, reasonable, or rational reactions on the part of citizens. So, contrary to Greenspan’s derisive comment, citizens might be rationally exuberant about the idea of investing part of their Social Security contributions in the stock market. The rational public view, championed by Page and Shapiro (1992), predicts sensible and measured responses to stimuli. Many citizens currently believe, perhaps mistakenly (Baker and Weisbrot 1999; White 2001), that the Social Security system is going bankrupt. When stock markets soar and the returns on Social Security are viewed as meager at best, a prudent person might look around for better alternatives. Social Security privatization could be a tempting alternative, particularly when confidence in the system is not high (Shaw and Mysiewicz 2004).

The rational exuberance perspective also fits with our understanding of how opinions are formed. Opin-

ions are constructed based upon considerations that come to mind immediately (Zaller 1992), and aggregations of individual opinions form collective opinion (Page and Shapiro 1992). Anything that reminds respondents of the risks of Social Security privatization, such as a market downturn, should *gradually* reduce support for Social Security privatization because it changes the mix of considerations that citizens draw upon when they report their opinions (i.e., support might temper with temporary market downturns, moving from strongly agreeing with the idea to a less enthusiastic level of support). Bullish markets should have the opposite effect, increasing the prominence and presence of pro-privatization considerations. The rational exuberance hypothesis to be tested here is that privatization preferences display a pattern of rational opinion updating, gradually responding to changes in the stock market.⁶

Therefore, whether the stock market influences privatization support sheds light on the nature of public opinion rationality. Addressing this fundamental question matters because public support often does, and many would argue should, play a key role in guiding public policy decisions (Jacobs and Shapiro 2000). Since most Americans pay into the system or receive benefits, any policy change in this area will affect the lives of millions of people. What the public wants with respect to Social Security privatization, and whether people stick with those views through periods of turmoil, may have a lasting effect on the policy reform debate. It may also require rethinking the nature of democratic representation. On issues where preferences are likely to evolve or be influenced by events, policymakers cannot simply enact the will of the people because those preferences might be context dependent. Policies must be designed with an eye toward long-term political support in addition to typical programmatic considerations.

Data and Methods

A study of the relationship between the stock market and support for Social Security privatization needs sound measures of both. Getting accurate and reliable stock market performance data is not difficult. Many

⁶Rational opinion updating, i.e., Bayesian learning (Bayes [1763] 1958; Leamer 1978), occurs when individuals have prior opinions that are updated in a systematic way with new information, yielding revised opinion preferences (see Alvarez 1997, 25–51). The idea already plays a role in political science (e.g., Achen 1992; Barabas 2004; Bartels 1993; Gerber and Green 1998) and flows naturally from models of opinions as distributions of considerations.

comprehensive sources are freely available over the internet, including the finance section of the internet site Yahoo, which was the source used here.

A somewhat more challenging decision was what particular financial series to use. Three of the best known indices are the Dow Jones Industrial Average, the Standard & Poor's 500, and the Nasdaq Composite. Most evening television newscasts devote at least part of their broadcasts to them. Most major print and major internet media sources also provide snapshots of these indicators, typically in a prominent way on their web page. In addition, investors regularly receive information on these indices in the form of quarterly newsletters. The "big-three indices" (Kansas 2001, 26–27) became particularly well known during the bull market of the late 1990s, and they also provide a nice source of variation (i.e., they went up and down dramatically in the span of just a few years). Therefore, of any U.S. stock markets likely to be politicized, it would be the Dow, the S&P 500, and Nasdaq, all of which are used here as well as an average of all three to capture citizens who follow "the market" in generic terms.

By far the most challenging analytical obstacle concerns the availability of public opinion data. Of interest here is whether citizens favor or oppose Social Security privatization at various points in time, but no single survey organization asks a standard question at regularly spaced intervals. A search of the archive of polling questions at the Roper Center for Public Opinion Research turned up 96 questions relating to Social Security privatization from June of 1996 through July of 2004. As one example, on January 13, 2000 the Gallup Organization asked a question using the wording: "A proposal has been made that would allow or require people to put a portion of their Social Security payroll taxes into personal accounts that would be invested in private stocks and bonds. Do you favor or oppose this proposal?"

Regrettably, this exact question was not repeated over time in a consistent manner. The variation in wording is due partially to the fact that Gallup only conducted 16 of the 96 surveys. Other firms or organizations like Princeton Survey Research Associates or the *L.A. Times* used variations on this basic question, and even Gallup occasionally altered the wording of their privatization question. For instance, on January 5, 2001 Gallup asked, "George W. Bush has made a proposal that would allow people to put a portion of their Social Security payroll taxes into personal retirement accounts that would be invested in private stocks or bonds. Do you favor or oppose this proposal?" The addition of Bush's name to the question wording,

especially after a divisive presidential election, could sway some respondents.

