Private Enterprise Development in Low-Income Countries

Call Me Maybe: Experimental Evidence on Using Mobile Phones to Survey Microenterprises

Robert Garlick, Kate Orkin and Simon Quinn

We run the first randomised controlled trial to compare microenterprise data from surveys of different frequency – weekly or monthly – and medium – phone or in-person. We show neither the quality of survey data nor the probability of respondents remaining in the panel differ substantially by frequency or medium, though respondents are more likely to miss higher-frequency interviews.

Motivation

Surveys, including enterprise surveys, should ideally be collected at low cost and high frequency. High-frequency survey data allow researchers to study volatility and dynamics in enterprise and household outcomes (McKenzie and Woodruff, 2008), inform economic models of consumption through time such as responses to income or expenditure shocks (Banerjee et al., 2015), illustrate how treatment effects evolve through time (Jacobson et al., 1993), or average over multiple measures to improve statistical power (Frison and Pocock, 1992). High-frequency surveys also allow shorter, more accurate recall periods while obtaining comprehensive time-series coverage. Phone surveys can lower survey costs and are particularly useful for highly mobile populations and during conflict or disease outbreaks when in-person surveys are not possible (Dabalen et al., 2016).

However, high-frequency phone surveys may generate different data quality to low-frequency in-person surveys. More frequent surveys can change respondent behaviour through reminder or learning effects (e.g. Beaman et al., 2014) and can change reporting conditional on real behaviour if respondents become fatigued, anchor on past responses, or learn from the experience of calculating cognitively-demanding outcomes (e.g. Beegle et al., 2012). More frequent surveys may either frustrate respondents or improve respondent-enumerator rapport, changing attrition. Phone surveys change the nature of respondent-enumerator interaction and may lead to different reporting behaviour, though household survey and opinion polling research from developed countries finds little evidence of this (Groves et al., 2001).

Experiment and context

We study a sample of 900 microenterprise owners in the city of Soweto in South Africa, randomly drawn from a census of microenterprise-owning households. Soweto is a low-income city on the edge of 12 million-person Gauteng conurbation. Self-employment in Soweto and in South Africa is low by developing country standards at 14% of total employment. Mobile phone ownership is nearly universal for adults in urban areas.

We use a randomised controlled trial to test if surveying these microenterprise owners weekly or monthly and in person or by phone generates different data. We conduct an in-person baseline survey with all respondents, panel surveys for three months, and an in-person endline survey. During the panel survey period, we randomly assign owners to be interviewed monthly in person, weekly in person, or weekly by phone. Data collected during the panel phase tells us if survey frequency or medium affect either respondents' real behaviour or reporting conditional on real behaviour. Data collected in the common in-person endline tells us if past survey frequency or medium affect respondents' real behaviour, as neither survey frequency nor medium is likely to persistently change reporting conditional on real behaviour.

In the panel and endline interviews we collect measures of enterprise operation; stock/inventory; assets; profit; sales in the past one and four weeks; nine cost categories; number of total, full-time, and paid

employees; hours of operation; money/goods/services taken from the business for the respondent and their household members; use of written records during the interview; and enumerators' perception of respondents' care and honesty in answering the questions.

Results

- *Finding 1: Most survey measures do not differ by survey frequency or medium.*

Figure 1: Survey frequency & medium effects in endline surveys

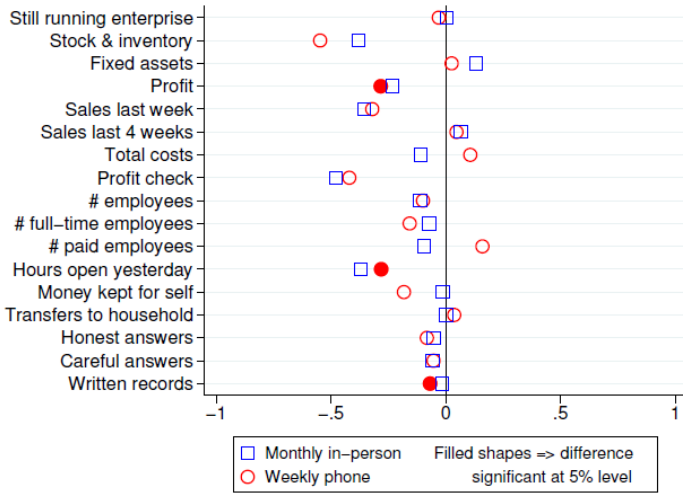
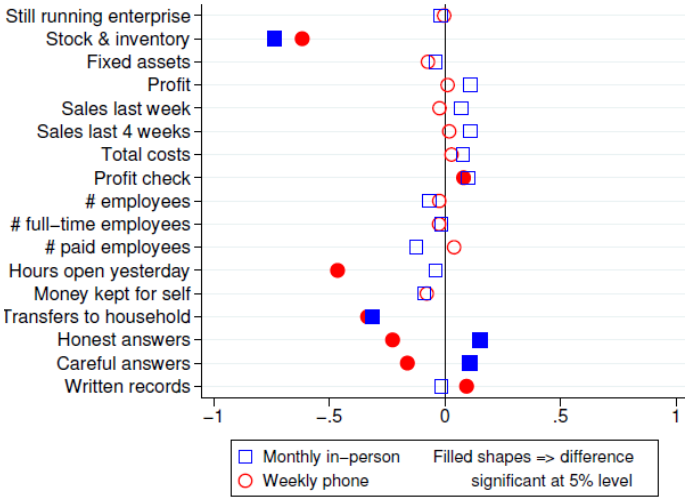


