Mobile Money Payment: An Effective Intervention for Bribery?

Laura Barasa

Abstract
Acts of bribery usually occur in a setting where transactions involving the exchange of money are unlikely to be recorded. Nevertheless, mobile money transactions leave behind a detailed trail of records and accounts pertaining to mobile money activities. Mobile money use may therefore act as a deterrent to acts of bribery for both firms and bureaucratic officials. This paper examines the impact of mobile money use on bribe intensity in manufacturing firms in Kenya by analysing firm-level panel data from the 2007 and 2013 World Bank Enterprise Surveys by means of a matched difference-in-differences estimator. The results reveal that mobile money use leads to a significant reduction in bribes. This finding suggests that mobile money payment is likely to be an effective anti-corruption intervention in Kenya.

Keywords: Bribes, Kenya, Manufacturing firms, Matched difference-in-differences, Mobile money

JEL codes: O12, O14, D73

1 Contact information: Lauranelima@uonbi.ac.ke; University of Nairobi, School of Economics, P.O. Box 30197, Nairobi, Kenya
1. Introduction

Petty corruption involving bribery is generally viewed as unethical practice, yet, acts of bribery remain the norm across the world and more so in sub-Saharan Africa (SSA). Bribery is a predominant form of corruption that is cited as a major constraint to firm growth in Africa (Faruq, Webb, & Yi, 2013; Kimuyu, 2007; McArthur, Teal, & others, 2002). Notwithstanding, bribery presents a viable option for reducing bureaucratic inefficiencies associated with the procurement of government services in developing countries in Africa. In fact, petty corruption has been demonstrated to significantly enhance, rather than harm firm performance in developing countries (Williams, Martinez-Perez, & Kedir, 2016). Nevertheless, petty corruption has adverse effects on national growth and development (Mauro, 1995; Mogens & Bjørnskov, 2014). Anti-corruption interventions have traditionally focused on initiatives aimed at strengthening government transparency and accountability. In view of this, anti-corruption interventions that are amenable to implementation by firms have remained sparse with perhaps the most common involving reporting of complaints to an official anti-corruption ombudsman.

The focal argument of this paper lies in the fact that corruption is more prevalent in cash-based economies. Government officials and firm managers are therefore more likely to engage in acts of bribery where transactions involve the exchange of cash because it is easier to conceal such payments. The rationale behind this is that there is a higher possibility of transactions involving the exchange of cash remaining undocumented and anonymous, whether intentionally or unintentionally. Consequently, prevention and detection of petty corruption based on accurate accounting records poses a challenge for firms. However, this will not be the case for firms using mobile money payment systems. Mobile money is a digital financial innovation that enables electronic payment transactions using mobile phones. Mobile money activities are backed by a trail of digitised transaction records including comprehensive details.
of account holders, which increases traceability, transparency, and accountability. In addition, mobile money payments are likely to reduce the frequency of meetings or potentially eliminate physical contact between government officials and managers, thereby decreasing incidental corruption involving opportunistic individuals. Thus, mobile money payments are likely to eliminate conditions under which petty corruption thrives including but not limited to anonymity, limited transparency and accountability, and the frequency of meetings with government officials. Although the use of mobile money has been reported to discourage petty corruption, there are very few empirical studies investigating this pertinent issue using impact evaluation methods in the context of manufacturing firms in SSA. Existing studies generally investigate how mobile money adoption impacts corruption in the provision of public goods (Blumenstock, Callen, Ghani, & Koepke, 2015; Krolkowski, 2014).

This paper aims to fill this gap by examining the causal impact of mobile money use on petty corruption in manufacturing firms. Specifically, the main objective of this study is to examine how mobile money use impacts bribe intensity in manufacturing firms in Kenya. This study uses the newly available World Bank Enterprise Survey (WBES) two-period panel data consisting of the first wave of data from the 2007 WBES, and the second wave of data from the 2013 WBES. In particular, this study exploits the launch of mobile money services in 2007 for Kenya as a means of identifying the impact of mobile money use on bribe intensity.² The rationale behind the choice of Kenya relates to the fact that mobile money was first launched in Kenya relative to other countries in East Africa (Mas & Morawczynski, 2009). Since baseline data is available, baseline observed characteristics from the first wave of data are used to calculate the propensity score to enable estimation using matched difference-in-differences (MDID) techniques thereby reducing the risk of selection bias. The results of this non-

²Vodafone Group launched Kenya’s M-PESA mobile money service by Safaricom Ltd. in March 2007.
experimental estimation reveal that use of mobile money payment systems has a negative impact on petty corruption.