Aggregating surveys with differences in wording or style may not be possible and is certainly not ideal (Schuman and Presser 1996). This study employs two analytical strategies. First, I searched for identically worded privatization surveys conducted immediately before and after sizable swings in the stock market. The goal is to study the changes in preferences from the first time point to the second. Such a situation constitutes a natural experiment where variation in the stock market is used to assess the effects on privatization preferences. Second, I conducted a longitudinal analysis of all publicly available Social Security privatization surveys.

These two approaches have strengths and weakness so both are adopted in separate but complementary studies. In the analyses that follow, the first study tackles the issue of whether the stock market affects support for privatization with two cross-sectional surveys that ask the same question less than two weeks apart during a time when the stock market registered substantial losses. The second study examines support for Social Security privatization in a time-series analysis from 1996 to 2004, which corresponds to the dramatic rise, fall, and partial rebound of the stock market. There are numerous technical aspects underlying both studies—e.g., the first employs ordered probit (McKelvey and Zavoina 1975) and the second uses error correction models (Engle and Granger 1987). Analytical details appear in the notes and in a supplemental appendix on the *Journal of Politics* web site.

Study 1: Cross-Sectional Analysis

A jittery mood developed during late August and early September of 1998 when the Dow, the S&P 500, and the Nasdaq were rocked by double digit percentage losses. Fortunately, during the calm before the market chaos, the polling firm Princeton Survey Research Associates (PSRA) was in the field from August 6 through August 27, 1998 asking a nationally representative sample of 2,008 American adults about their Social Security reform preferences. One of the questions on the survey concerned partial privatization, and approximately 58% of the sample supported Social Security privatization either strongly or moderately.⁷

⁷The question asked respondents whether they favored or opposed, “. . . changing Social Security from a system where the government collects the taxes that workers and their employers contribute, to a system where individuals invest some of their payroll tax contributions themselves. . . .”

The last day of the survey marked the start of a period of high volatility spawned by a Russian financial crisis. Stock markets around the world sold off in response to news that Russia would no longer defend the price of the ruble in international currency markets, a move that reportedly cost George Soros \$2 billion and nearly cost Boris Yeltsin his job (Abelson 1998). While the U.S. markets had been in a narrow range for most of the month, the Dow and S&P 500 both lost 12% and the Nasdaq lost nearly 18% of its value during the last three trading days in August.

To see whether the stock volatility influenced public support for privatization, PSRA went back into the field from September 9 to September 13, 1998 with a separate cross-sectional survey of 1,005 respondents nationwide. Even though the three major stock markets suffered additional 4- to 5-percentage point losses on the first two days of the survey, the results were unremarkable in the eyes of the researchers. Overall support for Social Security privatization remained high at 57%, only one point lower than the first survey and well within sampling error.

Hence at first glance Social Security privatization preferences appear to be insensitive to market turmoil, but the aggregated preferences are misleading. While the overall responses seem to show no decline in support, a different picture emerges when we examine the *degree* to which respondents support privatization. The percentage of respondents claiming they strongly or moderately oppose privatization is quite similar before and after the decline, at just under 25% and 20%, respectively. The same cannot be said about favorable attitudes toward privatization. While roughly a third (32%) of the respondents in the first survey strongly supported Social Security privatization, slightly more than a quarter (26%) did so after the markets went down. Enthusiasm for privatization tempered. Strong support for the idea became moderate support (from 26% to 31%) and moderate opposition increased slightly too.

While this change is statistically significant by virtue of a simple means comparison ($t = 1.62, p \leq .05$, one-tailed), the best way to be sure that support dropped in the second survey is through a statistical analysis. The two surveys were stacked and a dummy variable was created that takes a value of 1 after the stock market turbulence and 0 otherwise. The dummy variable was also interacted with important demographic factors that likely affect privatization views to determine whether any of the underlying relationships changed after the market dropped. The coefficient on the dummy term represents an intercept shift while the interaction terms represent slope changes (i.e., differences in the coefficients between

TABLE 1 The Effects of a Stock Market Decline on Support for Social Security Privatization