Figure 2: Survey frequency & medium effects in panel surveys



Notes: Differences are measured in standard deviations for continuous outcomes and percentage points for binary outcomes

In both the panel and endline surveys there are limited differences by medium and frequency in either mean responses or the quantiles of responses. Measures of easily stolen items (profit, sales, stock/inventory) are similar between phone and in-person groups, suggesting respondents do not systematically trust enumerators less in either medium. Measures of easily verified items (enterprise closure, fixed assets, stock/inventory, and number of employees) are similar between phone and in-person groups, suggesting respondents do not systematically use the lower verifiability of phone responses to mislead.

The largest difference is higher reported stock/inventory in the weekly in-person than in either other group. Respondents surveyed by phone report working fewer hours and making smaller transfers to their household. This suggests lower susceptibility to social desirability bias in phone interviews but, in contrast, phone respondents are more likely to report the socially desirable practice of using written records to answer questions. Enumerators report that respondents in the monthly in-person (respectively weekly phone) group give the most (respectively least) honest and careful answers, though we cannot tell if this pattern reflects enumerator biases or respondent behaviour.

These patterns are robust to accounting for missed interviews using multiple statistical methods.

- *Finding 2: The interview completion rate is lower for high-frequency surveys but the retention rate does not differ by survey frequency or medium.*

Figure 3: Interview completion rate

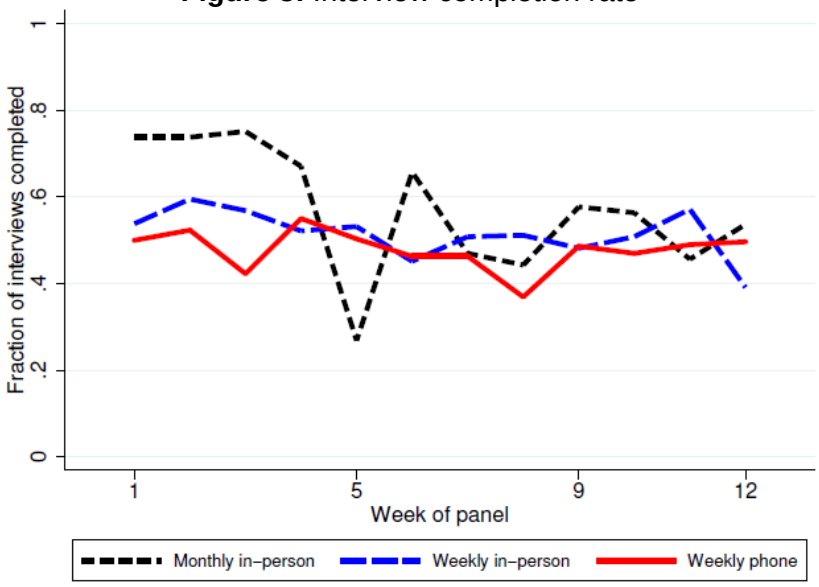
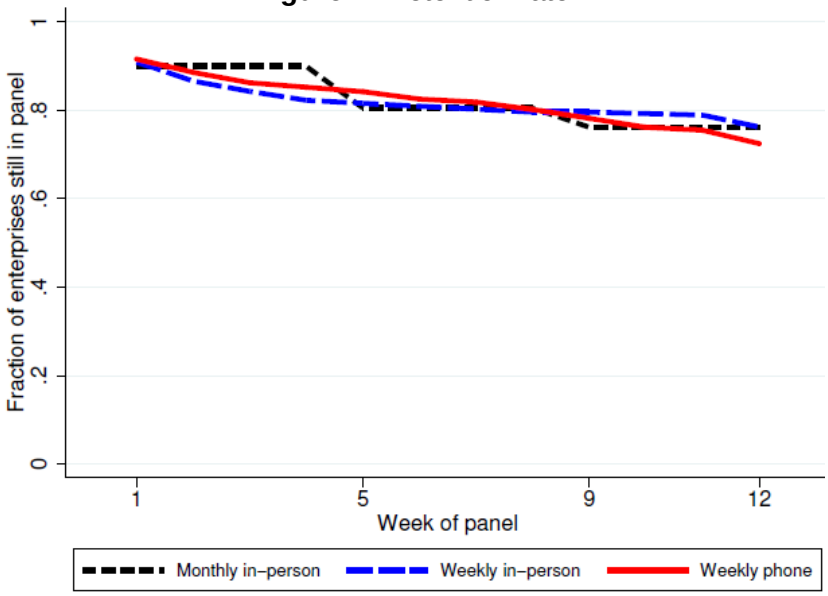