These results contribute fresh insights to the existing body of literature on corruption by focusing on mobile money as an anti-corruption intervention at the firm-level. Economic literature has generally focused on the adverse effects of corruption on firm growth, and economic growth and development. Additionally, anti-corruption interventions typically focus on strengthening institutions at the macro-level. This study therefore departs from previous studies by investigating the use of mobile money as an intervention against petty corruption at the firm-level. This study demonstrates that mobile money use can effectively mitigate petty corruption at the firm-level. Accordingly, policy makers should place emphasis on enforcing digitisation of payments with focus on mobile money, which is widely available in SSA.

The remainder of the paper proceeds as follows. Section 2 provides the background and context of petty corruption and mobile money. Section 3 provides the empirical strategy encompassing the non-experimental approach used in the study. Section 4 describes the data and descriptive statistics. Section 5 provides the results and discussion. Section 6 concludes.

2. Background and context

Increased awareness of the deleterious effects of corruption have led to the formulation and implementation of anti-corruption interventions in Africa. Notwithstanding, conventional anti-corruption reforms and interventions have had limited success in SSA (Camargo & Faustine, 2016; Persson, Rothstein, & Teorell, 2013). Various authors suggest that anti-corruption reforms and interventions often fail to take into account the local operational context for which they are prescribed (Hope Sr, 2014; Persson et al., 2013). Furthermore, several authors contend that anti-corruption strategies often fail because corruption is a collective action problem. For instance, petty corruption involving informal payments or gifts made “to get things done” with regards to licenses, taxes, customs, regulations, securing government contracts and services
presents a sensible choice for a majority of individuals either because they expect all other individuals to engage in it or because it is simply a means to an end (Mungiu-Pippidi, 2013; Persson et al., 2013).

Petty corruption interventions are classified into three categories including top-down interventions, social accountability interventions, and behavioural interventions (Stahl, Kassa, & Baez-Camargo, 2017). Top-down interventions essentially enhance the mechanism by which management holds government officials accountable. These type of interventions aim to combat incidental corruption by reducing the opportunity space in which petty corruption thrives. These interventions also address incentives of government officials through changes in contractual stipulations, and by enhancing internal workplace controls. Social accountability interventions on the other hand relate to direct citizen engagement involving awareness campaigns and capacity building activities pertaining to rights and entitlements of citizens. These activities strengthen citizenry efforts in denouncing corruption and holding the state and government officials accountable. The principal-agent problem arising from divergent interests and asymmetric information underlies both the top-down, and social accountability interventions. As a result, these two interventions are non-behavioural since they are based on the assumption of individuals being rational decision makers aiming to maximise their self-interests, thus responding rationally to changes in incentive structures. Contrastingly, behavioural interventions are usually determined by non-rational and quasi rational factors encompassing mental shortcuts, environmental, and social and cultural norms that individuals rely on for decision making. Behavioural interventions including education and media campaigns therefore target changes in the wider environment by influencing mental modes, social and cultural norms, and the ways in which information is communicated to elicit decision maker’s response to cues (Stahl et al., 2017).
Extant literature shows that individuals engaging in corruption systematically underestimate the likelihood of being caught. This is particularly reinforced in an environment characterised by the culture of corruption impunity (Basu, Basu, & Cordella, 2016; Navot & Cohen, 2015). This phenomenon suggests that information plays a vital role in deterring corruption. Accordingly, information which increases the likelihood of detection and punishment is critical for the success of anti-corruption interventions. Moreover, credible information relating to stronger monitoring mechanisms is associated with this success. Such information has been found to be crucial in altering perceptions of individuals even where oversight mechanisms have showed no improvement (Navot & Cohen, 2015; Stahl et al., 2017). Essentially, credible transactional information increases transparency and accountability which is likely to deter opportunistic petty corruption.

