Cash Transfers to Female-Run Microenterprises During COVID-19: Experimental Evidence from Dandora, Kenya*

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Abstract

We deliver one month's average profit to a randomly selected group of female microenterprise owners in the Kenyan slum of Dandora, just preceding with the exponential growth of COVID-19 cases. Firm profit, inventory spending, and food expenditures all increase. The transfers simultaneously cause a re-opening of previously closed businesses as they seek to rebuild a buffer stock of assets. PPE spending and precautionary management practices increase to mitigate this effect, but only among those who properly estimate the COVID-19 health risk. The results suggest a tension between public health and economic stabilization when subsistence requirements are likely to bind.

JEL Classification Codes: O1, O4
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1 Introduction

As COVID-19 spread around the world, almost all countries instituted measures to stop the spread of the virus, slow the strain on health systems, and replace lost income from shutdown orders. One specific group at risk is small businesses, with closure orders lowering demand and disrupting supply chains. In the United States, for example, such issues manifested in the Paycheck Protection Program (PPP), which allowed small businesses to access partially-forgivable government loans.

Despite the benefits of such a program (e.g. Alekseev et al., 2020; Humphries et al., forthcoming), there is growing recognition that such complicated schemes will not cover large portions of the vulnerable in developing countries. For example, the PPP requires detailed monitoring of employment, a task complicated by the high level of informality common in developing countries. In Kenya, where our study takes place, the government has instituted a number of economic relief packages primarily targeted toward the formal economy, such as tax cuts. Yet only 17 percent of our sample of female microenterprise owners in the slum of Dandora report any government relief by May 2020, a point that has been similarly picked up on in the Kenyan press (Mpungu, 2020).

Instead, policy recommendations have pointed to short-term unconditional cash transfers (e.g. Gelb and Mukherjee, 2020). While intuitively appealing, empirical evidence is nearly non-existent.[1] In this paper, we implement a randomized controlled trial to study the benefits of a one-time unconditional cash transfer (UCT) to a particularly vulnerable set of individuals – female microenterprise owners in Kenyan slum of Dandora, on the outskirts of Nairobi. We randomly divide these business owners into a treatment group that receives

[1] The closest available evidence to our knowledge includes Banerjee et al. (2020b), who study how those enrolled in an existing universal basic income RCT in rural Kenya experience the COVID-19 crisis differently from those who were not enrolled. While an important study to understand how UBI buffers against shocks, the interpretation of such ongoing transfers is quite a bit different than the one-time infusions being suggested as short-run stabilization policy. In a different vein, Bottan et al. (2020) study how the older individuals (around age 60) in Bolivia respond to additional cash delivered through the pension system.

5000 KES (≈ 50 USD, equal to approximately 1 month of average profit in January 2020 among our sample) and a control group that receives 50 KES (≈ 0.5 USD). The ubiquity of mobile money – already a key aspect of informal social insurance networks (Jack and Suri, 2014) – allowed us to quickly deliver the treatment without any in-person meetings and before the rise of infections. While there were 700 cumulative cases in Kenya when we delivered the transfers on May 12, there were 1286 two weeks later (World Health Organization, 2020). In addition to our baseline in January 2020 from which we drew our sample, we also gathered data continuously from April through August as the COVID-19 pandemic expanded and government policy responded in-kind.

As mentioned above, the policy we study has much support in both policy circles and the popular press, for at least three reasons. First, the COVID-19 crisis is likely to affect the poor more severely. In our sample, women earned around 2 USD per day during January 2020, which dropped to 1 USD per day as the Kenyan government implemented curfews and restricted movement into and out of Nairobi. Second, the nature of business in Dandora and many similar slums – producing "non-essential" goods and services and relying on face-to-face interactions – leaves microenterprise owners highly exposed to particular features of the COVID-19 shock (Alfaro et al., 2020). Finally, while female micro-entrpenreuers are subject to a number of gender-specific constraints during normal times,[2] both cross-country and Kenyan evidence point to the particular burden borne by women during the COVID-19 crisis (Alon et al., 2020a; Population Council, 2020). By any metric, this population is likely at substantial risk from the economic downturn.

Thus, getting resources into the hands of such a group is an important policy goal. While unconditional cash transfers are one way to do so, the lack of evidence leaves unanswered a number of important questions about its impact. For example, while it is well understood that the poor are unlikely to simply

[2] Brooks et al. (2018) show that Dandoran businesses run by women are substantially less profitable than those run by men, and Jayachandran (2020) provides a recent review on gender-specific microenterprise constraints.

abandon work to stay home, some suggest that transfers may in fact generate this type of substitution (e.g. Glassman et al., 2020). But such arguments leave implicit a number of relevant factors that will influence this choice – the ease of restarting one's business, expectations about future cash flow and COVID-19, and how close individuals are to subsistence, among others. If businesses do stay open, does the UCT induce increased public health-conscious management practices, thus potentially mitigating the public health concern? These types of questions are critical to understanding a full picture of the policy tradeoffs in such a program, and are not obvious, especially in a period of extremely low demand. We use our RCT to shed light on these questions.

Our results show the economic promise of such a policy, but also suggest some caution is warranted as businesses respond by operating more intensively. In terms of the economic benefits, we find that business profits increase by 38 percent relative to the control. Put differently, the treatment effect recoups about one-third of the decline in profit we observe between January and May. Moreover, the cash transfer accomplishes its goal of smoothing consumption, with food expenditures rise by 7 percent, while some of the gains are re-invested in the business. Correspondingly, we see a large rise in inventory spending among treated firms.

At the same time, however, we find little evidence that the treatment generates a "shut down as a luxury" effect that has been raised in both policy (e.g. Glassman et al., 2020) and the popular press (e.g. Sobecki, 2020). Our results instead suggest the opposite. On average, treatment firms are more likely to be open and work longer hours conditional on remaining open. These average effects are entirely driven by firms that had closed due to COVID-19 and subsequently re-opened in response to the treatment. A firm closed at baseline in May 2020 was 65 percentage points more likely to be open if treated, compared to control firm that was similarly closed at baseline.[3] We use

[3]Since our sample is drawn from a set of firms in existence in January 2020, this is equivalent to saying that a firm closed between January and May. Moreover, almost all businesses claimed that their business shutdown was temporary and not permanent. Thus, the result is not mechanically driven by being closed

the initial COVID-19 shock to understand the mechanism behind this result. Specifically, we observe each business twice before treatment, in January 2020 and then again in early May 2020. We see average profit decline by over 50 percent during this period, as the Kenyan government implements a series of measures to slow the COVID-19 spread. However, despite the natural collapse of inventory spending and profit for businesses that close between January and May, food spending remains remarkably stable between the two groups. Thus, the results suggest that those hit hardest by the initial shock cannibalize their own business to maintain a subsistence level of consumption, then use the treatment to rebuild their buffer stock.[4] The use of business to intertemporally substitute resources has been studied in other contexts in which credit markets fail (e.g. Fink et al., forthcoming), but takes on an added importance when such economic responses have direct implications for public health externalities.

