EFFECTS OF THE LEVEL OF INTERVIEWER EFFORT ON THE CHARACTERISTICS OF COMPLETED RESPONSES: AN EXPERIMENT USING THE 1998 SURVEY OF SMALL BUSINESS FINANCES

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ABSTRACT

All surveys contain a mix of interviews that required more or less effort to complete. Difficult cases are often given to interviewers specializing in refusal conversion or are given incentives to cooperate. Use of these refusal conversion experts can increase response rates among hard to reach subjects. Analysis not explicitly controlling for interviewer effort assumes that the easy to interview and hard to interview cases are statistically identical except for difficulty in completing the interviews. Violations of the assumption of "no interviewer treatment effect" question the validity of comparisons not controlling for ease of interview completion. The 1998 Survey of Small Business Finances (SSBF) allows us to test the assumption of no interviewer effect. This paper presents preliminary data suggesting that interviewer effects may be important for this data set. It also presents analysis of the effects of incentives on completion rates.

Key Words: business survey, interviewer effects, response rate, incentives

1. INTRODUCTION

This paper examines the possible effect of interviewer effort on the characteristics of completed interviews in the 1998 SSBF, an enterprise level survey conducted by the National Opinion Research Center (NORC) and sponsored by the Board of Governors of the Federal Reserve System. All surveys contain completed interviews drawn from different parts of the distribution of interviewer effort. Most analysts assume that all of these observations are comparable. If difficulty in completing the interview is correlated with other characteristics of the firms, then firms that were easy or hard to interview may not be comparable. Due to ex ante assignment of refusal conversion experts to certain strata in the 1998 SSBF, I can test this assumption.

2. THE SSBF, THE MINORITY SUBSAMPLE, AND EFFORTS TO INCREASE RESPONSE RATES

2.1 Background on the SSBF and the Minority Subsample

The 1998 SSBF is the third in a series of surveys of small firms sponsored by the Board of Governors of the Federal Reserve System. The SSBF will be used to assess the availability of credit for small and minority owned businesses, to assess the effects of bank mergers on small business access to credit, and to aid in revising the Federal Reserve Board's Flow of Funds statistics.[1] Along with demographic information about the owners of the firms, data are collected on the firms' financial relationships, credit experiences, lending terms and conditions, income and balance sheet information, and the location of the financial institutions used.

One of the goals of the 1998 SSBF is to collect information about minority-held businesses[2], which are rare. The 1993 National Survey of Small Business Finances found that only 2.9% of businesses were owned by African Americans, 3.4% by Asians, and 4.3% by Hispanics (Cole and Wolken 1995). The rare incidence of minority-owned businesses led to their being oversampled in the 1998 SSBF. Larger small businesses (whether minority-owned or not) are also rare and were also oversampled. The list frame for drawing the sample was Dun & Bradstreet's Dun's Market Identifiers® file, which does not contain a reliable indicator for minority-owned businesses (Haggerty, et al. 2000). Thus, a sample of 39,240 firms was screened for eligibility, race, and ethnicity. Expectations were that these 39,240 firms would yield 6,000 completed interviews with eligible firms, with over 400 completed interviews from each minority group and from larger non-minority firms. The 1998 main interview went into the field in September of 1999. Early experience in the field signaled a serious decline in response rates relative to previous rounds of the survey. Since credible statistical

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1. Small businesses are defined as non-financial, non-farm, for-profit, privately-owned businesses with fewer than 500 employees.

2. For the 1998 SSBF, minority firms are those more than 50 % owned by Hispanics (an ethnic category), or by Asians or African Americans (racial categories).

comparisons among subgroups require sufficient sample size, there was extra concern about the ability to complete sufficiently many interviews with minority-owned and larger firms.

2.2 Incentive Experiments

NORC tried a variety of experiments to increase response rates. A small number of initial refusals were offered monetary incentives to complete the interviews. A larger number of newly released cases were offered an incentive in the form of a check for $20 before the interview started. Corresponding to findings in previous literature, the use of a post-incentive seems to have had a negative effect if any, while use of an incentive before interviewing a firm seems to both speed completion of successful interviews as well as reduce the amount of time and number of calls before adamant refusals were obtained from respondents.[3]

2.3 Assignment of Refusal Conversion Experts to the Minority Interviews

The contractor also assigned refusal conversion experts (RCEs) skilled at interviewing minorities to focus on interviewing minority-owned firms in the hopes that this would boost minority response rates, which had historically been lower than non-minority response rates. As with any survey, one hopes use of RCEs makes it possible to collect information from respondents from the entire distribution of willingness to participate. Without representation from the harder to convince participants, the information collected would not be representative of the population. An interviewer can be an RCE for one or more of the following groups: Hispanics, Asians, African Americans or non-minority individuals. She will be an "ordinary" interviewer when interviewing members of groups for which she is not an RCE. Most of the interviewers are "ordinary" interviewers for most of the interviews they do. Information on who the non-minority strata RCEs are will not be available until August, 2000, limiting the analysis possible here to the characteristics of interviews completed with owners from the minority strata.

