

Exploring the Relation of Economic and Political Conditions with Refusal Rates to a Government Survey

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The relations among some important economic and political indicators and refusal rates for the Current Population Survey (CPS) were examined across a twenty-nine year period using time series regression techniques. The CPS (conducted through personal visit and over the telephone by the U.S. Bureau of the Census) is the primary household labor force survey in the United States. Evidence was found that changes in presidential approval, consumer sentiments regarding the economy, and the unemployment rate were reliably related to changes in refusal rates in the CPS. Different statistical models for these data are presented and compared, and their limitations and implications are discussed.

Key words: Survey nonresponse.

1. Introduction

A request for survey participation takes place within a broad context – a social, economic and political environment that can vary over time, across societies, or even across different geographic areas within a society (Groves and Couper 1998). Over these diverse contexts, there may be differing perceptions of the sponsoring and/or data collection organization. There may also be different norms and expectations for survey interviewers and for potential respondents interacting with them. These attitudes and norms may affect behavior towards survey interviewers in general or as representatives of the particular sponsor or data collector. Thus, the end result may be varying response rates across areas of a single country at one point in time or varying response rates over time.

There are many examples of differences in nonresponse across different areas within a country, particularly distinctions observed between urban and rural areas (e.g., Groves 1989; Groves and Couper 1998; Goyder, Lock, and McNair, 1992; House and Wolf 1978; Steblay 1987). However, there is much less documentation of the varying social, economic, or political conditions that may underlie these environmental differences in

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response rates. Groves and Couper (1998) found that in addition to urban-rural differences, block-level population density and the percentage of persons less than 20 years old were related to survey cooperation rates. Furthermore, when they attempted to “explain away” environmental differences by including household level predictors in a multivariate analysis, only some of the differences in survey response rates were explained by household level characteristics, but a large proportion of the environmental differences still remained.

In this article we focus on an even broader level than urban-rural or neighborhood differences, examining societal changes over time. This macro-level social, economic and political context may often be overlooked because most research on survey non-response typically focuses on one survey and provides only a “snapshot” of a particular society at a single point in time. To understand these more macro-level effects on survey participation, one must look across different societies or across long periods of time, and one must identify indicators of the environment to measure and compare. This kind of research is difficult to do because the required information may not be consistently available over time or from other societies.

There have been some efforts to conduct international comparisons of ongoing surveys that are similar across different countries. Specifically, de Heer and Israëls (1992) found differences in response rates for labor force surveys across several European countries. However, there were a variety of differences in survey designs and field procedures across countries as well, making it difficult to know how much of the variation was due to environmental factors.

Researchers have also investigated nonresponse trends over time. Typically, the focus of this research has been on whether rates were increasing in general or whether some components of nonresponse, namely refusals, were increasing (see Groves 1989; Madow, Nisselson, Olkin 1983; Shettle, Guenther, Kasprzyk, and Gonzalez 1994; Smith 1995; Steeh 1981). Although researchers have spent much effort looking at nonresponse rate trends over time, they have not typically tried to formally relate changes in the response rates to changes in the environment or to changes in what Lyberg and Dean (1992) refer to as the survey climate (but see Singer, VanHoewyk, and Maher 1997). There is some evidence for environmental influences on response rates but usually only in reference to single events or points in time. For example, there is evidence that some specific events affecting a survey organization or the public’s perception of that organization can impact response rates (e.g., Butani, Kojetin, and Cahoon 1996; Lindström 1986).

The purpose of the present study was to explore the relation between the social, political, and economic environmental conditions and cooperation rates in a government survey over time. We hypothesized that changes in the public’s feelings about the government and the performance of the government on critical issues of the time, such as the handling of the economy, foreign difficulties, and domestic social problems, may be related to changes in patterns of refusal rates in a major government survey.

1.1. Theoretical background

Our perspective for examining the relation between survey cooperation and environmental conditions at the macro level stems from the theory and research examining an individual’s

decision to participate in a survey (Groves 1989; Groves, Cialdini, and Couper 1992; Groves and Couper 1998). This theoretical foundation recognizes that nonrespondents can have well-founded rationales for not cooperating with a survey request that may be based on costs and benefits of responding from their perspective. More specifically, the social, political, and economic environment may influence a potential respondent's point of view or his or her calculation of the costs and benefits of participation and, ultimately, his or her decision to participate. For example, a potential respondent may hold negative attitudes about the government or how government leaders are managing the economy. If the economy is doing poorly or there is a political scandal, these attitudes may become more salient to the respondent or have greater influence on the respondent's decision to participate. In this case, it may decrease the likelihood that the respondent will agree to participate in a government survey. There is some research that shows that response to a government survey request is related to a person's political attitudes and trust in the government. For example, mail response to the 1990 U.S. Census was related to an individual's political alienation and concerns about confidentiality (Couper, Singer, and Kulka 1998; Mathiowetz, DeMaio, and Martin 1991).

The effects of the social environment are also postulated to influence cooperation with a government survey request through influence on interviewer attitudes and behavior (Groves and Couper 1998; Groves et al. 1992). In this case, one might hypothesize that a more negative political, economic, or social environment would affect interviewers' expectations and morale, influencing their ability to persuade people to respond to a government survey. There is also some general evidence that interviewers' attitudes and expectations are related to their performance (de Leeuw, Hox, Snijkers, and De Heer 1997; Singer, Frankel, and Glassman 1983; Sudman, Bradburn, Blair, and Stocking 1977), but environmental factors have typically not been examined.