Empirical evidence reveals that mobile money payment systems inhibit corrupt practices. Evidence from a randomised control trial of the adoption of mobile money for payment of salaries for police officers in Afghanistan demonstrates that mobile money is instrumental in uncovering corrupt practices. The findings from this experiment indicate that transitioning from cash-based to mobile money based payment of salaries resulted in the police officers receiving what they assumed was a salary increment, only to find out that what they had been paid was the their full salary entitlement. This arose from the fact that the cash-based system was riddled with corruption that saw high ranking police officers take pay outs from junior police officers’ salaries without their knowledge (Blumenstock et al., 2015). Notwithstanding, the authors argue that in the short run, mobile money payment systems accrue significantly larger benefits to the those making payments relative to those receiving the payments. Similarly, Krolikowski (2014) using qualitative techniques examined whether mobile money payment systems curb petty corruption in urban water systems in Dar es Salaam, Tanzania. The author concluded that mobile money payment methods reduce information asymmetries
and mitigate petty corruption by increasing transparency and accountability, and eliminating the corruption opportunity space.

Theoretically, mobile money payment systems are expected to have a negative effect on petty corruption. Nevertheless, related empirical evidence is scant since this is a relatively new area of research with much of the existing literature focusing on mobile money and financial inclusion (Aker & Mbiti, 2010; Donovan, 2012; Etim, 2014; Johnson, 2016; Mas & Morawczynski, 2009; Maurer, 2012). The main argument of this paper is that firms may adopt mobile money payment systems because they place a high premium on transparency and traceability of payment processes. In addition, mobile money use is likely to lower transaction costs associated with doing business. Distinctive features of mobile money payment systems that increase transparency, traceability, and accountability include digital real time records and stringent identification documentation that is required when carrying out mobile money transactions. Considering that the maturity of the mobile money ecosystem determines the success of mobile money payment systems, this paper contends that Kenya was among the first countries in the world to launch mobile money making the use of mobile money payments more advanced relative to the rest of the world. This indicates the possibility that firms adopting mobile money payment systems at later stages are more likely to benefit from the transparency and traceability features that are instrumental in curbing petting corruption. Consequently, mobile money payment systems are likely to be an effective anti-corruption intervention for firms. Nevertheless, little is known about how mobile money payment systems impact petty corruption. The purpose of this study is therefore to examine the impact of mobile money payments on bribe intensity in firms in Kenya.

The foregoing discussion is instrumental for developing a hypothetical theory of change (ToC) outlining how mobile money use impacts petty corruption. This is critical in providing a basis for determining the anticipated outcome relating to a decrease in bribe intensity. The
ToC describes how the use of mobile money payment systems deters petty corruption in an attempt to clarify the causal logic underlying the rationale of this study. With the aid of a results chain shown in Figure 1, this study sets out a ToC outlining the sequence of implementation involving the use of mobile money payment systems and outcomes relating to the reduction of petty corruption (Blumenstock et al., 2015; Krolikowski, 2014).

3. Empirical strategy

3.1 Matched difference-in-differences approach

Having the advantage of rich baseline data on comparison and treatment firms, this study combines difference-in-differences (DD) with propensity score matching (Dehejia & Wahba, 2002; Rosenbaum & Rubin, 1983). The DD method accounts for time-invariant unobserved characteristics that may be correlated with taking bribes. Notwithstanding, the DD method does not eliminate time-variant differences. Hence, this study assesses the validity of the parallel trends assumption to examine whether bribe intensity moved in tandem before the introduction of mobile money payment services. This study conducts two falsification tests entailing using a placebo treatment, and a placebo outcome that is theoretically unaffected by mobile money use including power outages. These placebo tests are suited to testing the parallel trends assumption since the data is structured as a two-period panel hence the lack of other pre-intervention observations for assessing the trends before the inception of mobile money payment services (see Card & Krueger, 1994).

The availability of rich baseline data makes it possible to carry out matching on the pre-treatment background characteristics to obtain a valid comparison group, which when used in combination with DD allows for the correction of differences that are fixed over time between the comparison and treatment group, and reduces the risk of bias in the estimation. Combining the two methods is useful in offsetting the limitations found in each method, resulting in increased robustness of estimated counterfactuals (Blundell & Dias, 2009; Gertler, Martinez,
Premand, Rawlings, & Vermeersch, 2016; Heckman, Ichimura, & Todd, 1997). Additionally, the launch of mobile money in Kenya was not in any way related to the outcome variable of interest encompassing petty corruption, consequently, this study does not suffer from simultaneous causality.