To better understand the economics – public health tradeoff, we ask whether the treatment induces other changes that potentially mitigate the public health costs. We find that treated firms increase their spending on personal protective equipment (PPE) by 15 percent relative to the control. Moreover, they implement management practices associated with increased health safety, such as using sanitizers or gloves, only accepting mobile money, enforcing social distancing in their stores, wearing a mask, and starting a delivery service. To summarize these measures, we create a health-safety management practices index and find that the treatment induces a 0.15 standard deviation increase relative to control. Thus, while the cash transfer does induce greater business interaction, it is at least partially mitigated by better practices among these firms.[5]

in May.

[4]Family-level food expenditures are approximately Ksh 2000 in May 2020, while urban food poverty line is Ksh 2,551 per adult equivalent (or Ksh 1,954 in rural areas). Thus, these households are well below the poverty line and food expenditures are likely to exhibit low income elasticity around such a subsistence level.

[5]We do not attempt to quantify the net effect of these forces within the context of our RCT, as our inability to work on the ground in Dandora eliminated our ability to collect the relevant health and interaction metrics. These moments would be required to credibly estimate the properly-modified SIR model that would be required to study the overall welfare change induced by this tradeoff. See, for instance, Alon et

We further find that baseline beliefs on the health risk posed by COVID-19 play a critical role in generating these mitigation responses. Among those who underestimate the health risk of COVID-19 as no greater than the common flu, we find no change in PPE spending or our health-safety index in response to the treatment. Instead, the average effect is entirely driven by those who properly or over-estimate the health risk posed by COVID-19. This suggests a potential important complementarity between cash transfers and information campaigns such as Banerjee et al. (2020a) to minimize health risk without stifling the social insurance benefits of cash transfers.

1.1 Related Literature

We view our RCT as informing policy in response to COVID-19 and social insurance in developing countries more broadly (see Hanna and Olken, 2018 for a review). The explosion of COVID-19 research has focused on a number of different aspects – targeted shutdowns (Alon et al., 2020b), machine learning to target aid (Blumenstock, 2020). Our goal here is to utilize the fact that at least in urban areas, extreme poverty tends to be geographically concentrated. When combined with existing telecommunications infrastructure, our results speak to a policy that could be feasibly implemented by governments within a short time window. More closely related is work looking at the impact of an ongoing universal basic income scheme on the COVID-19 shock (Banerjee et al., 2020b). While complementary to our work, and an important piece of evidence on how UBI allows households to buffer shocks, our goal here is to study a relatively simple, cheap, and short-term policy that policymakers can deploy in response to a well-defined shock.

There is also a broader literature on the using microenterprise cash transfers as a development tool, including de Mel et al. (2008) and Blattman et al. (2014). At a conceptual level, the difference between this literature and

al. (2020b) on the quantitative trade-off between lockdowns and viral spread in developing countries.

our paper is the difference between targeting growth versus stabilization. This existing literature works under the assumption of poverty traps or other capital constraints, with the implication that a one-time influx of cash can shock micro-entrepreneurs out of chronic poverty. Here, the goal of the UCT is to provide social insurance – smoothing consumption until normal economic activity can resume, which existing quantitative work suggests may happen quickly among the informally employed (Alfaro et al., 2020). Thus, the type of targeting to high productivity and growth businesses highlighted in this literature (e.g. McKenzie, 2017) is unlikely to play an important role here.[6] Moreover, we show throughout that the particulars of the COVID-19 crisis impact the interpretation of the results.

2 Economic Impact of COVID-19 in Dandora

Dandora is a dense, urban slum to the northeast of Nairobi, with around 150,000 residents. It is the site of a sprawling 30 acre trash dump that services all of Nairobi despite being declared full in 2001, and plays a major role in poor health and respiratory issues among its residents (Kimani, 2007). This, along with the density of Dandora and surrounding slums, lead to substantial anxiety that COVID-19 would spread quickly among its residents. In response to the first confirmed case in Kenya on March 13, 2020, the government instituted a series of measures designed to limit personal interactions.[7] As in many countries, density played an important role in spread – as of July 27, 59 percent of all cases were in Nairobi county (Kenya Ministry of Health, 2020).

Our sample focuses on microenterprises operated by women in Dandora. In addition to making up the majority of small businesses in Dandora, qualitative survey evidence shows women baring the brunt of the economic impact

[6] Of course, to the extent that short-run shocks have long-run consequences, the two notions need not be separate. This would imply our results are a lower bound on the impact of short-term cash transfers.

[7] On March 15, a curfew and travel ban were simultaneously announced. March 22nd closed all bars and restaurants, net of takeaway. On April 6, movement into and out of Nairobi was suspended for 21 days.

in Dandora and other slums surrounding Nairobi (Population Council, 2020). Combined with the fact that these female-run microenterprises are substantially less profitable than those run by men (Brooks et al., 2018), this suggests a particular vulnerability to such an economic downturn among Dandoran women.

2.1 Economic Contraction

The COVID-19 shock and associated government response had implications across Kenya, including Dandora. Figure 1 plots average profit among an unbalanced panel of the untreated firms our sample (Section 3 discusses data collection in more detail). For comparison, the dashed line shows the time series of profit among a similar set of Dandoran female-operated firms collected from 2014-2016 (Brooks et al., 2018). Figure 1 shows that average profit declines by 47 percent between January and late April 2020. This is 57 percent lower than what we observed four years earlier in April 2016, despite the fact that profit in late 2014 and 2019 seem quite similar. Thus, these Dandoran microenterprise owners are not immune to the substantial downturn induced by the combination of COVID-19 uncertainty and government-imposed restrictions on movement and trade.

The results are consistent with the expectations and qualitative responses observed at baseline. Eighteen percent of our sample had closed their businesses between January and May 2020 at least temporarily, while 47 percent expected the COVID-19 crisis to shut down their business at some point at least temporarily. Relatedly, of those that were open in May 2020, 27 percent expected their profit one month in the future to be zero.