	Intercept Change Only		Intercept and Slope Change	
	Coefficient	Std. Error	Coefficient	Std. Error
Stock market decline	-.09*	.05	-.48*	.20
Income	.06**	.02	.09**	.02
Income after decline	—		-.08**	.03
Education	.02	.02	-.02	.03
Education after decline	—		.10	.05
Age 35 to 44	.01	.03	-.03	.04
Age 35 to 44 after decline	—		.10	.07
Age 45 to 54	-.05*	.02	-.04	.03
Age 45 to 54 after decline	—		-.05	.05
Age 55 to 64	-.10**	.02	-.10**	.02
Age 55 to 64 after decline	—		-.02	.04
Age 65+	-.10**	.01	-.11**	.02
Age 65+ after decline	—		.01	.03
Female	-.03	.04	-.06	.05
Female after decline	—		.11	.09
Black	-.12	.07	-.12	.08
Black after decline	—		.00	.16
Married	.08	.05	.04	.06
Married after decline	—		.11	.10
Financial expertise	.27**	.02	.23**	.03
Financial expertise after decline	—		.13*	.06
<i>Ancillary parameters</i>				
Cut point 1	.07	.10	-.07	.12
Cut point 2	.62**	.10	.48**	.12
Cut point 3	1.40**	.10	1.27**	.12
X ² for LR test vs. restricted model		22.3*		26.1**
Number of cases		2,684		2,684

Source: Princeton Survey Research Associates data.

Note: The table displays ordered probit estimates (1 = strongly oppose privatization; 4 = strongly favor privatization). Missing demographic responses were recovered via multiple imputation (King et al. 2001).

* $p < .05$; ** $p < .01$ (two-tailed).

the two surveys). Support declines if the dummy variable is negative. If the interactions are significant, then the data have a structural break (see Franklin and Kosaki 1989; Johnston and DiNardo 1997).

Table 1 presents the results of an ordered probit analysis of the PSRA data. The first set of estimates considers whether the stock market decline affected support for Social Security privatization after the market decline while controlling for various individual-level factors. The statistically significant and negative coefficient on the *Stock market decline* variable confirms the rational exuberance hypothesis concerning a reasonable response to market declines. Support diminished significantly after the stock market turbulence (i.e., the intercept shifted in the direction of opposing privatization). This is true even when considering other factors related to support for privatiza-

tion. For instance, wealthy respondents are significantly more likely to favor privatization as are those with high levels of financial expertise. Similarly, respondents in each of the three age groups of 45 years and older are significantly less likely to support privatization than 18 to 34 year olds (the omitted category), confirming conventional wisdom on particular groups most likely to support Social Security privatization (Cook and Jacobs 2002; Page 2000).

The second set of estimates in Table 1 considers both intercept and slope changes. These coefficients help determine whether the factors underlying support for Social Security privatization changed *after* the market dropped. The results indicate that there was a significant change in how income is related to Social Security privatization preferences. Before the market decline, income was positively associated with

privatization support; that is, wealthy respondents favored Social Security privatization more than the poor. After the market sold off, the income coefficient reversed its sign, indicating that those who were better off financially actually became *less* likely to support privatization after the market downturn. Wealthy respondents, it seems, started to reevaluate their prior positions. That was not true of most other demographic subgroups, where the coefficients did not change, except in the case of financial expertise. Financial expertise was even more strongly associated with privatization support after the market drop, showing how savvy investors favor privatization even more when stocks become cheap.

Thus, the statistical results paint a nuanced picture of public opinion toward privatization. It is clear from the analyses that fewer people favored Social Security privatization after the market declined, mainly because strong support moderated. These results support the rational exuberance hypothesis of gradual opinion updating and reappraisal, not panic. Although these estimates are from survey data bracketing a downturn in 1998, anecdotal evidence from other identically worded survey pairs—with the first of each pair taken as the market peaked in 2000 and the other at least a year afterward—show similar reductions in privatization support during the first few years of the twenty-first century.⁸ It remains to be seen next whether privatization opposition grows amid a sustained stock market decline.

Study 2: Time-Series Analysis

Although it wiped out trillions of dollars in wealth, the dramatic rise and fall of the stock market during the late 1990s and early 2000s is useful in at least one respect. It provides an ideal setting in which to probe the relationship between the stock market and public opinion toward Social Security privatization. If a rational exuberance relationship exists, then support should track changes in the financial markets. As mentioned earlier, however, a significant challenge is that the public opinion data on Social Security privatiza-

⁸Two other pairs of surveys, conducted later and at longer time intervals, show decreases in support for Social Security privatization *after* the stock market peaked during the spring of 2000. A *Washington Post-ABC News* poll in May of 2000 estimated support for privatization at 64%, but a second poll from this organization in March of 2001 found that support had declined to 52%. Similarly, the Gallup Organization fielded identically worded privatization questions in June 2000 and September 2002 showing that support fell from 65% to 52%.

tion are disjointed. Many polling firms run surveys on privatization with a variety of different questions. To complicate matters further, there are clusters and gaps in the series. Sometimes privatization questions are asked several times during the same quarter while at other times no privatization questions appeared during a quarter, or at least none that were publicly archived at the Roper Center.