In order to later analyze the possible effects of assigning more persuasive interviewers to minority strata, the contractors monitored the work load of these minority RCEs to make sure that they also completed some non-minority interviews. As an artifact of the interview room technology, some other interviewers completed some minority interviews. Out of 712 minority interviews for which I have preliminary data, 146 were completed by RCEs in their assigned minority strata, while another 354 were completed by these RCEs in other minority strata for which they were not RCEs. The remaining 212 minority interviews were completed by "ordinary" interviewers. These same interviewers who are RCEs for at least one minority group completed 781 interviews in non-minority strata, while "ordinary" interviewers completed 1718 interviews with non-minority firms. Clearly many other interviewers may have interacted with a particular firm besides the interviewer who completed the interview. However, this information will not be available until August, 2000, further limiting this analysis. Further work will examine the possible effects of a RCE having interacted with a business at all.

There are four groups of interviews: interviews with minority-owned firms completed by a minority RCE (MIN RCE), interviews with minority-owned firms completed by an ordinary interviewer (MIN ORD), interviews with non-minority owned firms completed by a non-minority RCE (MAJ RCE), and interviews with non-minority owned firms completed by an ordinary interviewer (MAJ ORD). One obvious comparison is that between the minority-owned firm RCE interviews (MIN RCE) and minority-owned firm ordinary interviewer interviews (MIN ORD). If the characteristics of completed interviews do not vary between these groups in a systematic fashion, it is evidence that there may not be an interviewer effect. Similarly, if I knew who the non-minority firm RCEs were, I could compare the characteristics of firms they interviewed (MAJ RCE) with those of firms interviewed by non-minority firm ordinary interviewers (MAJ ORD). These comparisons address the question of whether or not there is a RCE effect in the minority or non-minority groups but not whether there is a RCE effect overall. Evidence of an RCE effect may show that using RCEs has cut non-

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[3] See Groves (1989) on incentives and interviewer effects or Knopf et al. (2000) for a discussion of the use of incentives in telephone surveys.

response. It is of further interest whether these two differences (MIN RCE vs. MIN ORD and MAJ RCE vs. MAJ ORD) are similar - e.g. is the RCE effect the same for minority-owned firms and non-minority owned firms. If it is, then one can control for the differences in interviewer effort through including a RCE dummy variable in regressions. If not, specific minority and non-minority RCE effects might be necessary. Unfortunately, since I do not know who the non-minority RCEs are, the latter two comparisons cannot be done. Thus, the rest of this paper focuses on differences between minority firm RCE interviews and minority firm ordinary interviewer interviews.

3. PRELIMINARY RESULTS

3.1 Analytic Framework

For this analysis, I chose to compare the distribution of several firm characteristics for minority interviews completed by RCEs and minority interviews completed by ordinary interviewers. Because I do not have data on the RCEs for the non-minority strata, I am restricting the analysis to the minority strata for now. For comparison purposes, I include a table of mean characteristics by minority and non-minority status in Table 1, along with the means for minority interviews completed by RCEs and by ordinary interviewers separately.

To see if there is an RCE effect in the minority strata, I ran logistic regressions of the form

$$Y = \alpha' \, I + \beta' \, X + \gamma \, RCE + \varepsilon,$$

where Y is some characteristic of the firm expressed as a zero-one dummy variable, RCE is a dummy variable for the interview having been completed with a minority RCE, I is a vector of interviewer dummy variables, and X is a vector of other control variables. The control variables include dummy variables for the number of employees of the firm in categories; a dummy variable for whether or not the firm was offered an incentive to participate; dummy variables for the Census division in which the firm is located; a dummy variable for whether or not the firm was located in an MSA (was urban); dummy variables for the race of the firm's main owner (African-American, Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaskan Native); a dummy variable for the Hispanic status of the firm's main owner; and a dummy variable for whether or not the screener interview took more than the median number of calls to complete (the screener was difficult to complete). The regressions also allow for correlations among the residuals within major sampling strata for the main interview. The seven strata were derived from the screener interview with the firm. The minority strata are Hispanic-owned firms, Asian non-Hispanic owned firms, and black non-Asian non-Hispanic owned firms. The non-minority strata are non-minority owned firms with 1-19 employees, non-minority firms with 20-49 employees, non-minority firms with 50-99 employees, and non-minority firms with 100-499 employees. Practically speaking, there were almost no non-white Hispanic firms.