Thus, at the individual level, environmental factors may have some influence on an individual's decision to participate in a survey at one point in time by triggering or strengthening a respondent's attitudes or predisposition to respond or by affecting an interviewer's expectations and behavior. However, the effect of the social, economic, and political conditions at any given point in time may be quite difficult to determine. It is only by observing changes over time in these environmental conditions and decisions to participate in a survey that one can see if they are indeed related. To study these changes over time at the individual level would require following the same people over a long period of time; however, their decisions to participate in the surveys would likely be contaminated by previous decisions and experiences as well as the burden of these repeated requests.

At the macro level, one would also have the same hypotheses because the refusal rate for a survey is the aggregation of many individual decisions. If an individual's decision to participate in a government survey is based at least partially on her or his attitudes about the government and its performance as reflected in current economic and political conditions, then the survey's refusal rate at any point in time should reflect this to some degree. Furthermore, at the aggregate level one can examine changes in the environment and refusal rates over long periods of time without the confounds present at the individual level. Although the results from such a macro-level approach may or may not be generalizable to the individual level (Robinson 1950, but see Kramer 1983; Steel, Holt,

and Tranmer 1996), our focus and hypotheses are specifically for the aggregate level. We are concerned with exploring how changes in a government survey's refusal rate may reflect changes in the political, social, and economic environment.

Ongoing government surveys offer a valuable arena to explore the effect of the environment on survey response rates. Their government sponsorship makes them highly visible, and these surveys are likely to follow similar procedures over a period of years. Because perceptions of the government are often deeply intertwined with the social, political, and economic conditions and their changes over time, it would seem likely that how citizens respond to a government request for survey participation could reflect these conditions more than other surveys.

The general feeling of the people toward their government may be reflected in their attitudes as to how well the chief executive is performing his or her job or feelings of trust in the government. Because the government often seeks to manage the economy, with resulting effects on citizens, economic conditions may also influence people's appraisal of their government. A number of studies have shown declines over the last 30 years in the levels of political trust and political efficacy or beliefs concerning government responsiveness (Citrin 1974; Abramson and Aldrich 1982; Pollock 1983; Conway 1991). There is also evidence that the decline in political trust is related to dissatisfaction with leaders (Citrin 1974) and to changing economic circumstances (Weatherford 1987; Wright 1976). Some of the changes in the economic and political conditions over the past 30 years also may be related to patterns of nonresponse rates to government surveys.

1.2. Overview of design

In the present study we sought to explore these relations more systematically using time-series regression analyses. We focused on how political and economic conditions might be related to refusals to a government survey on employment. We examined the relations among some important economic and political indicators and refusal rates for the Current Population Survey (CPS), a major U.S. government survey, across a 29-year period (1960–1988). The CPS gathers information used in the calculation of the unemployment rate. The political and economic indicators that were examined included presidential approval, consumer sentiment about the economy, the unemployment rate, and the rate of inflation. In some analyses we were also able to use public perceptions of the most important problem facing the country.

2. Methodology

2.1. The Current Population Survey

The CPS is the primary household labor force survey in the United States, and is sponsored by the Bureau of Labor Statistics with data collection by the Bureau of the Census. Interviews are conducted each month with over 50,000 households. A given household is interviewed for four consecutive months, leaves the sample for eight months, and is interviewed again in the next four calendar months. The sample rotation is staggered so that in any given month, eight separate cohort groups are in the survey. Thus, three

quarters of the sample is the same as the previous month, and half of the sample is the same as the previous year. Personal visits by a field interviewer are required in the first month and are usually conducted in the fifth month as well, but the telephone may be used for the other interviews. Each month the interviewer asks a series of questions designed to classify each household member age 16 and over into one of three classes – employed, unemployed, or not in the labor force. Additional questions are asked to gather other demographic information and, various supplements are often added to the survey to gather information on such topics as income (for more information, see U.S. Department of Labor 1997).

Two crucial assumptions of our analyses are that potential respondents know the government is conducting the survey and know the subject of the survey. These assumptions are valid in most cases because a letter is sent prior to the interviewer's first visit. The letter states in the first sentence that the survey is the basis for the official government figures on unemployment. The letter is on official government stationery (for the U.S. Bureau of the Census) and is signed by the director of the Census Bureau. Furthermore, the interviewer repeats this information as part of his or her introduction. DeMaio (1980) reported that fully three-fourths of the refusals to the CPS occur during or *after* this introduction.

The refusal rate for the CPS is calculated by dividing the number of households that refused by the total number of eligible households (interviewed, refusals, noncontacts, and other noninterviews, such as those incapable of responding). Although the CPS began in 1942, monthly refusal rates were only available beginning in 1960. Our analyses use data from January, 1960 through December, 1988. Although it would be preferable to have refusal rates based only on the households that are in the sample for the first month, we only have the refusal rates based on the entire sample, because the breakdown by month-in-sample was not available for the entire time period.³ Because households are in sample for a total of eight months over a 16-month period, the amount of autocorrelation in this time series is likely increased compared to a series consisting only of the refusal rates for the first month-in-sample.

