Abstract

Some pundits argue that public support for Social Security privatization is unaffected by stock market downturns. Other commentators contend that pro-privatization majorities fade when financial markets decline or behave erratically. 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, although the public appears mildly receptive to the idea of Social Security privatization, the stock market affects privatization attitudes, particularly when changes remind citizens of the risks inherent in investing.
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 likely wanes when stock markets perform poorly. The findings here reveal that changes in the stock market affect support for privatization. In this two-part study, the first empirical analysis shows how an abrupt market decline in 1998 reduced support for Social Security even after controlling for individual-level factors. The second study documents the same 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 relationship between the stock market and public support for privatization speaks to the fundamental issue of opinion rationality, and ultimately, the role of citizens in a modern democracy.

The Stock Market and Social Security Privatization

The link between economics and politics is well established. Evidence from the U.S. 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 gross national product or inflation, affect voting behavior or presidential approval. However, recent works have explored the 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 2000).

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 20th 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). Although public support remains strong, many people fear that Social Security is in danger because of financial difficulties looming on the horizon. When the 76 million workers of the Baby Boom generation retire, there will be fewer workers available to support more retirees who will also be living longer than in the past (Gramlich 1998). In an effort to improve the financial strength of the program, political leaders have flirted publicly with the idea of allowing

¹ See Leblang and Mukherjee (2004) on how elections affect stock markets.
workers to invest part of their Social Security contributions in privately controlled investment accounts (Aaron and Reischauer 2001; Diamond and Orszag 2003).

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). Even those who favor privatization alter their behavior on the assumption that such a relationship exists. According to one article written after the market collapsed, “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).

However, not everyone believes the stock market influences public support for privatization. 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 respondents claimed that their support of Social Security privatization would be unaffected by the sagging stock market.2

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2 The 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.
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 concerns 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. 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., Lewis-Beck and Stegmaier 2000; Erikson, MacKuen, and Stimson 2002).

A second scenario, which corresponds to Greenspan’s irrational exuberance statement, is one where citizens over-react 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 [1787-1788] 1961). Such a scenario would make it hard for policymakers to satisfy citizens assuming markets eventually experience sustained downturns.
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 Benjamin Page and Robert Shapiro (1992), predicts sensible and measured responses to stimuli. Citizens currently believe, perhaps mistakenly (Baker and Weisbrot 1998), 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. Opinions are constructed based upon the 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.3

3 Rational opinion updating is also known as Bayesian learning (Leamer 1978; Bayes [1763] 1958). The basic intuition is that individuals have prior opinions, and that these priors are updated 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; Bartels 1993; Barabas 2004) and flows naturally from models of opinions as distributions of considerations.
Therefore, whether the stock market influences privatization support sheds light on the nature of public opinion rationality. Answering 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 impact on the policy reform debate.

Data & 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 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 news casts 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 front page or webpage. In addition, investors regularly receive information on these indices in the form of quarterly newsletters. The “big-three indices” (Kansas 2001, 26-7) 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 across time 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 itself 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. This study employs two analytical strategies. First, if any identically worded privatization surveys were conducted immediately before and after sizable swings in the stock market, a researcher could study the changes in preferences from the first time point to the second. Such a situation would resemble a natural experiment where variation in the stock
market (i.e., the “treatment”) is used to assess the effects on privatization preferences. A second tactic is to study the problem longitudinally by focusing on the aggregate signal from an average of all the surveys that have been conducted.

Since these two approaches have strengths and weakness, both are adopted here in separate but complimentary 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 spanning more than eight years 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 notes appear in the appendix as well as in a detailed supplementary appendix on the Journal of Politics website.

**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 loses. Fortuitously, 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.

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4 The exact question wording was, “Social security affects just about every American in some way. But the issues involved in changing the program are complicated. I’d like your opinion of some specific proposals for how Social
The day the survey concluded marked the start of a period of high volatility spawned by a Russian currency crisis. Stock markets around the world sold off in response to news the Russian government would no longer defend the price of the ruble in international currency markets (LaFraniere 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.