3.2 Econometric specification

The estimation procedure for analysis involves using the propensity score for matching treated firms and comparison firms in the base year, following which the treatment impact is calculated across treated and matched comparison firms within common support. Khandker, Koolwal, & Samad (2009) contend that researchers can only ensure internal validity as opposed to external validity, thus, only the average treatment-on-the-treated (ATT) effect can be estimated reliably. In addition, validity of the ATT estimates is based on weaker assumptions of conditional independence assumption and common support. Following Khandker, Koolwal, & Samad (2009) and Villa (2013), this study considers a panel data structure of two-time periods such that \( t = \{1, 2\} \). Consequently, the DD estimator for mean difference in outcomes \( Y_{it} \) across participants \( i \) and nonparticipants \( j \) within the common support is calculated as:

\[
ATT_{PSM}^{DD} = \frac{1}{N_T} \left[ \sum_{i \in T} (Y^T_{i2} - Y^T_{i1}) - \sum_{j \in C} \omega(i, j)_{KM} (Y^C_{j2} - Y^C_{j1}) \right]
\]

(1)

where \( \omega(i, j)_{KM} \) represents the kernel matching weights that are given to the \( j \)th comparison nonparticipants matched to treatment participant \( i \). The weights are calculated as follows:

\[
\omega(i, j)_{KM} = \frac{K\left[\frac{P_j - P_i}{a_n}\right]}{\sum_{k \in C} K\left[\frac{P_k - P_i}{a_n}\right]}
\]

(2)

where \( K(.) \) is a kernel function, and if \( P_i \) is the propensity score for participant firm \( i \), \( P_j \) is the propensity score for nonparticipant firm \( j \), and \( a_n \) is a bandwidth parameter. A bandwidth
of 0.01 is used for kernel matching instead of the default bandwidth of 0.06. The narrow bandwidth is appropriate due to the small number of cases in the study (Li, 2013).

4. Data and descriptive statistics

4.1 Data

The analysis of this study is based on panel data from the WBES conducted in Kenya. The first wave of data is from the 2007 WBES, and the second wave is from the 2013 WBES. The surveyed firms are a representative sample of the respective country’s private sector. The WBES applies the stratified random sampling technique. The surveys are stratified by sector, firm size, and geographical location. The survey instruments collect data on firm characteristics, mobile money use, business-government relations, performance measures, and the business environment. The primary survey respondents include business owners and top managers (www.enterprisesurveys.org).

The evaluation sample used for the analysis includes 151 firms interviewed in both time periods. Accordingly, the data is set up as a two-period panel. The first wave of data covers the period 2005-2006. The second wave of data covers the period 2010-2012. The first wave of data was collected before the launch of mobile money services in Kenya. The second wave of data was collected after the launch. This study therefore exploits the launch of mobile money services in 2007 as a means of identifying the impact of mobile money use on petty corruption.

4.2 Variables of interest

The treatment variable is the use of mobile money payment services. The WBES asks respondents whether the “establishment uses mobile money for any of its financial transactions”. Thus, the treatment variable is measured a dummy variable taking a value of “1” if for firms using mobile money for financial transactions and “0” if otherwise. The outcome variable of interest is petty corruption including bribe intensity measured as the percentage of total annual sales paid in informal payments. The WBES introduces the subject of petty corruption by suggesting that firms are at times required to make gifts or informal payments to
government officials to “get things done” with regard to taxes, customs, business permits and licenses, regulations, services, and securing government contracts etc. and asks the respondents to report on average the percentage of total annual sales that “establishments like this one” pay in informal payments or gifts to public officials for this purpose. Table 1 shows the definition and measurement of the outcome variable, treatment variable, and pre-treatment covariates consisting of firm characteristics used for estimating the propensity score for matching.