2.2. Indicators of social, economic, and political conditions

There are many possible indicators of social, political, and economic conditions. However, we could only consider those that were systematically collected at frequent intervals over a long period of time so that we could empirically estimate the relation between changes in these conditions and changes in CPS refusal rates. Unfortunately, this means that much interesting data on the environment could not be used. For example, the National Election Studies, which have been conducted regularly since 1952 by the University of Michigan, contain a wealth of information about trends in voter participation, political alienation, and efficacy. However, because such a study is conducted only in an election year, there are far too few time series data points for any meaningful analysis with our monthly refusal rates.

For the current analyses, four economic and political indicators related to government performance were used as predictors of the refusal rate. We utilized two objective

³ Examination of a 48-month period not included in this time period for which refusal rates by month-in-sample were available (1994–1997) showed that the correlation of the overall refusal rate with the 1st month refusal rate was $r = .68, p < .01$. This suggests that these overall findings would be similar to those using the refusal rates for the first month-in-sample only.

indicators on the state of the economy – the inflation rate (the Consumer Price Index-Urban (CPI-U), unadjusted twelve-month change) and the seasonally adjusted civilian noninstitutionalized unemployment rate (UR). These are the figures released to the public (and the press) monthly (for details of calculation, see U.S. Department of Labor 1997).

In contrast to these relatively objective indicators of the state of the economy, we obtained other more subjective indicators of the American public's opinions about the economy and the way the government was handling national and international affairs. One of these indicators is the Index of Consumer Sentiment (ICS), collected by the Monitoring Economic Change Program at the Institute for Social Research at the University of Michigan (1990). This index combines measures of consumer opinions about personal finances, business conditions, and buying conditions.⁴ Another indicator of public opinions about government performance is the Gallup Poll Presidential Approval Rating.⁵

To further capture the political and economic conditions of a given time, we also obtained Gallup Poll results through the Roper Center on the most important problem facing the country at numerous points throughout the period. All of the responses were categorized into three general domains: social, economic, and foreign, with each variable reflecting the percentage of people who identified that type of problem as the most important one facing the country.⁶ Because these data were not available on a regular monthly basis from 1960–1988, but were available for most of the time period under investigation with at least one observation per quarter,⁷ we utilized these data only in analyses that averaged across months into quarterly summaries (see below).

2.3. Organizational environmental indicators

We also explored the effects of two organizational/methodological factors that reflected somewhat different survey environments from the normal CPS data collection. The CPS has traditionally included a rather long and detailed supplement on income once a year during the month of March. An examination of the time series shows that the inclusion of this supplement is often associated with the highest levels of refusal for each year and may partially account for a seasonal pattern for refusals. We included in our monthly time series models a variable that was coded as one for the month of March and zero for all other months to examine this effect.

Another factor that may affect refusal rates is the extensive publicity and additional awareness of government data collection during a decennial census. Because Census Bureau interviewers collect all CPS data, they may take advantage of their higher profile during the decennial census to obtain greater cooperation from respondents. We included in all models a decennial census variable that was coded as one for a decennial census year and zero for all other years.

⁴ The ICS was calculated only once a quarter from 1961 to 1977. Monthly figures are available after that. The quarterly figure was assigned to each month of the calendar quarter for the earlier period.

⁵ Presidential approval was missing for about 7% of the months covered by this study. For purposes of the present analyses all missing data were replaced with the values of the nearest prior values.

⁶ Because people were allowed to choose more than one problem, these percentages can exceed 100. Foreign problems included mentions pertaining to war or threat of war, foreign policy, Vietnam, etc. Mentions of the oil crisis, unemployment/recession, inflation, etc. were classified as economic problems, and mentions of crime, civil rights, abortion, decline in morals, government, etc. were categorized as social problems.

⁷ These data were available somewhat sporadically over the entire period. Ratings within the same quarter were averaged, and quarters with no ratings were imputed with the ratings of the previous quarter.

2.4. Analysis issues and plan

2.4.1. Effects of monthly versus quarterly analyses

It is difficult to say *a priori* what the most meaningful parsing of time is for the analysis of political and economic conditions on refusal rates. Because the CPS is a monthly survey, and there are very few economic, political, or social indicators that are available more frequently than monthly, a one-month period is the minimum we can analyze. However, one might expect that social, political, and economic environmental conditions would change relatively slowly, with the exception of some specific events. It is also possible that the general social perceptions and attitudes are more stable than the specific events that may trigger changes in these conditions (Conover, Feldman, and Knight, 1986). Thus, one could argue that using monthly data is too fine a level of detail to properly examine the conditions of interest. Furthermore, there may be too few useful indicators of political and social conditions that are produced every month, so a monthly model may be underspecified.

Thus, aggregating the data to quarters of the year may do a better job of capturing more meaningful variation in political and economic conditions. It also allowed us to include additional indicators of the most important problem facing the country, which was measured at least once in a quarter for most of the time period we are examining. Clearly, the higher the level of aggregation, the fewer the number of data points and the less potentially meaningful detail. While we have 348 monthly data points from 1960–1988 to explore the relation among economic and political conditions and refusal rates, we have only 116 points if we aggregate the data to quarters. In this article, we did not consider further aggregation (e.g., yearly) because there would have been too few observations for the kind of analyses we were doing.