Table 2 contains the odds ratios and p-values for coefficients of interest from logistic regressions of the form above for a sample of firms from the minority strata. Results from linear regressions were similar. The characteristics of interest are whether the firm had more than median sales for its employment size category (1-4 employees, 5-9 employees, 10-19 employees, 20-49 employees, 50-99 employees, and 100-499 employees), whether the total assets were larger than the median for the firm's size category, whether the firm had more than the median number of owners for its size category, whether the firm was male-owned, and whether or not the interview took more than the median number of calls for its size category.

These dependent variables fall in two categories: (1) variables expected to be correlated with the employment size of the firm (whether the sales, assets, and number of owners are larger than the median and whether or not the firm was at least 50 % male owned), and (2) a variable expected to be correlated with how difficult it was to complete the interview (whether or not the interview took more than the median number of calls to complete).

3.2 Coefficients of Interest from the Logistic Regressions

Table 2 presents the odds ratios for only three of the variables included in the logistic regressions: the dummy variable for the interview having been completed by an expert, the dummy variable for the screener having been difficult to complete, and the dummy variable for the firm having been offered an incentive. I do not expect the odds ratio for having had the interview completed by an RCE to be significantly different from one if the no interviewer effect hypothesis is

correct. If the assignments to different types of firms were random, then the coefficients on the RCE dummy should not be significantly different from one. Similarly, I do not expect the odds ratio on the dummy variable for having been a hard screener to complete to be significantly different from one except in the regression where the dependent variable is having been a hard interview to complete; for this regression I anticipate a coefficient larger than one, as firms that are hard to screen will likely be hard to interview. I expect that incentives will increase cooperation. If the dependent variable is whether it was a difficult interview to complete, I expect the odds ratio for having received an incentive payment to be less than one. For the other dependent variables, this odds ratio should not be statistically significantly different from one.

3.3 Means of the Relevant Variables – Table 1

The means are presented in Table 1. Because weights adjusted for ineligibility and non-response are not yet available, all the frequencies and regressions are unweighted. T-tests (not reported here) assuming two samples with unequal variances show that the minority and non-minority firms differ along many dimensions in a statistically significant fashion (p-values are less than .10). This comparison is shown in columns 1 and 2 of Table 1. Minority firms are more likely than non-minority owned firms to have fewer employees, to be younger, to have younger owners, to be located in an MSA, and to have fewer sites than non-minority firms. They were somewhat less likely to be offered an incentive. They are not more likely to have fewer employees than others in their size group, nor are they more likely to be male-owned. However, their sales and assets are likely to be smaller than the median for their employment size class. While they are not more likely to have fewer owners, they are more likely to have fewer owners than others in their size group. These differences, while interesting, are not the focus of this paper.

Minority-owned firms interviewed by RCEs do appear to differ systematically from minority firms interviewed by "ordinary" interviewers in a statistically significant fashion along some characteristics. The RCE completed minority interviews were less likely (in a statistical sense) to have been difficult to complete, more likely to both have more employees and have more employees than others in their employment size class, more likely to have younger owners, and more likely to have had larger assets in the raw means and compared to their employment size group. They had larger sales than others in their employment size class. They were also more likely to have more owners than and more sites than non-RCE completed interviews. The RCE and non-RCE completed interviews did not differ statistically on the following characteristics: difficulty in completing the screener, number of employees, age of the firm, whether or not they were located in an MSA, sales, number of owners, and whether or not they had a male owner. The means (columns 3 and 4 of Table 1) and T-tests suggest there may be an interviewer effect. However, a simple comparison of raw unweighted means is not sufficient to conclude this. Thus we turn to regression analysis to control for possible other differences that may be driving these differences in means.