2.2 Policy Response and (Lack of) Reach into Dandora

Understanding the cost induced by both COVID-19 and imposed public health restrictions, the government simultaneously implemented a number of policies

Figure 1: A comparison of female-run microenterprise profit over time in Dandora

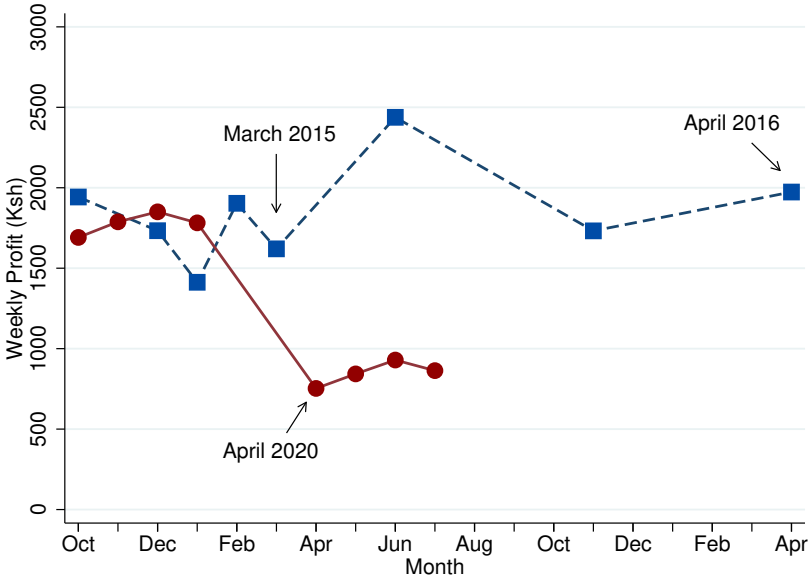


Figure notes: This figure traces out average control group profit by month in our study, and compares it to time series of profit from a similar sample of female-run microenterprises in Dandora collected in 2014-2016 (from Brooks et al., 2018). Surveys began April 23, 2020, so the April 2020 data point should be interpreted as the last week of April 2020.

designed to partially stabilize incomes and reduce the impact of the expected health crisis.[8] This included tax relief to the poorest earners and a reduction of income tax in mid-March. As of April 1, the government suspended of listing of negative credit information with the Credit Reference Bureau (CRB) of any person or micro or small business with an overdue loan, along with a decrease in the VAT rate from 16 to 14 percent.

An important similarity across many of these policy changes is their near universal catering to the formal economy, as should be perhaps expected from any government. Indeed, in our baseline survey, only 17 percent of business owners had received any government relief by May 2020. More than half of that 17 percent mentioned the tax cut. Few mention any benefits in terms

[8]We say "expected" here because these policies were implemented before the majority of cases were realized. At the time of the movement restrictions into and out of Nairobi on April 6, there were 142 cumulative cases and 4 cumulative deaths.

of loan deferrals or any other programs, as the formal loan market is utilized by few businesses in our sample. Similarly, there is little NGO reach into Dandora. Ninety-five percent of our sample received no help from any NGO (no one mentions cash transfers, in particular). These numbers remain roughly constant among the control group throughout the study period ending August 2020.

Thus, our study takes among a population that is among the most vulnerable to such an economic downturn and, as Figure 1 shows, faces a substantial contraction in profit. Yet, at the same time, there is little relief from either the government or NGOs.

2.3 COVID-19 Beliefs and Preventative Measures

A second question is whether residents perceive COVID-19 as a substantial health risk. We asked these questions in our baseline survey in May 2020. We begin with a measure of the perceived overall health risk of COVID-19, in which we asked respondents to roughly bracket the mortality risk in terms of other illnesses. Those results are in Figure 2. Nearly 55 of our sample believe the mortality risk of COVID-19 to be similar to that of ebola. Thus, at least at a conceptual level, many respondents seem to recognize that COVID-19 is a substantial health risk.[9]

These beliefs are similarly reflected in business practices. Figure 3 plots the share of businesses that have instituted a number of different COVID-related business practices as of May 2020. Now-standard preventative measures are indeed high – 86 percent are wearing masks while at work, while 77 are regularly using hand sanitizer or washing hands during work and 76 percent mandate social distance among customers. This is consistent with other survey evidence that both the basic knowledge and practice of COVID-19 preventative

[9]While the true mortality risk of COVID-19 is naturally uncertain right now, even the most extreme bounds imply it is more deadly than the seasonal flu and less deadly than typhoid. However, it is not clear that overestimated beliefs would necessarily warrant correction given the associated externalities.

Figure 2: Beliefs about COVID-19 Deadliness

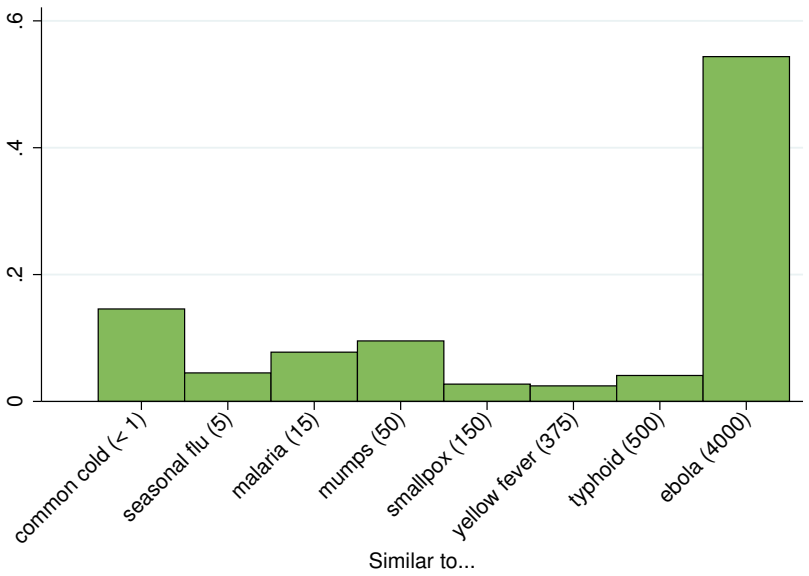


Figure notes: This figure is a histogram of the answer to the question "For an average person in good health, how serious a threat does the coronavirus pose to their health?" in late April and early May 2020 (before treatment). The number in parenthesis is the approximate average death rate per 5000 untreated individuals, which was given to respondents as part of their choices.

measures have to some extent permeated poorer areas of Nairobi (Population Council, 2020).