We present analyses of monthly time series that explore the relation of unemployment, inflation, consumer sentiment, presidential approval, the income supplement, and the census year with CPS refusal rates. We also present quarterly time series models that do not include the indicator for the March income supplement, but do include indicators of the most important problems facing the country. Comparing these two models will allow us to see the effects of a slightly different level of aggregation as well as the effects of some additional indicators of the social, economic, and political conditions.

2.4.2. Effects of different time periods

Any analysis of trends and relations over time is of course limited to the time period for which data are available. We currently do not know how these associations may change in the future or have changed since the unmeasured past. One way that we might gain some insight into the effect of particular time periods on our analysis is to focus on different segments from time that we currently have available. Political history has often been divided into periods that are distinguished from one another by the unique events that occurred in each of them. These events contribute to the distinctive character of each period, identifying it as a separate “political era” (e.g., see Beck 1979; Billingsley and Tucker 1987). The period for which CPS refusal rates are available spans two of these political eras. The first is the *Sixties* or *Vietnam* era, which runs from the early 1960s to the mid-1970s (Billingsley and Tucker 1987). Besides the Vietnam War and the Watergate

scandal, the period was characterized by a concern for social issues. The years extending from the mid-1970s through most of the 1980s are termed the *post-Watergate* or *Neo-conservative* era. This period included a decline in the interest in social issues and, perhaps, an increased concern for economic self-interest. Certainly, economic issues were more important.

We present separate monthly time series models for these two political eras and compare the results as one way of exploring how much the relations of economic and political conditions with refusal rates may change over time.

2.4.3. Time series models

In analyzing time series data with regression procedures, one must take into account the autocorrelation of errors that typically characterize these data. Although the presence of autocorrelated errors may not affect the parameter estimates, they will substantially affect tests of significance (Ostrom 1990). We conducted several auto-regressive, moving average (ARMA) time series regressions using both the actual levels of the dependent and independent variables as well as transformations taking first and seasonal (twelve-month) differences. The models over the entire time period from 1960 to 1988 showed very similar results. Therefore, to conserve space we present only the models using the differenced variables, which reflect how monthly or quarterly changes in political and economic conditions are related to changes in refusal rates.⁸

All of the models presented include variables measured at the same point in time. The cross-correlations of the different series almost always peaked with no lag, i.e., all indicators were from the same time period; however, one might conjecture that it takes some period of time for economic and political conditions to become more generally known by the public. Therefore, we explored models including the predictors at lags ranging from one to three months for the monthly series and one to three quarters in the quarterly series. These models with lagged predictors nearly always resulted in diminished relations between the predictors and refusal rates. Because the models in which all indicators are measured at the same point in time are more parsimonious and resulted in the best prediction of refusal rates, we do not present the results of the lagged models.

For both the monthly and quarterly data, the time series models that fit the data reflected variations of common seasonal models. It is worth noting that although time series models can often be constructed atheoretically, the autocorrelated error terms included in our analyses likely reflect at least to some degree the rotation pattern of the CPS.

3. Results

3.1. Overview of the CPS refusal rates

The monthly refusal rates for the CPS for the years under investigation ranged between 0.6% and 3.5%, with a mean of 2.0%. The monthly refusal rates for 1960–1988 are displayed in Figure 1. Clearly, there was an increase in refusal rates across the years, with the bulk of the increase taking place during the period 1960–1976 and perhaps a

⁸ The inflation rate and the organizational variables were not differenced because they reflect relative change.

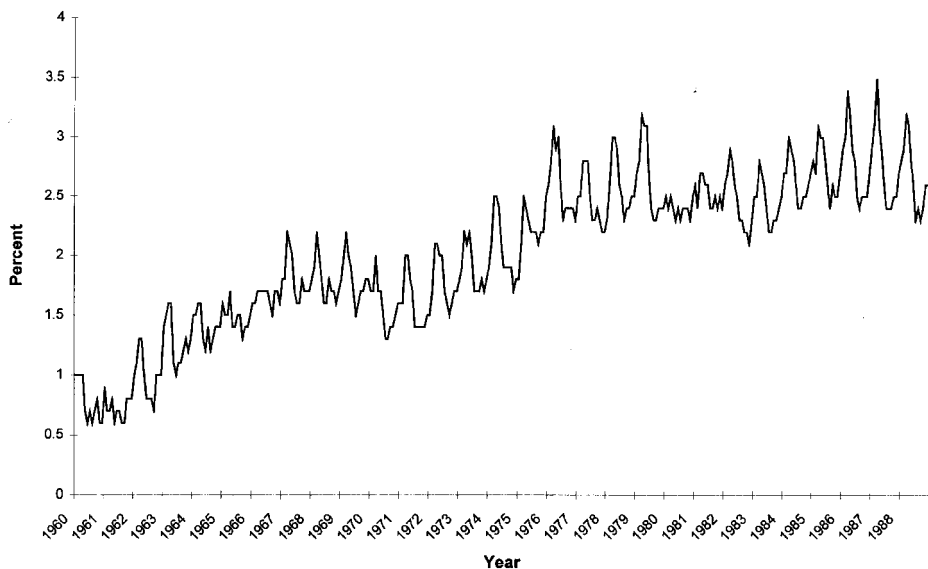


Fig. 1. CPS monthly refusal rates 1960–1988

slight decline at the time of the 1970 census. A regression line fit to the whole series has a slope of .068 (s.e. = .0019), which is significantly different than zero. From 1960–1976, the slope is .087 (s.e. = .0039), but following 1976 there is a leveling off for some time, so that during the period 1977–1984 the refusal rates were rather constant with a slope = $-.005$ (s.e. = .01).