The downturn was so severe that investor George Soros reportedly lost $2 billion and Boris Yeltsin was pressured to resign (Abelson 1998). The researchers at PSRA capitalized on the situation by fielding another survey. As the PSRA pollsters wrote of their first survey, “This survey was completed August 27, before the latest 500-plus point plunge in the stock market, which has been followed by days of the stock market indexes moving up or down by 100 points or more. An obvious question is whether this volatility has substantially weakened existing levels of public support for putting some Social Security money into equity investments” (Princeton Survey Research Associates 1998).

To address this question, 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 4-5 percentage point losses on first two days of the survey period, the survey 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. As the PSRA researchers stated in a report afterward, Security might be changed in the future. If I ask you anything you feel you can’t answer, just tell me. (First), do you favor or oppose the following proposal…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…Do you strongly (favor/oppose) this proposal, or moderately (favor/oppose) it?”
“The quick answer is that there has been some limited impact, but that overall attitudes have not shifted in dramatic fashion...showing no significant change due to the stock market changes” (Princeton Survey Research Associates 1998, 7, emphasis added).

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 did indeed drop 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 one after the stock market turbulence and zero 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 slope coefficients between the two surveys). Support declined if the dummy variable is negative. If any of the interactions are significant, then the data have a structural break (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 privatization. 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 (Page 2000; Cook and Jacobs 2002).

Insert Table 1 here

The second set of estimates in Table 1 considers both intercept and slope changes. These coefficients help us 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 re-evaluate 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 in the first few years of the 21st century. 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 privatization are disjointed. Many polling firms run surveys on privatization with a variety of different questions. To complicate matters further,

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5 Two 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%.
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 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.6

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

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6 As shown in the supplemental 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 (Page 2000; Cook and Jacobs 2002). 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.
series and underlying polls declined for the first three years of the 21st 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 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 recover 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 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 non-stationary (Granger and Newbold 1974).

Instead, it is better to use time series techniques, and an error correction model in particular (see appendix), which accounts for the correlated error structure (Engle and Granger 1987). As we see from 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 in 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.\footnote{7}

Insert Table 2 here.

The Nasdaq, although highly correlated with the other market indices, did not have a significant short-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 3 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

\footnote{7} The range of the S&P 500 was just over 800 points (from 660 to 1,476), which translates into a 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 appendix explains how the coefficients can be used to calculate the effect on privatization preferences.
-.53 for the S&P 500 (excluding the Nasdaq because of its insignificant long-term coefficient).

This means that between 48 to 53 percent 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 $t+3$, etc. (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, 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.8

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8 A 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 those variables never significantly affect privatization support. See the supplementary appendix for diagnostic tests.
Conclusion

Citizens are especially likely to favor Social Security privatization during rising stock markets. 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 using all publicly available Social Security privatization polls from 1996 to 2004.

The focus has been public opinion toward Social Security privatization. Whether or not the nation should privatize its Social Security system is another matter (Aaron and Reischauer 2001; Arnold, Graetz, and Munnell 2000; Diamond and Orszag 2003; Feldstein 1998). Nevertheless, a weakness of the privatization idea exposed here is that public support has not yet crystallized. Just as citizens view privatization less favorably when reminded of the risks associated with investing (Page 2000; Cook and Jacobs 2002), they also alter their beliefs based upon movements in the stock market. These findings speak to the larger issue of public opinion rationality, where rationality is defined as reasonable responses to events in the world. Far from over-reacting or being insensitive to market changes, the public exhibits measured responses.

As Social Security privatization moves onto the domestic political agenda (Hacker and Pierson 2004), both sides in the debate may argue about public support. Some proponents might note that the average of the privatization support time series, even after the market sell-off, is still above majority support at 54%, albeit by just a few percentage points. However, a pivotal point for the policy debate is that support for privatization is linked to how well the stock markets are doing. If the stocks were to drop precipitously, the analyses here suggest that public support for Social Security privatization probably would too. Proponents of Social Security reform have not yet convinced the American public to support privatization unconditionally.
Appendix

As noted at the beginning of the time series study, the Dow, S&P, Nasdaq, and an average of all three markets appear to be positively related to support for Social Security preferences in ordinary least squares regression models. Those estimates, presented in the supplemental appendix on the *Journal of Politics* website, are considered spurious regressions because the data are non-stationary. In particular, Augmented Dickey-Fuller (ADF) tests for the undifferenced data series indicate that the Dow, the S&P, the Nasdaq, and the three market average are all non-stationary or integrated, I(1), variables. The undifferenced Social Security privatization series is also non-stationary according to augmented Dickey-Fuller tests (ADF=-2.4, p > .10), while the differenced privatization series is stationary (ADF=-4.5, p ≤ .01).9