3 Data Collection and Experimental Design

From October 2019 to January 2020, we had been conducting a cross-sectional survey of 4,500 female-run microenterprise owners in Dandora for a separate research study. As COVID-19 began to spread around the world, we decided to draw a sample from this baseline to study the importance of a quick and one-time cash injection as a response to the economic downturn. We therefore selected 800 women to be part of the study. 753 were eventually randomized into treatment (367) and control (386). We then collected continuous surveys starting April 23, 2020 through August 11, 2020. Once each business owner

Figure 3: COVID-Related Protective Measures at Work

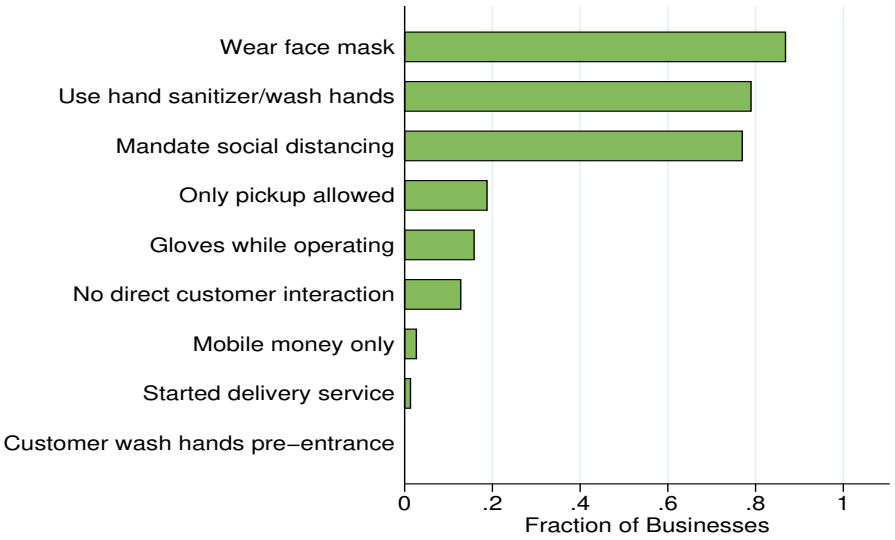


Figure notes: Baseline responses in May 2020 on measures undertaken to limit COVID spread at business. Sum to greater than one because individuals can choose as many as relevant.

was contacted (or called a maximum of 4 times with no response), the call list was re-randomized to limit the likelihood of bias in the timing of contact. Overall, this roughly amounted to contacting each business owner bi-weekly. All surveys were conducted by trained enumerators via phone.

The transfers were delivered on May 12, 2020. Treated individuals were made aware of their status after the completion of the April/May survey wave that ended on May 11, 2020. The treatment group received 5000 KES and the control group received 50 KES (as compensation for surveys and air time required to answer). The scale of the treatment transfers was designed to be approximately equal to one month of average profit among our sample as observed in January 2020. Funds were delivered via the individual's verified M-PESA accounts.

To summarize this timeline, Figure 4 overlays our data collection and cash delivery timeline with the daily cumulative cases in Kenya from the

World Health Organization COVID-19 Dashboard (World Health Organization, 2020). Two things are worth noting. First, we observe all business owners twice before the delivery of the treatment – once in January before COVID-19 and once in late April or early May. This second pre-treatment observation is after the first documented case on March 13 and subsequent policy responses by the government, but before the increase in growth rate observed in June and July. Second, our treatment similarly is delivered immediately preceding this same higher growth rate period, and our data collection period covers the bulk of the run-up in COVID-19 cases in Kenya.

Figure 4: Cumulative COVID-19 Cases in Kenya and RCT Timeline

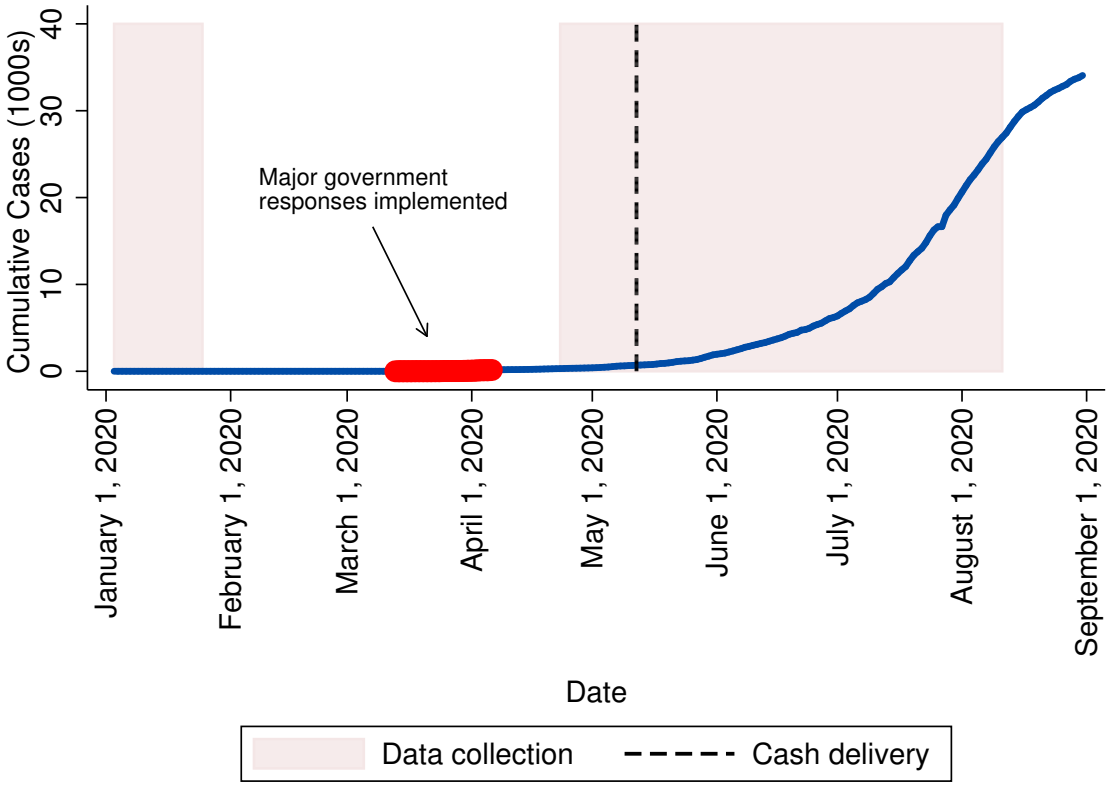


Figure notes: This figure plots cumulative COVID-19 cases in Kenya at a daily frequency from World Health Organization (2020) beginning on January 3, 2020. It further includes our data collection periods (shaded area) and cash delivery date (dashed line).

Table 1 reports balance tests, and shows that our treatment and control groups are balanced.

4 Empirical Results

Our baseline regressions take the form

$$y_{it} = \alpha + \beta T_{it} + \theta_i + \gamma_t + \varepsilon_{it} \tag{4.1}$$

where y_{it} is some outcome for individual i at week t, $T_{it} = 1$ if i is treated at week t, and θ and γ are individual and week fixed effects. Standard errors are clustered at the individual level. We focus on the continual data collection from April – August 2020, though the results are robust to the inclusion of the earlier baseline data (for the subset of outcomes we collected).