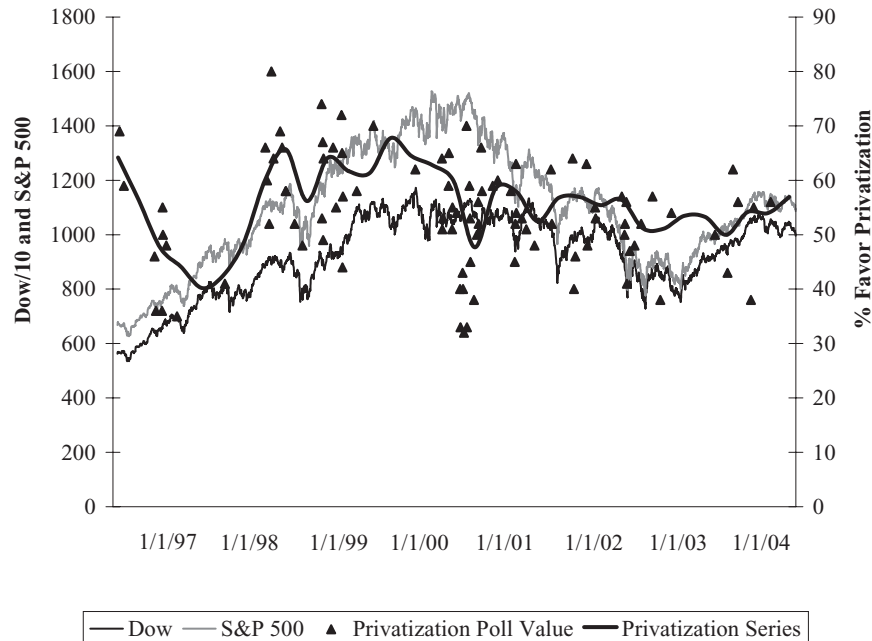
Time-series models are well suited for longitudinal investigations such as this one, but a key requirement is evenly-spaced data over a fairly long time period. Thus, can these 96 surveys asking about Social Security privatization preferences be used to extract a single measure? The results from an auxiliary empirical analysis predicting privatization views as a function of survey-level factors suggests they can, but with one important caveat. According to the findings of a regression analysis, questions which contained wording about the potential risks or gains associated with Social Security privatization had a significant effect on the level of support.⁹

Therefore, as long as we control for periods which may be unusually low because of the risks/gains wording, it is possible to use all of the questions to form a single, evenly spaced measure of aggregate support for Social Security privatization. The Social Security privatization support series, a quarter by quarter average of all publicly available privatization polls, appears in Figure 1. The privatization support series—the thick dark line—closely tracks the black triangles, which are the original poll data points. The series starts off in the mid-60s during the second quarter of 1996 before several polls in 1997 measured the percentage of support between the mid-30s to mid-50s. Support for Social Security privatization then rose dramatically during the late 1990s according to more than a dozen polls; the quarterly support series moved up and down between the mid-50s and peaked at 68 during the third quarter of 1999. Finally, the overall series and underlying polls declined for the first three years of the twenty-first century, with a sharp drop during late 2000, before rebounding slightly.

The Social Security privatization support series tracks the stock market fairly well. This can be seen in the thin gray and black lines of Figure 1 showing daily

⁹As shown in the web appendix, if a question mentioned the risks or gains associated with privatization (N = 25 out of the 96 surveys), support for privatization drops by 8 percentage points, a finding that confirms previous studies (Cook and Jacobs 2002; Page 2000). With the exception of one poll where only the potential gains were mentioned, risks were always mentioned with gains so they were joined to form a single variable.

FIGURE 1 Support for Social Security Privatization Plotted against the Dow Jones Industrial Average and the Standard & Poor's 500



closing prices for the Standard and Poor's 500 index and the Dow Jones Industrial Average (where the Dow closing prices have been divided by 10 for scaling purposes to permit graphing along with the S&P series). With the notable exception of the early part of the series, privatization support appears to climb as the Dow gains dramatically during the late 1990s. The privatization series also tracks the decline of the markets, which peaked in early 2000. As the markets recovered in 2003 and 2004, there are similar increases in the privatization support series. Although not depicted due to space limitations, the Nasdaq Composite and average of all three major U.S. markets show similar patterns of rising, falling, and then recovering together.

The graphs in Figure 1 hint that a relationship may exist, but it is hard to be sure, especially given the different scaling of the two y -axes. Statistical analysis provides a formal way of determining whether the stock markets affect support for Social Security privatization or vice versa. However, it is misleading to run an ordinary least-squares regression model with stock market variables predicting support for Social Security preferences. Although those regressions are significant and in the expected direction (i.e., as the markets rise, so does support), the results are spurious because the data are nonstationary (Granger and Newbold 1974).