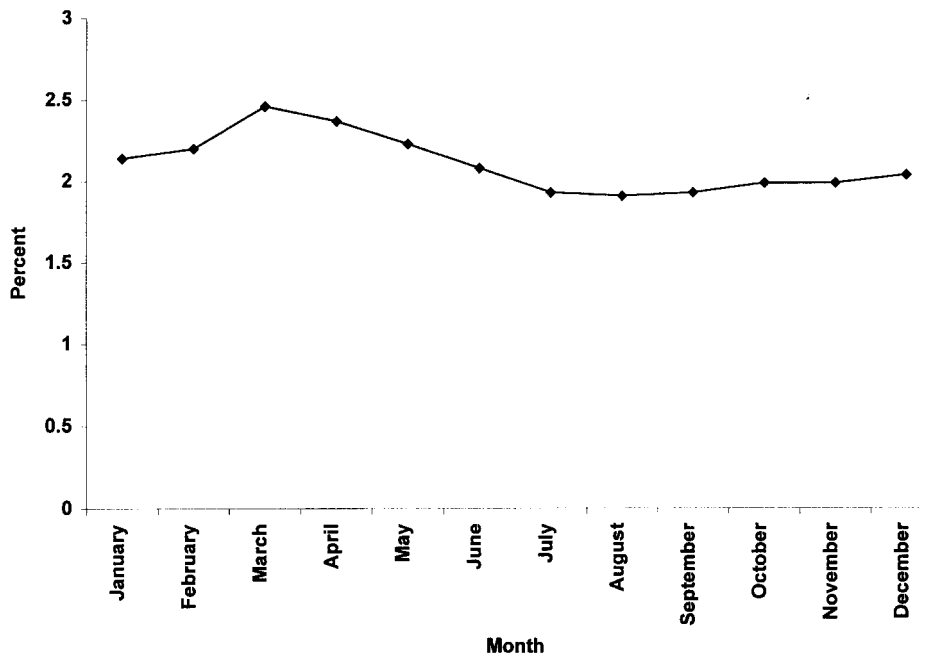


Fig. 2. CPS average refusal rates by month, 1960–1988

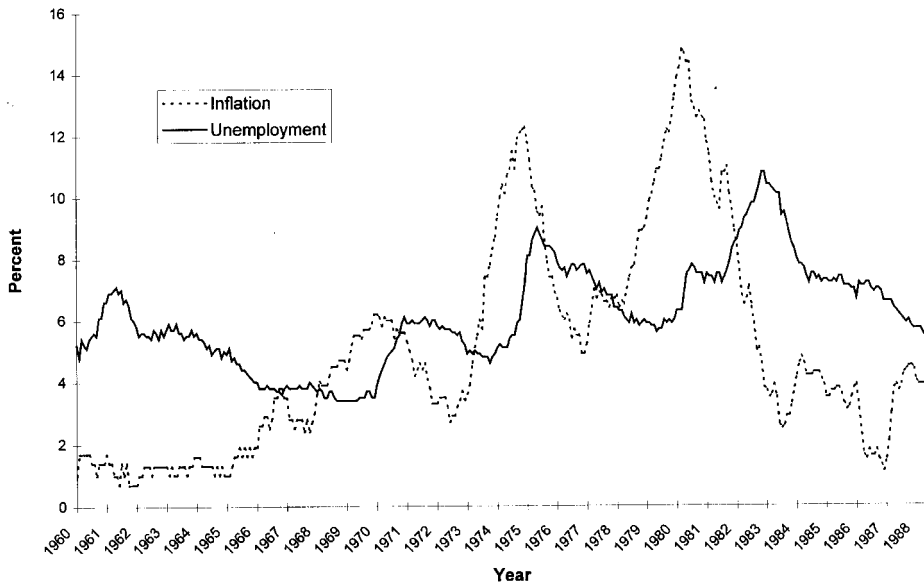


Fig. 3. Monthly unemployment and inflation rates, 1960–1988

Clear seasonal trends are also evident in the monthly refusal rates. The refusal rates tended to be larger in March or April, at the time of the long and burdensome income supplement to the CPS. Refusal rates typically declined in the following months until they bottomed out around July and/or August then increased from October to December approaching the January level. This pattern is visible across most of the series but is shown also in Figure 2, with the refusal rates for each month averaged over all years from 1960 to 1988. Other monthly labor force surveys also show a seasonal pattern (e.g., Kantorowitz 1997).