4.1 Economic and Business Impact of the UCT

Table 2 begins with business and expenditure outcomes. Panel A shows the average effects. We observe a substantial increase in profit, revenues, and inventory spending within the business. Profit increases by 40 percent relative to the control average ($p = 0.000$). A different interpretation of this change is that it recoups about one-third of the decline in profit we observe between January and May. Some of these additional resources are re-invested into the business in terms of higher inventory spending, which increases by 66 percent ($p = 0.000$), while other is used for consumption, with food expenditures increasing by 7 percent ($p = 0.072$).

Yet, the results show that the treatment also induces businesses to operate more intensively on average. Firms are 5 percentage points more likely to be open ($p = 0.046$) and are open 0.55 hours more per day ($p = 0.050$). Because of our survey and intervention timing, we can further study treatment heterogeneity in the treatment based on the scale of the initial COVID-induced shock.

Table 1: Balance

	(1) Treated	(2) Constant
Business Outcomes		
Profit	-54.35	811.4***
	(81.73)	(57.06)
Revenue	-73.15	2619.7***
	(258.4)	(180.4)
Inventory Spending	-141.1	2138.3***
	(302.4)	(211.1)
Open	0.0147	0.811***
	(0.0282)	(0.0197)
Hours open	0.150	6.477***
	(0.289)	(0.202)
Number of employees	0.00380	0.179***
	(0.0392)	(0.0274)
Any employee	0.000420	0.126***
	(0.0245)	(0.0170)
Any loan	0.0246	0.242***
	(0.0687)	(0.0479)
Loan amount	-5.628	201.8***
	(69.00)	(48.17)
Personal and Household Characteristics		
Age	0.492	39.47***
	(0.706)	(0.493)
Head of household	-0.00689	0.582***
	(0.0361)	(0.0252)
Married	0.0140	0.618***
	(0.0354)	(0.0247)
Number of children	-0.0335	2.927***
	(0.109)	(0.0763)
Years of schooling	0.275	10.28***
	(0.786)	(0.549)
Food Spending	-17.99	2112.2***
	(91.11)	(63.61)
Observations	753	
Joint F-test, p-value	0.984	

Results from a regression of $y_i = \alpha + \beta T_i + \varepsilon_i$ run on baseline data, where $T_i = 1$ if eventually treated. All results are from the April/May 2020 survey wave, except Age through Years of Schooling, which were collected in the initial baseline in late 2019/early 2020. Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We interact the treatment with an indicator for whether the business closed between January and May. The results in Panel B highlight that these businesses fare differently. While there is some evidence that those who remained open in May were able to shut down their stores in response to treatment, this effect is swamped by the massive re-entry of closed businesses induced by the treatment. Together with the implied increase in hours, these results generate the increase in average intensity of operation observed in Panel A.

Table 2: Economic and Business Outcomes

PANEL A: OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Daily Hours
Treat	315.381***	744.372***	1,098.363***	154.291*	0.053**	0.545*
	(72.165)	(216.005)	(228.128)	(85.709)	(0.027)	(0.278)
Observations	4,046	3,996	3,997	4,019	4,112	4,052
R-squared	0.021	0.019	0.021	0.014	0.013	0.025
Ind FE	Y	Y	Y	Y	Y	Y
Control Average	785.7	2567	1663	2063	0.829	6.931

PANEL B: OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Daily Hours
Treat	234.309***	591.776**	993.137***	178.686**	-0.073***	-0.375
	(77.166)	(230.622)	(245.989)	(90.587)	(0.021)	(0.264)
Treat × Closed	459.672***	884.806**	601.642**	-141.733	0.738***	5.235***
	(116.312)	(379.292)	(255.576)	(144.870)	(0.052)	(0.497)
Observations	4,001	3,952	3,952	3,973	4,066	4,006
R-squared	0.025	0.021	0.022	0.015	0.103	0.064
Ind FE	Y	Y	Y	Y	Y	Y
Control Average (Open)	898.1	2927	1890	2091	0.913	7.767
Control Average (Closed)	301.3	968.4	647.2	1965	0.464	3.365

Standard errors clustered at the individual level in parentheses. Continuous variables trimmed at 1 percent. Control averages taken over entire time period of study.
*** p<0.01, ** p<0.05, * p<0.1

Thus, the results show that the cash transfers are indeed effective as economic stabilization in response to COVID-19, in terms of profitability and food spending. The results also suggest a tension with the public health goals of containing such a crisis in a context where subsistence requirements are likely to bind: those hit hardest by the COVID-19 shock pre-treatment use the treatment to reopen their businesses. If the treatment simultaneously induces businesses to take more public health-related precautions, this would

likely lower the public health concern of this increased operational intensity. We return to this issue in Section 4.2 after further probing the results in Table 2.

4.1.1 Why Do Businesses Re-open?

To better understand the results of Panel B in Table 2, we use our January and May data pre-treatment to study the initial shock to firms.

One final result from Table 2 is that food spending increases only among those that remained open in May. Among those who remained open, we observe a 9 percent increase in food expenditures ($p = 0.049$). The change among those who were closed in May is 36.953 KES, a 2 percent increase and statistically indistinguishable from zero. To study this result further, we begin by studying how inventory and profit change before the treatment. Figure 5 plots inventory expenditures and profit in January and May, delineated by whether or not the firm is eventually closed in May. The first thing to note as that the two groups looks similar in January along these margins. Second, there is a clear decline in inventory expenditures and profit in both groups, though it is naturally more pronounced among those that close by May.

The perhaps more surprising result is that despite the large decline in profit among those who close, food expenditures look similar to those who do not.[10] The rationale for this follows from consumption *levels*. We observe family-level food expenditures around Ksh 2000, well below the most recent poverty line update of Ksh 2,551 per adult equivalent in urban areas (and Ksh 1,954 in rural areas). Thus, food expenditures are at subsistence level where the income elasticity is likely to be quite low.

This low food elasticity tilts adjustment toward inventory expenditures in response to the baseline shock, implying that the business itself acts as the technology used to move resources across time in the absence of formal

[10] We did not collect food expenditures in January, though it would be surprising if they were substantially different across the two groups given the other results.