Instead, it is better to use time-series techniques, and an error-correction model in particular, which

accounts for the correlated error structure (Durr 1993; Engle and Granger 1987; see the web appendix for details). According to the estimates in Table 2, short-term quarter-to-quarter changes in the major stock market indices are never significantly related to support for Social Security privatization. Instead, three of the four stock market series exhibit long-term *lagged* relationships. That is, the level of the market one period back ($t - 1$) predicts privatization support at any given time point (t) for the Dow, the S&P, and a three-market average. Because the stock market indices all run into the thousands, the data have been divided by 1,000 to yield more readily interpretable coefficients. So, in the case of the Dow, a 600-point quarterly gain in the index (roughly 12%) increases support for Social Security privatization by approximately 3 percentage points. Since the Dow gained over 5,000 points during the period being studied, that means support shifted by approximately 21 percentage points, which is nearly the same magnitude of the effects for the S&P and the three-market average.¹⁰

The Nasdaq, although highly correlated with the other market indices, did not have a significant short-

¹⁰The range of the S&P 500 was just over 800 points (from 660 to 1,476), which translates into an 18 percentage point increase in support for privatization over the entire range. Similarly, the range of the three-market average was just over 3,000 points (from 2,487 to 5,536), again equating to a roughly 18 percentage point effect. The web appendix explains how the coefficients can be used to calculate the effects on privatization preferences.

TABLE 2 Time-Series Analysis of How Stock Markets Affect Support for Social Security Privatization

	Error-Correction Model Estimates							
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
<i>Short-term effects</i>								
Δ Dow Jones Industrial Ave.	.02	.02	—	—	—	—	—	—
Δ Standard & Poor's 500	—	—	.13	.16	—	—	—	—
Δ Nasdaq	—	—	—	—	.00	.03	—	—
Δ Three-market average	—	—	—	—	—	—	.03	.04
<i>Long-term effects</i>								
Dow Jones Industrial Ave. _{t-1}	.02*	.01	—	—	—	—	—	—
Standard & Poor's 500 _{t-1}	—	—	.12*	.05	—	—	—	—
Nasdaq _{t-1}	—	—	—	—	.02	.02	—	—
Three market average _{t-1}	—	—	—	—	—	—	.03*	.01
<i>Rate of return to equilibrium</i>								
Error correction term _{t-1}	-.48**	.14	-.53**	.14	-.43**	.16	-.49**	.14
Constant	.10	.08	.15*	.07	.20*	.08	.14	.08
Adjusted R-squared	.25		.26		.14		.22	
Root MSE	.06		.06		.06		.06	
Number of cases	32		32		32		32	

Note: The dependent variable is the proportion which favors privatization from the second quarter of 1996 to the second quarter of 2004. All stock market data were divided by 1,000 so each slope coefficient represents the effect on privatization support for a 1,000-point change in the market index.

* $p < .05$; ** $p < .01$ (two-tailed).

term or long-term effect on support for Social Security privatization. Some of this is due to the Nasdaq's sharp spike upward during the late 1990s. Privatization preferences simply did not trend upward to the same degree and they only partially mirrored the downturn. Of the three U.S. markets, the Nasdaq exerts the weakest impact on privatization preferences.

Because they explicitly model the error structure, these time-series models estimate the rate at which the two series return to an underlying equilibrium. The long-run error-correction terms in Table 2 are negative and significant as expected. Each estimates the time it takes stock market shocks to dissipate. All are estimated to be between $-.48$ on the low end for the Dow and $-.53$ for the S&P 500 (excluding the Nasdaq because of its insignificant long-term coefficient). This means that between 48 to 53% of the shocks to the stock market during one quarter (t) impact privatization support the next quarter ($t+1$). So, if the Dow were to rise by one standard deviation (1,550 points), the total long-term effect is to increase support for privatization by 7 percentage points. However, that effect would be spread out with 3 percentage points appearing one quarter later, 2 at $t+2$, 1 at $t+3$, and so on (see the appendix for more on interpretation). Thus,

movements in the major stock markets affect support for privatization over long periods.