### TABLE 1 NEAR HERE

#### 4.3 Balance on baseline characteristics

Pre-treatment covariates influencing the treatment status and the outcome variable (Smith & Todd, 2005) encompass firm characteristics comprising age, size, foreign ownership, exporter, managerial experience, access to credit, external financing, and sector dummies (Birhanu, Gambardella, & Valentini, 2016; Pelizzo, Araral, Pak, & Xun, 2016). These covariates are included in the participation equation for estimating the propensity scores. Ignoring the separate effect of the initial conditions during the baseline survey can bias the DD estimates. This paper therefore takes into cognisance that initial conditions may have a separate influence on the subsequent change in the assignment to treatment or outcome (Khandker et al., 2009). Heckman, Ichimura, and Todd (1997) contend that the precision of propensity scores is usually improved when the same survey instrument or source of data is used because this ensures that observed characteristics are measured in the same manner and reflect the same concepts. Other factors that increase the likelihood of producing valid results include using a representative sample of participants and nonparticipants that face the same economic incentives, for example access to similar markets, which drive the choice of using mobile money payment services. This study accounts for this factor by selecting participants and nonparticipants in the same country. The baseline data is also used for confirming that the balancing property is satisfied such that firms with the same propensity scores have the same distributions of all covariates. Table 2 shows that the balancing condition is satisfied as there
are no statistically significant differences in the baseline characteristics of firms in the treatment group and comparison group. This suggests that baseline firm characteristics between treatment and comparison groups are similar, which establishes the validity of the comparison group. Hence, both sets of firms begin with very similar average baseline characteristics before exposure to mobile money payment services.

**TABLE 2 NEAR HERE**

4.4 Balance on parallel trends

This study test the validity the comparison firms by examining placebo effects arising from two falsification tests involving estimating the impact of using mobile money using a placebo treatment, and on power outages. The placebo treatment group comprises manufacturing firms from Rwanda, a member state of East Africa that launched mobile money services in 2010 with most of its applications in business transactions being in the early stages in comparison to Kenya. Additionally, while power outages are a common phenomenon in Kenya, there is no theoretical link between their occurrence and mobile money use. Power outages are measured as “the number of power outages experienced in a typical month in the last fiscal year”. A nonzero impact implies that reported impacts cannot be attributed to causal effects of mobile money use (see Gertler et al., 2016). The difference-in-differences results from the falsification tests are reported in Table 3 and Table 4 from which a zero impact is observed across both tests. The falsification tests therefore suggest that the control and treatment firms can be assumed to have parallel trends in the absence of mobile money. These results also serve as robustness checks for the reported causal impact of mobile money use.

**TABLE 3 & 4 NEAR HERE**

5. Results and discussion

The results of the MDID estimates of the impact of mobile money use on bribe intensity are presented in Table 5. The treatment has a negative and significant effect. Hence, the use of
Mobile money for financial transactions has a negative impact on bribe intensity. This finding suggests that mobile money based systems are effective in reducing informal payments relating to petty corruption. Hence, the findings of this study offer support to the hypothesized ToC attempting to show how mobile money use deters petty corruption. There are several reasons why mobile money use may reduce bribe intensity at the firm-level. First, the real time digital transaction records that arise from mobile money use result in increased accountability and transparency. Second, mobile money use is based on stringent identification documentation and procedures that rule out the possibility of anonymity. Third, identification information increases traceability of transactions. Mobile money payment systems may therefore deter petty corruption by reducing the opportunity space for corruption (Blumenstock et al., 2015; Krolikowski, 2014).

Moreover, individuals who engage in corruption typically underestimate the likelihood of getting caught particularly in an environment characterised by impunity (Basu et al., 2016; Navot & Cohen, 2015). This phenomenon implies that lack of information pertaining to financial transactions underlies petty corruption. Mobile money payment systems are therefore likely to be an effective anti-corruption intervention in such a context because they are designed in a manner that reduces information asymmetries (Navot & Cohen, 2015; Stahl et al., 2017). Essentially, digital transaction records arising from mobile money use are tools that enhance monitoring mechanisms which are critical in detection and punishment of corrupt individuals.

6. Conclusions
The key objective in this study was to examine the impact of mobile money use on petty corruption involving bribery in Kenya. In meeting this objective, this study exploited the launch of mobile money services in Kenya as a means of identifying the impact of mobile money use on bribe intensity by means of nonexperimental methods. The analysis of a two-period panel
of 151 firms demonstrated that the use of mobile money for financial transactions reduced bribe intensity in firms. Mobile money use is linked to increased accountability, transparency, and traceability of transactions. Furthermore, stringent identification documentation eliminates anonymity. Hence, mobile money use limits the opportunity space under which petty corruption thrives. Furthermore, availability of digital financial records fosters stronger monitoring mechanisms which are necessary for detection and punishment of corrupt individuals. The findings of this study suggest that firms may have bigger gains from adopting mobile money including being less vulnerable to petty corruption, and circumventing bribery incidents.