Figure 4: Retention rate

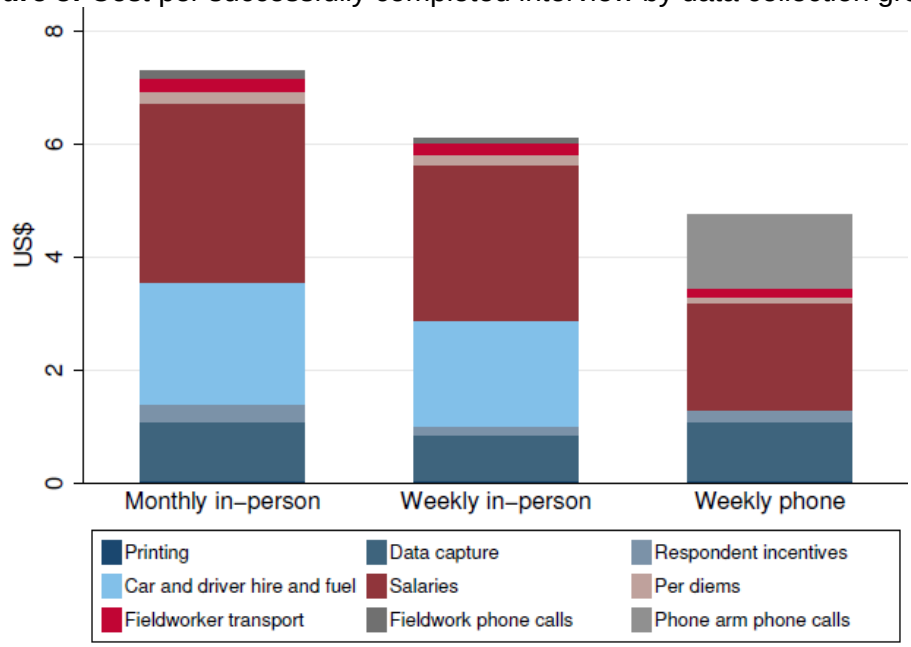


We measure both interview completion, which is a respondent-week measure equal to one if the respondent completes a scheduled interview in that week, and retention, which is a respondent-week measure equal to one if the respondent completes a scheduled interview in that week or any subsequent week (i.e. the respondent has not permanently attrited by that week). The interview completion rate during the panel phase is approximately 50% for weekly respondents and 57% for monthly in-person respondents. This difference seems to reflect the logistical difficulty of interviewing respondents in a tight weekly time window. Although weekly respondents miss more interviews, they are still more likely to be interviewed in each month than monthly respondents. By the end of the panel phase, the retention rate reaches 76% for in-person respondents and 72% for phone respondents, but this difference is not statistically significant. We conclude that survey medium has little effect on interview completion or retention but that researchers should be aware that high-frequency surveys pose logistical challenges that

lead to missed interviews.

- *Finding 3: Phone surveys are at least 20% cheaper than in-person surveys.*

Figure 5: Cost per successfully completed interview by data collection group



Our average cost per successfully completed survey in the weekly phone, weekly in-person, and monthly in-person groups are respectively USD4.76 (49 South African Rands at August 2013 exchange rates), USD6.12, and USD7.30. These comparisons exclude the cost of in-person baseline and endline surveys. We work in a dense urban area with low transport costs and in a country with relatively high telecommunication costs: 27% of the total phone interview cost is airtime. Phone interviews should deliver larger savings in rural surveys or countries with lower airtime costs.

Policy Implications and Moving Forward…

Our findings show that, in at least this context, high-frequency phone surveys deliver comparable data quality to low-frequency phone surveys at lower cost. We also show in the paper that our high-frequency surveys find substantial intertemporal variation in both stock measures (enterprise operation, assets, employment) and flow measures (sales, costs, profits) that conventional low-frequency surveys would miss. Other researchers can and have begun to use these findings to inform their design of firm surveys (Carranza et al., in preparation; Crawfurd, 2017; Franklin, 2016) and our findings have been incorporated into data collection guides (Dabalen et al., 2016). Governments and statistical agencies can use these findings to improve firm surveys and censuses, which are very rare in low-income countries but vital to inform policies on private sector development. In particular, our findings show that governments can effectively collect panel surveys of firms at low cost using mobile phones, rather than using expensive in-person panel surveys, increasing the feasibility of such surveys for governments low-income countries.