Viewed collectively, the Dow and the S&P as well as a three-market average affect support for Social Security privatization. The effects are not immediate, but they appear within a few quarters. Considering both empirical studies together, it is possible to see how support for Social Security privatization appears to ratchet down slowly when stock markets decline, moving from strong support to moderate support over the course of a few weeks (Study 1), and from support to opposition over the course of several quarters (Study 2). Therefore and particularly over the long run, domestic stock markets affect public support for Social Security privatization. Citizens rationally update their privatization preferences based upon changes in major stock market indicators. These reactions are modest, sensible, and in line with expectations.¹¹

¹¹A dummy variable for a risks or gains question in any given quarter is always insignificant, indicating that aggregating the different surveys has no effect on the results. What politicians say about the privatization plans could also affect support. Although difficult to pair with the privatization series, which is constructed based upon all the polls in a given quarter, analyses with counts of privatization stories in *CBS Evening News* and *USA Today* show

Conclusion

Citizens are especially likely to favor Social Security privatization during times of rising stock prices. When domestic equity markets decline, so does support for privatization. Evidence of this relationship emerges from an analysis of surveys before and after a sharp stock market downturn in 1998 as well as in a time-series study of Social Security privatization polls from 1996 to 2004.

My focus was public opinion, not whether the nation should privatize Social Security (e.g., Aaron and Reischauer 2001; Feldstein 1998). Nevertheless, a weakness of the privatization proposal is that public support has not yet crystallized. Just as citizens view privatization less favorably when questions remind them of the risks associated with investing (Cook and Jacobs 2002; Page 2000), they also alter their beliefs based upon movements in the stock market. If stocks were to drop dramatically, public support for Social Security privatization probably would too. Privatization proponents have not convinced Americans to support accounts unconditionally.

My findings speak to the larger issue of public opinion rationality, where rationality is defined as reasonable responses to events in the world. Far from overreacting or being insensitive to market changes, the public exhibits measured responses. Equally important, these findings also go to the heart of democratic representation. Politicians face a tension between leading and following (Jacobs and Shapiro 2000). On issues where the public has well-developed preferences, following may be sensible (Geer 1996). Given the salience of Social Security, both sides in the reform debate want public support. Yet, the context-dependent political preferences emerging here transcend previous classifications. On one hand, market-sensitive reactions are rational. On the other hand, mutable opinions are what the Founders and proponents of trustee representation feared. In situations like these, meaningful changes in public support ought to inspire leaders to design policies that are both politically viable and palatable in the long run.

those variables do not significantly affect privatization support. However, more research is needed on the link between elite rhetoric and public support for privatization, particularly with detailed media content analyses and surveys at the monthly, weekly, or daily level. See the web appendix for stationarity, Granger causality, and diagnostic tests.

Acknowledgments

I received valuable comments from Genie Baker, Larry Bartels, Jennifer Jerit, and Luke Keele. Earlier versions of this article were presented at the Center for the Study of Democratic Politics (CSDP) at Princeton University and at the Annual Meetings of the Midwest Political Science Association. I am especially grateful for the generous support I received from the CSDP and the Robert Wood Johnson Foundation.

Manuscript submitted 5 August 2004

Manuscript accepted for publication 16 February 2005

References

- Aaron, Henry J., and Robert D. Reischauer. 2001. *Countdown to Reform: The Great Social Security Debate*. Washington: Century Foundation Press.
- Abelson, Reed. 1998. "The Market Turmoil: Money Managers, Hedge Funds Registering Huge Losses," *New York Times*, 3 September, sec. C, p. 1.
- Achen, Christopher H. 1992. "Breaking the Iron Triangle: Social Psychology, Demographic Variables, and Linear Regression." *Political Behavior* 14 (3): 195–211.
- Alvarez, R. Michael. 1997. *Information and Elections*. Ann Arbor: University of Michigan Press.
- Arnold, Douglas R. 1990. *The Logic of Congressional Action*. New Haven: Yale University Press.
- Arnold, Douglas R., Michael J. Graetz, and Alicia H. Munnell, eds. 2000. *Framing the Social Security Debate: Values, Politics, and Economics*. Washington: National Academy of Social Insurance.
- Baggette, Jennifer, Robert Y. Shapiro, and Lawrence R. Jacobs. 1995. "The Polls-Poll Trends: Social Security—An Update." *Public Opinion Quarterly* 59 (3): 420–42.
- Baker, Dean, and Mark Weisbrot. 1999. *Social Security: The Phony Crisis*. Chicago: University of Chicago Press.
- Barabas, Jason. 2004. "How Deliberation Affects Policy Opinions." *American Political Science Review* 98 (4): 687–701.
- Bartels, Larry M. 1993. "Messages Received: The Political Impact of Media Exposure." *American Political Science Review* 87 (2): 267–85.
- Bayes, Thomas. [1763] 1958. "An Essay Toward Solving a Problem in the Doctrine of Chances." *Philosophical Transactions of the Royal Society*, pp. 330–418. Reprinted, with biographical note by G. A. Barnard, in *Biometrika* 45: 293–315.
- Biggs, Andrew. 2002. "Personal Accounts in a Down Market: How Recent Stock Market Declines Affect the Social Security Reform Debate." *Cato Institute Briefing Paper No. 74*. Washington: Cato Institute.
- Burden, Barry C., and Anthony Mughan. 2003. "Presidential Approval and the International Economy." *Public Opinion Quarterly* 67 (4): 555–78.
- Campbell, Andrea. 2003. *How Policies Make Citizens: Senior Political Activism and the American Welfare State*. Princeton: Princeton University Press.