Considering the widespread nature of petty corruption in SSA, a commonplace solution such as the adoption of mobile money for financial transaction by firms is likely to prove an effective anti-corruption intervention in the context of Africa. The dominance of mobile money in Africa makes it an ideal anti-corruption intervention since the information and communications technology infrastructure relating to mobile network operators is already in place. Furthermore, mobile money adoption in Africa has generally outpaced that of the rest of the world. Taking into account that rigorous empirical evaluation of anti-corruption interventions has been lacking, the findings of this study contribute towards policy debate surrounding practical and effective anti-corruption measures in Africa. Some of the issues not addressed in this paper that form interesting areas of future research include establishing the external validity of the results for other regions in Africa.

References


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https://doi.org/10.1162/itgg.2009.4.2.77

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### Table 1. Definition and measurement of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome variable</strong></td>
<td></td>
</tr>
<tr>
<td>Bribe intensity</td>
<td>Percent of total annual sales paid in informal payments.</td>
</tr>
<tr>
<td><strong>Treatment variable</strong></td>
<td></td>
</tr>
<tr>
<td>Mobile money</td>
<td>Dummy variable. 1 if mobile money is used for financial transactions.</td>
</tr>
<tr>
<td><strong>Firm characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Age (log)</td>
<td>Number of years since firm began operations.</td>
</tr>
<tr>
<td>Size</td>
<td>Dummy variable. 1 = medium or large i.e. has &gt;=20 employees, 0 = otherwise</td>
</tr>
<tr>
<td>Foreign ownership</td>
<td>Dummy variable. 1 = ownership by foreign organization is &gt;= 10%, 0 = otherwise</td>
</tr>
<tr>
<td>Exporter</td>
<td>Dummy variable. 1 = firm is a direct exporter, 0 = otherwise</td>
</tr>
<tr>
<td>Managerial experience</td>
<td>Dummy variable. 1 = managerial experience is &gt;= 10 years, 0 = otherwise</td>
</tr>
<tr>
<td>Access to credit</td>
<td>Dummy variable. 1 = line of credit or loan from a financial institution, 0 = otherwise</td>
</tr>
<tr>
<td>External financing</td>
<td>Dummy variable. 1 = working capital financed from external sources &gt;= 50%, 0 = otherwise</td>
</tr>
<tr>
<td>Sector dummies</td>
<td>Dummy variable. 1 = manufacturing; 2=retail; 3=services, 0 = otherwise</td>
</tr>
<tr>
<td>Weighted Variable(s)</td>
<td>Mean control (n=80)</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Bribe intensity</td>
<td>1.699</td>
</tr>
<tr>
<td>Age (log)</td>
<td>2.765</td>
</tr>
<tr>
<td>Size</td>
<td>0.629</td>
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<tr>
<td>Foreign ownership</td>
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<tr>
<td>Exporter</td>
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<td>Managerial experience</td>
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<td>Access to credit</td>
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<td>External financing</td>
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<td>Retail sector</td>
<td>0.145</td>
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<tr>
<td>Service sector</td>
<td>0.264</td>
</tr>
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</table>

Means and t-test are estimated by linear regression

* p<0.10, ** p<0.05, *** p<0.01
Table 3. Impact of mobile money on placebo outcome

<table>
<thead>
<tr>
<th>Variables</th>
<th>Diff-in-Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>0.924</td>
</tr>
<tr>
<td>Baseline controls</td>
<td>No</td>
</tr>
</tbody>
</table>

N 151

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.010
Table 4. Impact of mobile money on bribe intensity on placebo treatment group

<table>
<thead>
<tr>
<th>Variables</th>
<th>Diff-in-Diff</th>
<th>Standard errors in parentheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>-2.143</td>
<td>(1.618)</td>
</tr>
<tr>
<td>Baseline controls</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>151</td>
<td></td>
</tr>
</tbody>
</table>

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.010
Table 5. Impact of mobile money use on bribe intensity in Kenya

<table>
<thead>
<tr>
<th>Variables</th>
<th>OLS</th>
<th>Diff-in-Diff</th>
<th>MDID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>-0.0978</td>
<td>-1.814*</td>
<td>-2.786**</td>
</tr>
<tr>
<td>Baseline controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>151</td>
<td>151</td>
<td>151</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.010