Figure 5: Pre-Intervention Changes in Outomces

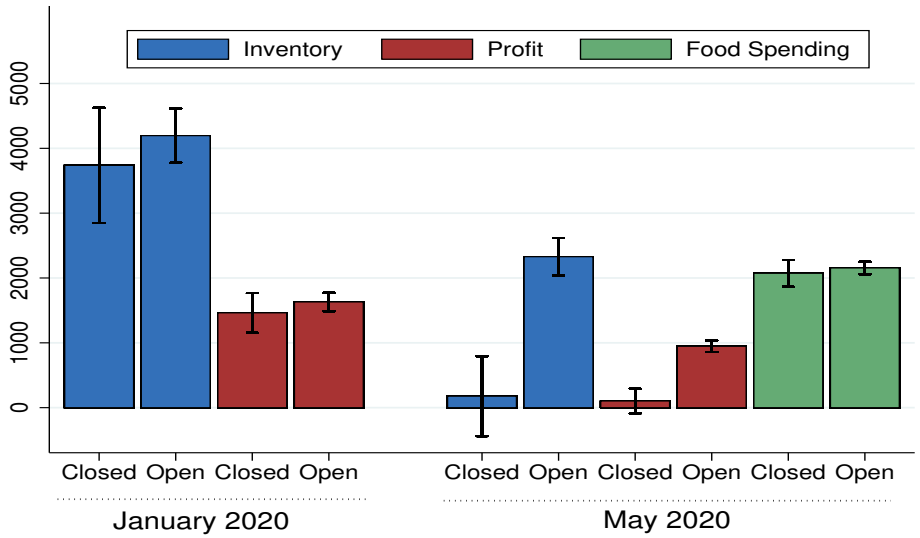


Figure notes: This figure plots average inventory spending in January and May 2020, along with food expenditures in May 2020. It delineates firms by whether or not they were open in May 2020. Ninety-five percent confidence intervals are included. Vertical axis is measured in Kenyan shillings.

credit markets. Thus, when exposed to the treatment, these firms rebuilding their inventory (and thus see a larger treatment effect as in Column 3, Panel B of Table 2) at the expense of changing food consumption (as in Column 4, Panel B). This point has similarly been raised in a different context by Fink et al. (forthcoming) among Zambian farmers, though takes on additional implications when connected to potential public health externalities.

4.2 COVID-19 Preventative Measures

As discussed in Section 4.1, the results highlight the potential for tension between the economic and public health concerns from the COVID-19 crisis. While business profits and food spending increase, businesses re-open and operate longer hours. One mitigating factor on this margin is whether or not the treatment similarly impacts measures to limit the public health concerns of re-opening. We therefore study whether the treatment induces any change

in spending on personal protective equipment (PPE) or public health-related management practices. The latter is an index of 9 practices related to safe business operation, measured as the z-score.[11]

Columns (1) and (3) in Table 3 show the average effect on personal protective equipment (PPE) spending along with the management practices index. We find that despite causing businesses to remain open and operate more intensively, the treatment is also causing them to increase protective measures against the spread of COVID-19 while operating. PPE spending increases by 15 percent ($p = 0.047$), while our "protective measures" index increases by 0.15 standard deviations above baseline mean ($p = 0.029$).

This effect, however, is not universal. When we consider how spending differs by baseline beliefs about the severity of COVID-19 on health, we find that those who underestimate the severity do not change their spending or practices. Specifically, we interact the treatment with an indicator for the baseline belief that the health impact of COVID-19 is equal to or smaller than the seasonal flu (see Figure 2 and the surrounding discussion in Section 2 for more detail). When we do this, the interaction is of the opposite sign but similar magnitude and statistical significance to the treatment variable. The net effect is that those who underestimate the severity of COVID-19 at baseline do not change preventative practices, while those who properly/overestimate it use the treatment to increase PPE spending and public health-related management practices.

What drives this result? If we look at spending over time, we can observe its co-movement with beliefs. This is in Figure 6. Of particular note here are the two major policy announcements by the Kenyan government during this time. On June 6, the curfew and movement restrictions into/and out of Nairobi were extended for 30 days as the new caseload was beginning to increase quickly.

[11] We construct an index of these practices by counting the number implemented and normalizing by baseline levels. Specifically, we construct the z-score for individual i at time t as $(\sum_{j=1}^{9} \mathbb{1}_{ijt} - \mu_0)/\sigma_0$, where $\mathbb{1}_{ijt} = 1$ if individual i implemented practice j at week t and the mean and standard deviation are from baseline responses. The practices are listed in the Appendix, and are the same as those reported in Figure 3 in Section 2.

Table 3: COVID-19 Precautionary Measures

OUTCOMES	(1) PPE spending	(2) PPE spending	(3) Protective measures (z-score)	(4) Protectives measures (z-score)
Treat	36.753**	47.869**	0.154**	0.217***
	(18.491)	(20.028)	(0.071)	(0.077)
Treat x Underestimate		-51.402**		-0.279***
		(25.859)		(0.103)
Observations	3,243	3,210	3,862	3,818
R-squared	0.064	0.066	0.072	0.075
Ind FE	Y	Y	Y	Y
Control Average	245.1	245.1	0.188	0.188

Standard errors clustered at the individual level in parentheses. Spending trimmed at 1 percent. *Protective measures* is the standardized z-score of 9 management practices designed to limit COVID-19 spread.
*** p<0.01, ** p<0.05, * p<0.1

Corresponding to this, we see a drop in the share of businesses underestimating the health risk of COVID-19. At the same time, we see a spike in spending among the treatment firms without any corresponding change among control firms. After the movement restriction was lifted on July 6 as Nairobi was nearing what seemed to be the peak of its crisis (Ojal et al., 2020), beliefs seemed to relax and spending resumed its earlier decline.[12]

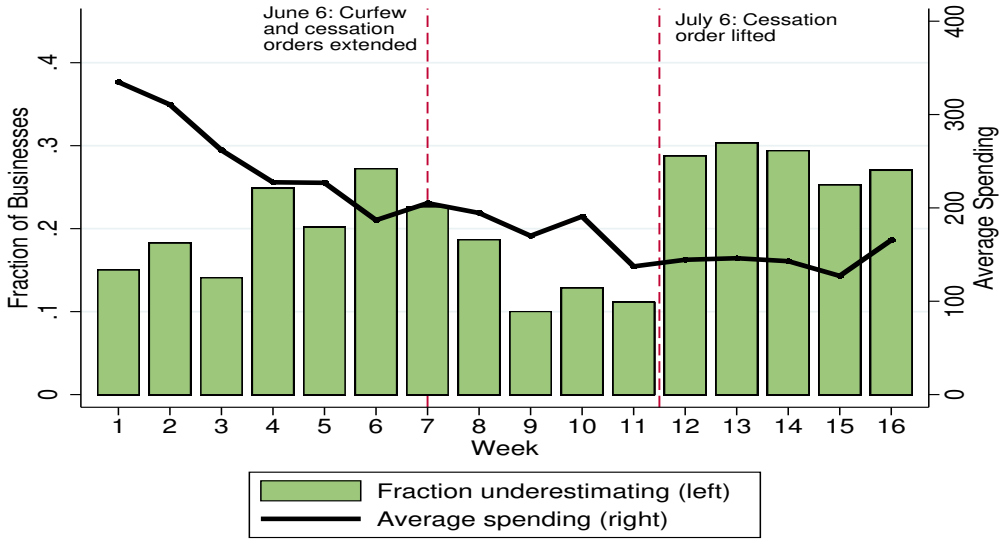
Given our sampling, these averages come from an unbalanced panel of firms. While care was taken to limit bias across periods, we can study this variation over time more formally. We use our same estimating equation (4.1), but run it separately for three periods: before June 6, June 6 - July 6, and after July 6. While the point estimate is positive in all three periods, it is concentrated and statistically significant only in the June - July period, when beliefs of COVID-19 seriousness seem to be at their peak.[13]

[12]Of course, this is more suggestive evidence given that it does not come from the RCT directly. Moreover, it should be noted that given the co-movement of government policy and COVID-19 caseload, it is difficult to determine whether individuals are responding to directly to the government policy announcements or if they have a good indication of the severity of the crisis directly.