- Converse, Philip E. 1964. "The Nature of Belief Systems in Mass Publics." In *Ideology and Discontent*, ed. David Apter. New York: Free Press, pp. 206–61.
- Cook, Fay Lomax, and Lawrence R. Jacobs. 2002. "Assessing Assumptions about Americans' Attitudes about Social Security: Popular Claims Meet Hard Data." In *The Future of Social Insurance*, eds. Peter Edelman and Dallas L. Salisbury. Washington: Brookings Institution Press, pp. 82–110.
- Cook, Fay Lomax, Jason Barabas, and Benjamin I. Page. 2002. "Invoking Public Opinion: Policy Elites and Social Security." *Public Opinion Quarterly* 66 (2): 235–64.
- Derthick, Martha. 1979. *Policymaking for Social Security*. Washington: Brookings Institution Press.
- Diamond, Peter A., and Peter R. Orszag. 2003. *Saving Social Security: A Balanced Approach*. Washington: Brookings Institution Press.
- Durr, Robert H. 1993. "What Moves Policy Sentiment?" *American Political Science Review* 87 (1): 158–70.
- Engle, Robert F., and Clive W. J. Granger. 1987. "Co-integration and Error Correction: Representation, Estimation, and Testing." *Econometrica* 55 (2): 251–76.
- Erikson, Robert, Michael MacKuen, and James Stimson. 2002. *The Macro Polity*. New York: Cambridge University Press.
- Feldman, Amy. 2004. "The Investor Class Speaks." *Money*, January, 89–92.
- Feldstein, Martin. 1998. *Privatizing Social Security*. Chicago: University of Chicago Press.
- Franklin, Charles, and Liane Kosaki. 1989. "The Republican Schoolmaster: The Supreme Court, Public Opinion, and Abortion." *American Political Science Review* 83 (3): 751–71.
- Geer, John G. 1996. *From Tea Leaves to Opinion Polls: A Theory of Democratic Leadership*. New York: Columbia University Press.
- Gerber, Alan, and Donald P. Green. 1998. "Rational Learning and Partisan Attitudes." *American Journal of Political Science* 42 (3): 794–818.
- Gramlich, Edward M. 1998. *Is It Time To Reform Social Security?* Ann Arbor: University of Michigan Press.
- Granger, Clive W. J., and Paul Newbold. 1974. "Spurious Regressions in Econometrics." *Journal of Econometrics* 2: 111–20.
- Greenspan, Alan. 1996. "The Challenge of Central Banking in a Democratic Society." Remarks at the Annual Dinner and Boyer Lecture of the American Enterprise Institute, Dec. 5.
- Hacker, Jacob, and Paul Pierson. 2004. "Popular Fiction," *The New Republic Online*, 8 Nov.
- Hamilton, Alexander, James Madison, and John Jay. [1787–1788] 1961. *The Federalist Papers*. Ed. Clinton Rossiter. New York: Mentor.
- Herron, Michael C. 2000. "Estimating the Economic Impact of Political Party Competition in the 1992 British Election." *American Journal of Political Science* 44 (2): 326–37.
- Herron, Michael C., James Lavin, Donald Cram, and Jay Silver. 1999. "Measurement of Political Effects in the United States Economy: A Study of the 1992 Presidential Election." *Economics and Politics* 11 (1): 51–81.
- Hutcheson, Ron. 2004. "Bush Holds Forum in D.C.; President Will Try to Build Public Support for Changes in Social Security, Tax Code," *Pittsburgh Post-Gazette*, 15 December, sec. A, p. 13.
- Investment Company Institute and the Securities Industry Association. 2002. "Equity Ownership in America, 2002." New York: Investment Company Institute.
- Jacobs, Lawrence R., and Robert Y. Shapiro. 2000. *Politicians Don't Pander: Political Manipulation and the Loss of Democratic Responsiveness*. Chicago: University of Chicago Press.
- Jayachandran, Seema. N.d. "The Jeffords Effect." *Journal of Law and Economics*. Forthcoming.
- Johnston, Jack, and John DiNardo. 1997. *Econometric Methods*. 4th ed. New York: McGraw-Hill.
- Kansas, Dave. 2001. *The Street.com Guide to Smart Investing in the Internet Era*. New York: Currency Books.
- King, Gary, James Honaker, Anne Joseph, and Kenneth Scheve. 2001. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation." *American Political Science Review* 95 (1): 49–69.
- Leamer, Edward E. 1978. *Specification Searches: Ad Hoc Inference with Nonexperimental Data*. New York: John Wiley & Sons.
- Leblang, David, and Bumba Mukherjee. 2004. "Presidential Elections and the Stock Market: Comparing Markov-Switching and Fractionally Integrated GARCH Models of Stock Volatility." *Political Analysis* 12 (3): 296–322.
- Lester, Will. 2001. "Poll: Less Enthusiasm for Social Security-Stock Market Idea," *Associated Press*, 30 March, BC cycle.
- Lewis-Beck, Michael S., and Mary Stegmaier. 2000. "Economic Determinants of Electoral Outcomes." *Annual Review of Political Science* 3: 183–219.
- Light, Paul. 1995. *Still Artful Work: The Continuing Politics of Social Security Reform*. 2nd ed. New York: McGraw-Hill.
- Marmor, Theodore R., and Jerry Mashaw, eds. 1988. *Social Security: Beyond the Rhetoric of Crisis*. Princeton: Princeton University Press.
- Martinez, Gebe, and Samantha Levine. 2005. "GOP Leaders Postpone Social Security Vote; They Say They Need Time to Gain Public Support," *Houston Chronicle*, 2 March, sec. A, p. 1.
- McKelvey, Richard D., and William Zavoina. 1975. "A Statistical Model for the Analysis of Ordinal Level Dependent Variables." *Journal of Mathematical Sociology* 4: 103–20.
- Monroe, Alan D. 1979. "Consistency between Public Preferences and National Policy Decisions." *American Politics Quarterly* 7 (1): 3–19.
- Morin, Richard, and Dana Milbank. 2001. "Poll Shows New Doubts on Economy; President's Tax Cut, Policy Are Questioned," *Washington Post*, 27 March, sec. A, p. 1.
- Page, Benjamin I. 2000. "How Public Opinion Affects Reform: Is Social Security Reform Ready for the American Public?" In *Social Security and Medicare: Individual versus Collective Risk and Responsibility*, eds. Shelia Burke, Eric Kingson, and Uwe Reinhardt. Washington: National Academy of Social Insurance, pp. 183–218.
- Page, Benjamin I., and Robert Y. Shapiro. 1983. "Effects of Public Opinion on Policy." *American Political Science Review* 77 (1): 175–90.
- Page, Benjamin I., and Robert Y. Shapiro. 1992. *The Rational Public: Fifty Years of Trends in Americans' Policy Preferences*. Chicago: University of Chicago Press.
- Patashnik, Eric M. 1997. "Unfolding Promises: Trust Funds and the Politics of Precommitment." *Political Science Quarterly* 112 (3): 431–52.
- Paulos, John Allen. 2003. *A Mathematician Plays the Stock Market*. New York: Basic Books.
- Roberts, Brian E. 1990. "Political Institutions, Policy Expectations, and the 1980 Election: A Financial Market Perspective." *American Journal of Political Science* 34 (2): 289–310.