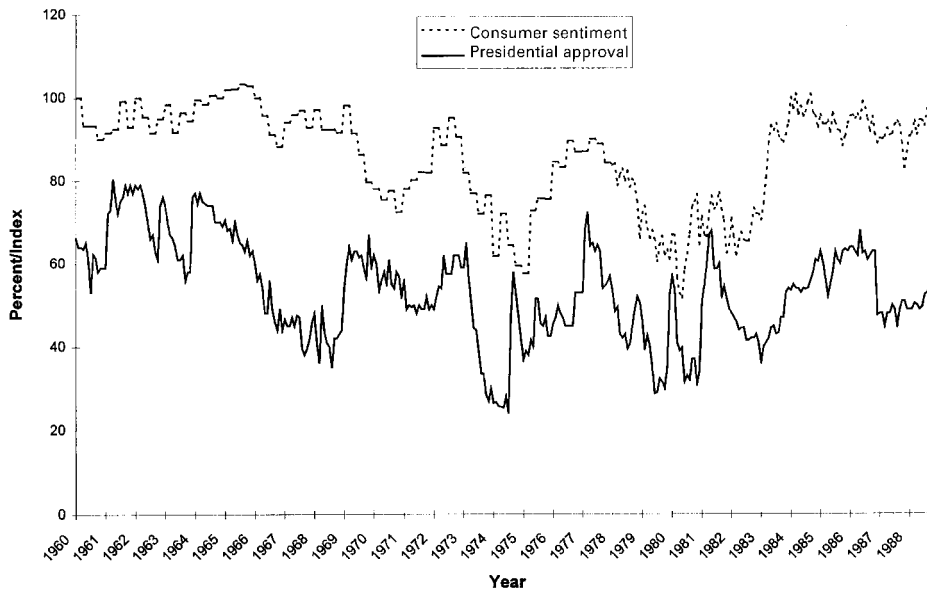


Fig. 4. Presidential approval and consumer sentiment, monthly, 1960–1988

A further examination of Figure 1 also suggests that the range in monthly refusal rates within a particular year appears to have increased over time. The absolute differences between the high and low points for the refusal rates within each year generally grew larger over the period, with a few exceptions (1965–66, 1980–81). However, because the refusal rates have generally increased over time, proportionately, the within-year variation has remained relatively stable. There does appear to be less monthly variability during decennial census years.

3.2. Overview of the political and economic indicators

Figure 3 shows the monthly unemployment and inflation rates during the period 1960–1988. The unemployment rate mostly dropped from 1960 to 1970, then rose abruptly in 1971 and again in 1975. Unemployment declined from 1975 to 1980, rising again from 1980 to 1982 and then declining through 1988. The inflation rate, stable during the first half of the 1960's, began to increase in the latter half of that decade, but it declined in 1972, as a result of wage and price controls. Inflation increased substantially by 1974 and then declined, but rose again sharply in 1978. After declining during the period 1978–1983, inflation remained relatively low through 1988.

Figure 4 shows the index of consumer sentiment and presidential approval ratings during the period 1960–1988. From 1960 to 1975, consumer sentiment declined inversely with the increases in inflation. It rose again from 1975 to 1977, but then declined into 1980. Consumer sentiment rose sharply in 1983 and remained relatively stable through 1988. In general, presidential approval began relatively high at the beginning of each new presidential term and then declined. There was a very sharp drop in 1973, reflecting the Watergate scandal, and a sharp decline related to rising inflation in the late 1970s. After a decline following Reagan's first election, there was a general increase beginning in 1983 that held until a decline following the Iran contra scandal in 1987.

3.3. Correlations of political and economic conditions and CPS refusal rates

To more formally assess the relations among refusal rates and the political and economic conditions during the period 1960–1988, we examined the correlations among these variables. As can be seen in Table 1, all of the predictor variables were significantly related to the refusal rates in the CPS. The intercorrelations among all of the political, economic,

Table 1. Intercorrelations of monthly economic and political conditions and monthly CPS refusal rates: 1960–1988^a

	Refusal rate	Inflation rate	Unemployment rate	Presidential approval	Consumer sentiment	Census year
Inflation rate	.46**	—				
Unemployment rate	.44**	.24**	—			
Presidential approval	-.44**	-.61**	-.13*	—		
Consumer sentiment	-.30**	-.86**	-.34**	.60**	—	
Census year	-.33**	.17**	.06	.13*	-.25**	—
Income supplement	.16**	.00	.00	.03	.00	.00

Note: $N = 348$, * $p < .05$, ** $p < .01$

^aThe results shown are for the undifferenced refusal rates and predictor variables.

and organizational variables are also shown in Table 1. As one would expect, there is some collinearity among these variables that may influence the particular variables that emerge as significant in the multiple regression analyses. Presidential approval, the closest measure to feelings about the government that we have, is negatively associated with inflation, and is positively associated with the index of consumer sentiment. There was no significant relation between presidential approval and the unemployment rate. However, these zero order correlations also reflect autocorrelation of errors, so we conducted time series regressions to obtain more accurate estimates of these relations.

3.4. Time series regressions of political and economic conditions on CPS refusal rates

3.4.1. Monthly time series

To explore how these economic, political, and organizational variables might be related to refusal rates in the CPS, we conducted a time series regression analysis with autoregressive and moving average errors (see Ostrom 1990). As can be seen in Table 2, unemployment, presidential approval, and consumer sentiment were all significantly related to monthly refusal rates. More specifically, over the entire period 1960–1988, increases in presidential approval, which may also reflect more generally positive attitudes towards the government, were associated with decreases in refusal rates. The economic picture appears to go in the other direction, however, because increases in consumers' expectations about the economy and decreasing unemployment were associated with increases in refusal rates. Thus, it appears from these analyses that better economic times are associated with higher refusal rates to a government survey on the economy or labor force status more specifically. The effects for the inflation rate, decennial census years, and the yearly income supplement to the CPS did not achieve conventional levels of statistical significance in this model.

