Data Limitations in the M-PESA Household Survey

Compiled from related research papers by Tavneet Suri and William Jack

Survey Sampling and Coverage

At the time we designed our sampling strategy the subsequent rapid adoption of M-PESA was unanticipated, and there were real concerns that we might not find enough users to make statistically meaningful observations.

Northern and Northeastern Regions

Both cell phone tower and M-PESA agent coverage are very limited in the remote and sparsely populated northern and eastern parts of the country, so these areas were excluded from the sample frame[1]. These only represent 8% of the population in the 1999 census, based on which we constructed our sample.

Nairobi

Since this is a longitudinal survey that tracks the same households over time, not all households were found in every round. From round 3 onwards, the Nairobi sample was dropped, as it was too difficult to track the same households in densely populated Nairobi over such a long period of time[2].

Oversampling Based on Agents' Density

In the first round of our household survey, we sampled administrative locations weighting by the number of M-PESA agents. We had to collect the data on the number of agents in each location in the country ourselves as Safaricom simply did not maintain a database with this information. This was still true at the time of our agent survey in 2010. Safaricom finally collected the GPS coordinates for only a subset of its agent network after our agent survey[3].

Challenges of Supplementing Excluded Areas

Once M-PESA took off, we attempted to supplement our sample with areas that were not sampled during the first round. However, the Kenyan government was conducting its census in 2009, which made adding a sample from the previous sampling frame impossible because the census staff were overwhelmed with the logistics and collection of the new census.

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[1] https://www.aeaweb.org/articles.php?doi=10.1257/aer.103.3.356

[2] http://fsdkenya.org/dataset/m-pesa-panel-survey-kenya-2014/

[3] ibid

Changes between Rounds

Each survey round lasted between 8 and 12 weeks in the field so only a short period of time elapsed between rounds 2 and 3[4]. We conducted round 3 to try to lower attrition.

Attrition

Tracking Households over Time

There is some attrition in the panel, though the magnitudes are not particularly large by the standards of this kind of survey work in developing countries. We also designed the interview strategy for the third round with an eye toward finding households missed in the second round. In 2009 we re-interviewed 2,017 households, and in 2010 we were able to find 1,595 of the original sample, 265 of whom were not interviewed in 2009.

Tracking Agents over Time

In addition to these rounds, M-PESA agents across the country were surveyed and their GPS locations recorded. This sample covered the entire population of agents in each of the administrative locations from which our household sample was drawn. At the national level, the agent network grew from about 4,000 agents at the time of round one of the survey to close to 15,000 by round three.

Some M-PESA agents may have shut down between 2007 and our survey, but we cannot measure that turnover. This is likely to be an issue given the growth in total agents over this period.

Household Disclosure

In the first rounds, households tended to be very unwilling to report actual amounts saved in the instruments they use due to security concerns. We got these numbers in later rounds.

External Factors

In using these survey data, it is useful to note that the annual per capita consumption expenditure was ~73,000 Kenyan shillings KSh; (~ $975) in round 1, but fell to about 64,000 KSh (~$850) in round 2. This drop is likely attributable to a devastating drought that hit Kenya in late 2008 and continued through 2009[5].

[4] http://www.mit.edu/~tavneet/Jack_Suri.pdf

[5] http://www.pnas.org/content/suppl/2012/06/11/1115843109.DCSupplemental/pnas.201115843SI.pdf#nameddest=STXT

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