- Schuman, Howard, and Stanley J. Presser. 1996. *Questions and Answers in Attitude Surveys: Experiments on Question Form, Wording, and Context*. Thousand Oaks: Sage.
- Shaw, Greg M., and Sarah E. Mysiewicz. 2004. "Trends: Social Security and Medicare." *Public Opinion Quarterly* 68 (3): 394–423.
- Siegel, Jeremy J. 2002. *Stocks for the Long Run*. 3rd ed. New York: McGraw-Hill.
- Stimson, James A., Michael B. MacKuen, and Robert S. Erikson. 1995. "Dynamic Representation." *American Political Science Review* 89 (3): 543–65.
- White, Joseph. 2001. *False Alarm: Why the Greatest Threat to Social Security and Medicare is the Campaign to "Save" Them*. Baltimore: The Johns Hopkins University Press.
- Zaller, John R. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge.
- Zogby, John. 2004. "Public Opinion and Private Accounts: Measuring Risk and Confidence in Rethinking Social Security." In *Social Security and Its Discontents: Perspectives on Choice*, ed. Michael D. Tanner. Washington: Cato Institute, pp. 357–70.

Jason Barabas is Robert Wood Johnson Scholar, Harvard University, Cambridge, MA 02138 and assistant professor in political science (on leave) at Southern Illinois University, Carbondale, IL 62901.