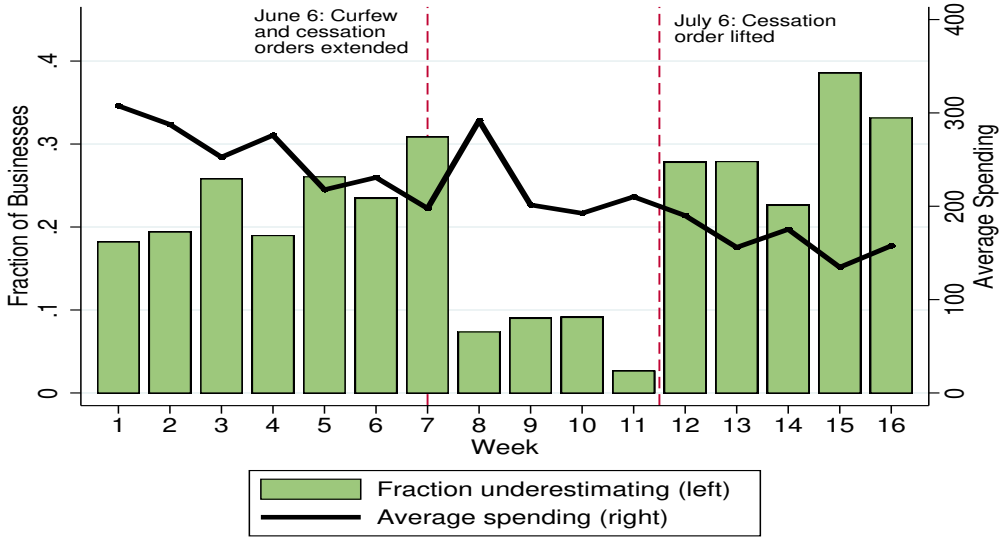
[13]The shorter time horizon puts a bit more strain on the specification with individual fixed effects. The same pattern emerges with an ANCOVA specification and is somewhat more pronounced, with the relevant point estimates 23.96 (16.50), 45.05*** (16.12), and 9.37 (11.59) across the three time periods.

Figure 6: PPE Spending and Beliefs

(a) Control



(b) Treatment



4.3 Discussion and Other Outcomes

The results in this section show that there substantial impacts from an unconditional cash transfer. As mentioned in the Introduction, however, there

Table 4: PPE Spending by Period

OUTCOMES	(1) PPE spending	(2) PPE spending	(3) PPE spending
Treat	31.746	52.701**	25.321
	(24.986)	(23.821)	(23.069)
Observations	1,861	1,630	2,306
R-squared	0.050	0.079	0.128
Ind FE	Y	Y	Y
Control Average	250.375	168.667	147.324
Period	pre-June 6	June 6 - July 6	post-July 6

Standard errors clustered at the individual level in parentheses. Spending trimmed at 1 percent. Time periods include baseline observation and then all those in the listed time window.
*** p<0.01, ** p<0.05, * p<0.1

is both little existing evidence on how such a transfer impacts microenterprise owners and many hypotheses on how it should. In the Appendix, we therefore study heterogeneity along a number of different dimensions that may play a role. This of course comes with the usual caveats about external validity, but given the dearth of evidence, we take it up in the Appendix for the sake of completeness.

First, we study whether household characteristics – whether the woman is married, head of household, age, and number of children – generate variation in the treatment effect. Field et al. (2020), for example, shows how these types of characteristics may impact outcomes. We find no statistically significant evidence that these characteristics generate differential treatment effects. We then consider heterogeneity by type of business, as certain types of businesses are more likely to be hurt by the COVID-19 shock. We find no differential effects. We emphasize however that this is likely a function of the types of businesses that are most common in Dandora. Like most slums, our sample is dominated by retail (either directly, or combined with own-production of goods such as furniture or clothes) and restaurants. Thus, the same heterogeneity highlighted in more diversified economies is unlikely to be found here.

5 Conclusion

This paper provides the first experimental evidence on the impact of delivering cash transfers to small businesses in developing countries during one of the most severe global downturns in the past 100 years. We focus on a policy proposal that has garnered much traction in academic, policy, and the popular press – short-term, unconditional cash transfers. We utilize mobile money to deliver these transfers to female micro-entrepreneurs in Dandora, Kenya, a group that was both significantly exposed to the downturn and saw little relief from the government and NGO sectors.

Our results suggest the enthusiasm for such a policy is warranted, but comes with some words of caution as well. Firm profit increases by 38 percent, making up approximately one-third of the decline observed during the initial shutdown implemented by the Kenyan government. We similarly see such gains split between investment in the firm in terms of inventory and consumption in the form of higher food spending. The caution, however, comes from the types of people who generate those gains. We observe that the cash transfer substantially increases the likelihood of a closed business re-opening and this result drives an overall average increase in the operating hours among average businesses. Thus, in a situation where subsistence constraints are likely to bind, the economic motivations of business owners push against the aggregate public health goals. Policy-makers must take these tradeoffs into account when designing policy. Some measure of hope comes from the fact that the treatment also induces more health-safety management practices and increased PPE spending, thus mitigating some of the health risks of reopening. These changes, however, are concentrated among those who properly estimate the health risk of COVID-19. This suggests an important complementary role for information interventions, which have been highlighted in recent work as well (Barnett-Howell and Mobarak, 2020; Banerjee et al., 2020a). Together, such a suite of policy adjustments may be able to induce safer re-opening without

eliminating the economic gains generated by the UCT.

As the use of cash transfers grows as a response to COVID-19, we are hopeful these result can provide a useful guide for policy design both now and during whatever additional "waves" of the virus are forthcoming. More broadly, the results show that short-term cash transfers have a clear place in the toolbox of governments to combat standard recessions, in which the public health concerns at the center of the COVID-19 crisis play a smaller role.