3.4 Comparison of Minority Interviews Completed by RCEs to Minority Interviews Completed by Ordinary Interviewers – Table 2

Table 2 presents the odds ratios and p-values for the coefficients of interest. Recall that if a coefficient has an odds ratio R that is statistically significantly larger than one, a one-unit increase in the level of the independent variable increases the odds that the dependent variable is one by R. For minority firms, the coefficients on having had the interview completed by a RCE were insignificant and smaller than one for the sales and assets measures and for having been a difficult interview. The odds ratio was less than one and statistically significant for being male owned and greater than one and statistically significant for having many owners for one's employment size class. Since there are interviewer dummy variables in the regressions, this is some evidence that there may be an interviewer effect.

The odds ratio for having been a hard firm to screen was never significant except when the dependent variable was having been a difficult interview to complete. This corresponds to expectation. The same was not true for the odds ratios for having been offered an incentive. Firms offered incentives were more likely to have larger sales and less likely to have larger assets, strangely enough. While firms offered incentives were less likely to have many owners and less likely to be male owned, these odds ratios were not statistically significantly different from one. However, firms offered incentives were much less likely to have been difficult interviews to complete, as anticipated.

4. CONCLUSION

The results presented here are somewhat inclusive. An analysis of only the results for minority interviews suggests some evidence of an interviewer treatment effect. Complete data on the race, ethnicity, and gender of all the interviewers and on the identity of the RCEs for the non-minority strata may inform the analysis as may use of non-response and ineligibility adjusted weights. This preliminary analysis also suggests that incentives increase cooperation as has been found in many other settings. Hopefully, the delivery of the rest of the data will clarify this puzzle.

5. ACKNOWLEDGEMENTS AND DISCLAIMER

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6: TABLES

Table 1: Descriptive Statistics

Characteristic	Non-minority Interview	Minority Interview	Ordinary Minority Interview	RCE Minority Interview
Difficult Screener	.46	.50	.51	.47
	(.01)	(.02)	(.02)	(.04)
Offered an Incentive	.31	.20	.23	.10
	(.01)	(.02)	(.02)	(.02)
Larger than Median Sales	.52	.42	.39	.54
	(.01)	(.02)	(.02)	(.04)
Larger than Median Assets	.52	.42	.40	.50
	(.02)	(.02)	(.02)	(.04)
More than Median Number of Owners	.29	.22	.20	.34
	(.01)	(.02)	(.02)	(.04)
Male Owner	.78	.75	.74	.75
	(.01)	(.02)	(.02)	(.04)
Difficult Main Interview	.44	.54	.57	.55
	(.01)	(.02)	(.02)	(.04)
Number of cases	2499	712	566	146

Note: Each row of this table contains unweighted means (standard errors) for the row variables. Each column represents a different subsample. Column 1 contains the means for non-minority strata interviews, column 2 the means for all minority strata interviews, column 3 the means for non-RCE ``ordinary'' interviewer completed interviews with minority strata firms, and column 4 the means for RCE completed interviews with minority strata firms.

Table 2: Logistic Regressions of Firm Characteristics, Minority Interviews

Characteristic	Larger than Median Sales	Larger than Median Assets	More than Median Owners	Male Owner	Difficult Main Interview
RCE Completed Interview	.37 (.17)	.38 (.15)	2.71 (.00)	.38 (.01)	.78 (.72)
Difficult Screener	.94 (.23)	1.11 (.11)	1.01 (.92)	1.06 (.83)	1.38 (.00)
Offered an Incentive	1.17 (.02)	.95 (.09)	.97 (.12)	.89 (.15)	.21 (.00)

Note: This table reports the odds ratios (p-values) of some coefficients from logistic regressions of firm characteristics on various controls. Coefficients with odds ratios significantly larger (smaller) than one indicate that a firm with that independent variable is more (less) likely to be one where the dependent variable is also one. The independent variables for which odds ratios are shown are an indicator variable for the interview having been completed by a refusal conversion expert (RCE) in their assigned minority stratum, an indicator for the screener having been hard to complete, and an indicator for whether or not the firm was offered an incentive. Each column represents one regression. The dependent variable is identified in the column heading. Aside from the variables whose odds ratios are shown, controls include dummy variables for the interviewer who completed the interview, controls for the size of the firm, dummy variables for the Census division of the firm, a dummy variable for whether or not the firm was in an MSA, dummy variables for the race of the firm's owner, and a dummy variable for the Hispanic status of the firm's owner. All regressions allowed for correlation among the residuals within major strata.