3.4.2. Quarterly time series

A second analysis was conducted aggregating the refusal rates and monthly predictor variables to quarterly averages. We also included in the model indicators from the Gallup Poll on the most important problems facing the country collapsed into three major categories of social, foreign, and economic problems. The indicator for the March income supplement was dropped. The results of these time series regressions are also shown in Table 2. The pattern of findings is quite similar to that found in the monthly analyses, with unemployment, presidential approval, and consumer sentiment all significantly related to monthly refusal rates in the same direction as the monthly series and with similar magnitudes. None of the indicators of the most important problem contributed significantly to the prediction of refusal rates.

3.4.3. Examining different periods of time (monthly time series models)

We also sought to explore the effects of looking at different time periods on how the monthly economic and political conditions would be related to refusal rates. As noted earlier, we chose to divide the entire series into two parts that corresponded to two different political eras. The correlations of the conditions with refusal rates for two different periods are shown in Table 3. The magnitude and the direction of some relations of the

Table 2. Time series regressions of changes in predictor variables on changes in CPS refusal rates, 1960–1988

Predictor ^b	ARMA Regression on refusal rates ^a	
	Monthly	Quarterly
Inflation rate	.000 (.000)	.000 (.001)
Unemployment rate	-.059** (.018)	-.070** (.024)
Presidential approval	-.0026** (.0011)	-.0038** (.0017)
Consumer sentiment	.0042** (.0016)	.0065** (.0023)
Census year	.0084 (.0047)	.001 (.037)
Income supplement	.012 (.0073)	—
Economic problems	—	.000 (.001)
Foreign problems	—	.001 (.001)
Social problems	—	.000 (.001)

Note: Standard errors are shown in parentheses below each parameter. $N = 348$ for monthly series and $N = 116$ for quarterly series. * $p < .05$, ** $p < .01$.

^aResults shown are for differenced refusal rates.

^bAll predictor variables except for the inflation rate and the Census year were differenced.

economic and political conditions with refusal rates vary dramatically across these different time periods. For example, the correlations of the inflation rate and presidential approval change in direction between the two time periods.

The results of the separate time series regressions with autoregressive and moving average errors can also be seen in Table 3. These are more consistent between the two time periods, with the exception of the inflation rate which still changes in direction between the two periods; however, the parameter in each case only approaches conventional levels of statistical significance. The separate regression models of the different time periods showed some similarities and some differences. The income supplement and unemployment rate were consistently associated with refusal rates in both periods. The index of consumer sentiment and presidential approval were significant or approached significance only in the later period.

These models were also generally consistent with the overall model for the entire time period. The biggest difference was that the income supplement emerged as a significant predictor of refusal rates in both time periods, but was not significant in the overall model. However, the time series regression models for the entire period from 1960 to 1988 utilized refusal rates and predictors with one- and twelve-month differences, while seasonal models without differencing appeared to fit the data better for these shorter time periods. Since we expected that the income supplement contributed strongly to the seasonal effects, it is not surprising that the type of seasonal model used affects its magnitude and significance.

Table 3. Correlations and regressions of predictor variables on monthly CPS refusal rates during different time periods

Predictor	Correlations with refusal rates ^a		ARMA regression on refusal rates ^b	
	1960–1974	1975–1988	1960–1974	1975–1988
Inflation rate	.63**	-.30**	.027+ (.015)	-.021+ (.012)
Unemployment rate	-.51**	-.28**	-.054* (.027)	-.068** (.023)
Presidential approval	-.62**	.22**	-.001 (.001)	-.0032+ (.0018)
Consumer sentiment	-.40**	.31**	.003 (.003)	.0045* (.0023)
Census year	-.30**	-.16*	-.067 (.053)	.022 (.066)
Income supplement	.20**	.44**	.100* (.044)	.242** (.083)

Note: Standard errors are shown in parentheses below each parameter. $N = 180$ for 1960–1974 and $N = 168$ for 1975–1988.

+ $p < .10$, * $p < .05$, ** $p < .01$

^aThe correlation results shown are for the undifferenced refusal rates and predictor variables.

^bThe regression results shown reflect undifferenced refusal rates and predictor variables.

4. Discussion

4.1. Summary

The present investigation represents an initial exploration and use of time series regression analyses to examine the relations among social, political, and economic conditions and survey cooperation. This macro-level analysis offers a different perspective into the nature of nonresponse problems in surveys than most other research that has examined relations between respondent attitudes and the decision to participate in a survey. Rather than measuring the attitudes of a potential respondent, we have only the results of other surveys revealing the public's approval of the president and view of the economy over time. We attempted to relate these views and more objective indicators of the economy, viz., the unemployment and inflation rates, to the refusal rates to a major government survey over time.

The results showed some evidence that political and economic conditions were related to refusal rates in the CPS. Over the entire period 1960–1988, higher presidential approval was associated with lower refusal rates. Thus, periods when the public has increasingly positive evaluations of the government and government leaders are associated with periods of increasing cooperation with government survey requests. This result suggests that a generally positive view of the government may contribute to a positive atmosphere for cooperation with requests by the government.