The one-step error correction models that appear in the manuscript are akin to the specification that Durr (1993) uses—i.e., without lagging the differenced independent variables—but the substantive findings are unchanged in models with lagged and differenced independent variables. Following Durr’s exposition, the general form of the bivariate error correction model is written as follows:

\[ \Delta Y_t = \beta_1 \Delta X_t - \beta_2 (Y_{t-1} - \beta_3 X_{t-1} - \gamma) + \epsilon_t \]

The \( \beta_1 \) coefficient estimates the short-term quarter to quarter changes of \( X \) on \( Y \), \( \beta_3 \) measures the long-term (or lagged) effect of \( X \) on \( Y \), and \( \beta_2 \) is the error correction component, which measures the rate at which disequilibria are corrected. The \( \gamma \) term represents the unknown and inestimable constant “spread” between the variables in their equilibrium state, which is the constant from the cointegrating regression. The error correction estimates for the Dow imply:

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9 The market models must be run separately due to multicollinarity. A privatization poll appeared in virtually every quarter; missing values were interpolated. Privatization polls were not numerous enough for monthly analyses.
\[ \Delta \text{Priv. Support}_t = 0.10 + 0.02 \Delta \text{Dow}_t - 0.48 \text{Priv. Support}_{t-1} + 0.02 \text{Dow}_{t-1} + e_t \]

where \text{Priv. Support} is the percentage favoring Social Security privatization and \text{Dow} is the quarterly Dow Jones Industrial Average value. Rewriting this estimated equation in error correction form produces the following:

\[ \Delta \text{Priv. Support}_t = 0.10 + 0.02 \Delta \text{Dow}_t - 0.48(\text{Priv. Support}_{t-1} + 0.04 \text{Dow}_{t-1}) + e_t \]

where the part of the equation in parentheses represents the error correction component. The main difference between the raw estimates and re-writing them in error correction form is that the coefficient on the lagged market series goes from .02 to .04 (0.02 / 0.48).

According to the model, support for Social Security privatization will be in an equilibrium relationship with the Dow Jones Industrial Average when this expression equals zero. Any shock to this relationship will be corrected by changes in privatization support at a rate of 48% per quarter, beginning one quarter after the shock is experienced. This suggests that privatization support responds to equilibrium errors fairly quickly, leaving only 52% of the disequilibrating shock after two quarters, 16% after three, 5% after four, and so on.

So, starting in equilibrium and holding all else constant, suppose the Dow experiences a 1,550 point increase (or 1.55 units, since the data have been divided by 1000), which is a one standard deviation gain. Since only the long-term (\text{Dow}_{t-1}) coefficients are significant, the total effect is a nearly 7 percentage point increase in support for privatization (.042 * 1.550 = .065). The error correction term means that total effect appears gradually, with support for privatization increasing roughly 3 percentage points the quarter after the initial increase in the Dow (.065 * .475 = .031 at \(t+1\)), another 2 points two quarters later (.034 * .475 = .016), 1 additional percentage point three quarters later (.018 * .475 = .009), and so on with roughly half (.475) of the remaining percentage in each following quarter until the entire effect has been experienced.
References


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

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<tr>
<th></th>
<th>Intercept Change Only</th>
<th>Intercept and Slope Change</th>
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<td></td>
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<tr>
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Ancillary parameters

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$X^2$ for LR test vs. restricted model 22.3* 26.1**

$N$ 2684 2684

Note: Princeton Survey Research Associates data. The table displays ordered probit estimates (1=strongly oppose privatization; 4=strongly favor privatization).

* $p < .05$; ** $p < .01$ (two-tailed).
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*Note*: The dependent variable is the proportion who favor privatization. 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).
Figure 1. Support for Social Security Privatization Plotted Against the Dow Jones Industrial Average and the Standard & Poor's 500

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Dow/10 and S&P 500

% Favor Privatization

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Dow — S&P 500 ▲ Privatization Poll Value — Privatization Series