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A Additional Results

A.1 Treatment Effect by Household Composition

Table 5: Household Composition

	(1)	(2)	(3)	(4)
INTERACTED CHARACTERISTIC	Head of Household	Married	Age	No. of Children
Treat	279.673***	403.318***	520.015**	345.303**
	(99.924)	(99.545)	(250.487)	(139.583)
Treat ×	64.661	-135.632	-4.919	-9.637
HH Char	(108.884)	(108.353)	(5.832)	(36.816)
Observations	4,042	4,042	4,028	4,042
R-squared	0.021	0.021	0.021	0.021
Ind FE	Y	Y	Y	Y
Control Average	848.3	848.3	848.3	848.3

Standard errors clustered at the individual level in parentheses.
Outcome in all columns is profit trimmed at 1 percent.
Columns vary the interacted characteristic.
*** p<0.01, ** p<0.05, * p<0.1

A.2 Treatment Effect by Business Type

A.3 Time Series by Health Management Practices Index

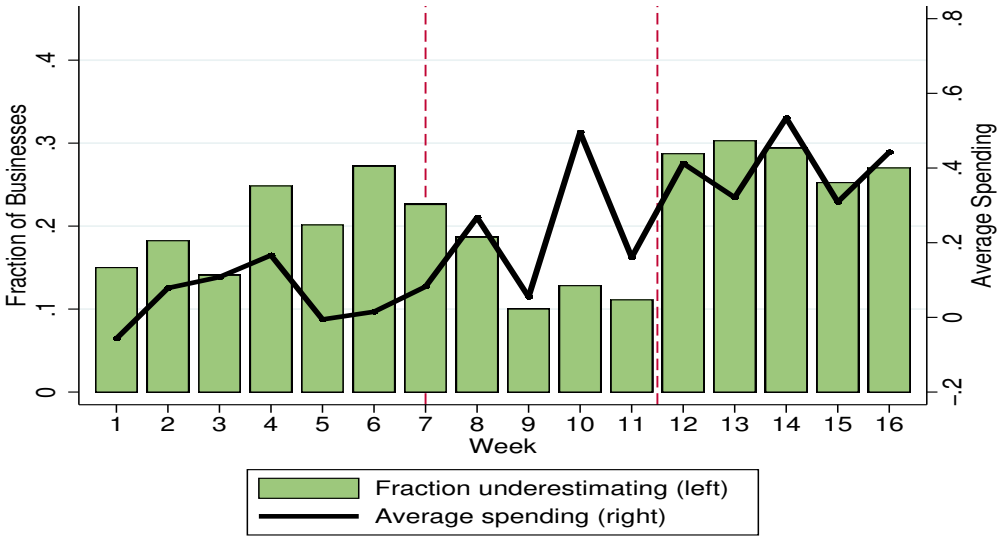
Table 6: Heterogeneous Effect on Profit by Business Type

	(1)
INTERACTED CHARACTERISTIC	Business Type
Treat	320.344***
	(88.290)
Treat × Production	85.880
	(189.974)
Treat × Service Provider	2.393
	(123.721)
Treat × Restaurant	-22.057
	(172.743)
Treat × Other	-146.113
	(249.236)
Observations	4,042
R-squared	0.021
Ind FE	Y
Control Average	848.3

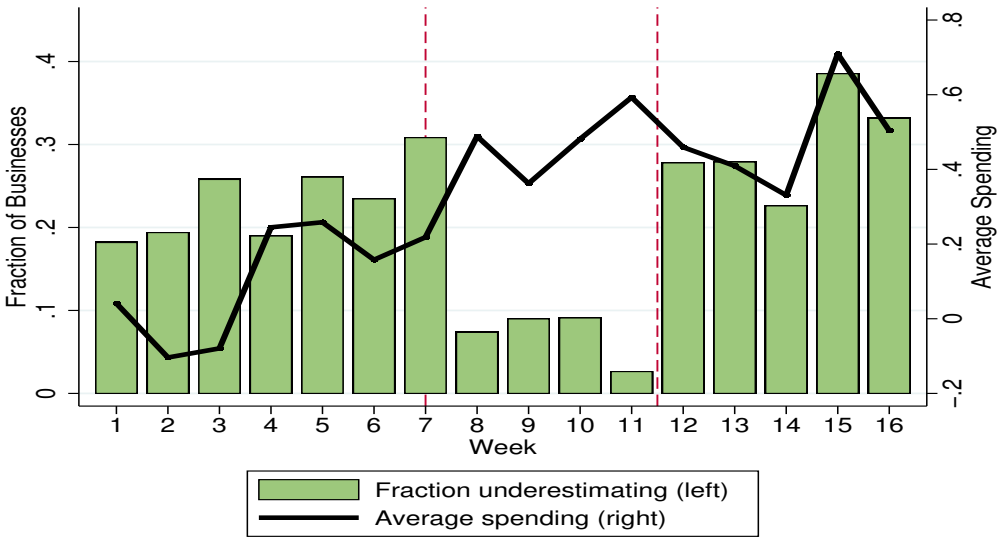
Standard errors clustered at the individual level in parentheses.
Outcome in all columns is profit trimmed at 1 percent.
Columns vary the interacted characteristic.
Baseline business type is retail.
*** p<0.01, ** p<0.05, * p<0.1

Figure 7: COVID-19 Protection Management Index

(a) Control Owners



(b) Treatment Owners



B Robustness

B.1 Headline Results with ANCOVA specification

Table 7 reproduces the headline results in the main text. The results are similar, with lower p-values for some. The only outcome that becomes statistically insignificant at standard cutoffs is the index of health safety measures, in which the p-value increases to $p = 0.115$.

Table 7: ANCOVA Specification

OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Hours Open	(7) PPE Spending	(8) Protective measures (z-score)
Treat	246.701***	635.509***	550.914***	179.891***	0.050***	0.525***	22.170***	0.054
	(56.402)	(176.519)	(146.779)	(56.531)	(0.017)	(0.194)	(10.571)	(0.034)
Observations	3,216	3,167	3,159	3,169	3,312	3,213	2,322	2,946
R-squared	0.135	0.178	0.108	0.120	0.117	0.126	0.082	0.054
Ind FE	N	N	N	N	N	N	N	N
Control Average	771.4	2534	1637	2074	0.829	6.886	245.1	0.188

Standard errors clustered at the individual level in parentheses. Continuous variables trimmed at 1 percent.
*** p<0.01, ** p<0.05, * p<0.1

B.2 Interactions Using Continuous Measures

C Construction of Empirical Moments

C.1 Public Health Management Practices

The 9 practices included in our index are: (1) use hand santizer while working, (2) wear globes while handling money, (3) only use mobile money, no cash, (4) do not interact directly with customers, (5) customers must pick up their orders and leave immediately, (6) started a delivery service, (7) enforce social distancing, (8) wear a mask, (9) ask customers to wash hands before entering.