However, periods of decreasing unemployment and increasing consumer expectations for the economy were associated with periods of increasing refusal rates. This would

indicate that better economic times are associated with periods of lower cooperation with government surveys. We had expected that economic conditions may have served as an indicator of government performance and would, therefore, reflect a generally positive atmosphere toward the government and requests for survey participation during good or improving economic times. Instead the opposite appears to be true. While we can only speculate post hoc, it may be that during poor or worsening economic times, the public looks to the government to step in and make things better, creating a more positive atmosphere for responding to government requests. In contrast, relatively good economic times may be associated with the public feeling less need for the government and perhaps even desiring less interference from the government. The general public attitude may be more one of “if it isn’t broken, don’t fix it,” which may serve to create a less positive atmosphere for government requests for survey participation.

These results did not appear to be affected by whether we analyzed monthly or quarterly data. However, dividing the whole series into two separate political eras revealed that the particular time period chosen did affect the magnitude of some of the relations between economic and political conditions and refusal rates.

4.2. *Limitations*

There are several limitations to the current data that would seem likely to make it more difficult to detect relations between environmental conditions and CPS refusal rates. Although we noted a significant trend over time for refusal rates, the actual range is quite small, even though the proportional change is relatively large. Surveys with larger variation in refusal rates may be more likely to show more covariation with these environmental indicators, which did show considerable variation over this time period. In addition, the refusal rates we analyzed, which included all waves or rotation groups from the CPS, may not serve as well as the refusal rates for those households in the sample for the first time.

Certainly a further difficulty in analyzing monthly or quarterly time series data is that good, consistent indicators of social, political, and economic conditions are often not available at such regular intervals, especially as one looks further back in time. Because we were constrained by what was available, our models currently may not reflect important aspects of the environment.

Although there were some differences in the relation of political and economic indicators with refusal rates in the two different time periods we examined, the results were basically consistent with the overall model. Nonetheless, division of the data into time periods different than those examined here may produce somewhat different results. We currently do not know the effect of studying only the particular time period we have here. Ultimately, history will tell us whether the associations we found persevere or change over time.

4.3. *Implications*

In this article we have focused on the macro level as a potentially useful paradigm for the study of social and environmental influences on survey participation. The magnitude of the correlations between our economic and political conditions and refusal rates were relatively high, which may serve to make our hypothesis about this relation seem very

reasonable. However, these relations diminished considerably when the autocorrelated errors were included in the time series models. The considerably more modest results from the time series regression models underscore the necessity of constructing formal statistical models.

Theoretically, one would generally expect that environmental factors would have a rather subtle effect on survey cooperation, and that respondent characteristics, interviewer characteristics, and the interaction of the respondent and interviewer would play a much larger role. Because these effects would normally be expected to be quite small, researchers studying environmental factors need to ensure that they have sufficient power to detect these effects. Researchers should also be attuned to opportunities for natural experiments to examine the effect that particular environmental events may have on survey cooperation.

The current macro-level analysis does not provide insight on whether environmental effects are direct or indirect through respondent and/or interviewer characteristics. Only carefully controlled research at the individual level can provide insights into the mechanism for how environmental factors affect a potential respondent's decision-making process and ultimately his or her behavior.

It is important to note that another interesting aspect associated with the organizational influences on refusal rates is the overall level of nonresponse during this 29-year period. Although the refusal rate steadily increased during the first two decades, the overall nonresponse rates were fairly constant, even dropping slightly in the middle of the series. Through the 1960s and 1970s, the nonrefusal portion of the nonresponse rate (chiefly reflecting noncontacts) decreased at approximately the same rate as the refusal rate increased. However, when the refusal rate stabilized in the 1980s, the rate for other types of nonresponse did also. If an effort was made to hold the overall nonresponse rate constant throughout this period, it probably required the expenditure of greater resources to contact hard-to-reach households. When the refusal rate leveled off in the last few years, resources and thus effort may have stabilized. Unfortunately, although refusal rates leveled off, they did not drop. If another period of increasing refusals occurs, the starting point will be where it was at the end of the last increase.

4.3. Future directions

Survey field staff have commented to us that the idea that economic and political conditions influence refusal rates makes a great deal of sense to them. They often feel that despite doing everything they can to maintain or improve cooperation rates, at certain times they hit levels of resistance that they cannot seem to overcome. Similarly, discussion of these findings with participants in the international educational program at the Bureau of Labor Statistics frequently yields further anecdotal evidence of associations of economic and political conditions and survey cooperation in other countries. Although the current findings show much more modest results than casual observations such as these often suggest, we hope this work encourages others to attempt to test these hypotheses more systematically using a variety of methodologies.

What we currently lack in historical data cannot be remedied, but we can focus on the present and the future to better measure and track current conditions as well as identify characteristics of local environments that are associated with survey cooperation. We are also gathering more data to continue the time series for the CPS and the indicators

we currently have, as well as identifying others that are available for a considerable period of time, if not back to 1960. In addition, we are gathering and examining refusal rates in other government household surveys over as long periods of time as we can obtain to assess how well these findings generalize to other U.S. surveys.

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