IDB WORKING PAPER SERIES Nº IDB-WP-1430

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February 2023

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

The causal impact of Covid-19 government-backed loans on MSMEs liquidity and earnings / Maikol Cerda, Paul Gertler, Sean Higgins, Ana Maria Montoya, Eric Parrado, Raimundo Undurraga.
p. cm. — (IDB Working Paper Series ; 1430)
Includes bibliographic references.
1. Loans-Government guaranty-Chile-Evaluation. 2. Loans-Government guaranty-Colombia-Evaluation. 3. Small business-Finance-Chile. 4. Small business-Finance-Colombia. 5. Coronavirus infections-Economic aspects-Chile. 6. Coronavirus infections-Economic aspects-Colombia. I. Cerda, Maikol. II. Gertler, Paul, 1955- III. Higgins, Sean. IV. Montoya, Ana María. V. Parrado, Eric. VI. Undurraga, Raimundo. VII. Inter-American Development Bank. Department of Research and Chief Economist. VIII. Series.
IDB-WP-1430

http://www.iadb.org

Abstract

We conducted two randomized controlled trials (RCTs) to evaluate the impact of government-guaranteed loans offered by the Chilean and Colombian governments. The public funds of these programs greatly expanded following the start of the Covid-19 pandemic and offered loans to Micro, Small and Medium Enterprises to mitigate the negative impact of the shock. Through a collaboration with private banks, we launched two experiments which offered loans to a sub-set of the 10,072 Chilean and 3,079 Colombian small businesses that took part in our experiments. Most of these firms had previously applied for a loan–during the pandemic but prior to the RCTs–but were rejected by banks due to their risk analysis of the firms. With take-up rates of 27% and 29%, respectively, we find that Covid-19 loans had a significant positive impact on the total liquidity that treated MSMEs could access: total liquidity with the formal banking system increased by 15.7% (statistically significant at the 1% level). The results of our RCTs will inform Latin American governments concerning their strategies to support MSMEs via government-backed loan programs and will shape similar public policies in the future.

JEL classifications: J16, L26, P52
Keywords: RCT, Government-guaranteed loans, Covid-19 pandemic, Event study, Impact evaluation

1 Introduction

Firms confronted a significant negative demand shock during the Covid-19 pandemic due to mobility, gathering, and other social and economics restrictions imposed by federal governments. Under these circumstances, many small businesses required short-term financial relief to confront the pandemic, survive as businesses, and continue paying rent and meeting payrolls. Yet, when the economy is under stress, financial institutions are more reluctant to lend money to the most negatively impacted and vulnerable firms since the risk of default of these companies is higher. Among the firms facing higher financial stress during economic slumps, micro, small and medium-sized enterprises (MSMEs) are the type of businesses that may benefit the most from more flexible and generous access to credit. Access to credit to MSMEs in developing economies is critical, moreover, as they are the backbone of economic growth and labor demand.[1] Because of this, central governments implemented new or greatly expanded well-established government-guaranteed loans relief programs in order to reduce the financial risk faced by banks when lending and to promote fast liquidity to small businesses by partially or fully guaranteeing financial loans in order to avoid a larger economic decline and higher unemployment during the pandemic.

The Chilean and Colombian relief program expansions are two of the most noticeable cases in Latin America where governments early on interceded in helping small businesses during the Covid-19 pandemic. Early in June 2020, the Chilean government significantly expanded the most popular and long-established economic program offering government-backed loans to national firms, the Small Entrepreneurs Guarantee Fund, FOGAPE.[2] Likewise, the Colombian MSMEs economic program

[1] According to the IDB, Micro, small and medium-sized enterprises (MSMEs) comprise 99.5 percent of businesses, 60 percent of the employed population, and about 25 percent of the gross domestic product (GDP) in Latin America and the Caribbean (LAC). Source: https://publications.iadb.org/en/msme-financing-instruments-in-latin-america-and-the-caribbean-during-covid-19

[2] The financial program started to operate in 1980 and has been expanded over the years. Most of FOGAPE's financial aid is spent exclusively on MSMEs and, during economic slumps, the amount of financial support has grown either by increasing the percentage of the loan that is guaranteed by the government or relaxing the requirements that MSMEs must fulfill. FOGAPE's historical statistics show that coverage has expanded continuously, reaching a higher number of businesses

counterpart, the Fondo Nacional de Garantias, FNG, also greatly expanded in May 2020 as a result of the implementation of the Covid-19 Unidos por Colombia program. The FGN has supported most of the financial emergency loans approved by the Colombian banking system from mid-2020 to date. As a result of these two programs' expansions, the government-guaranteed share of loans' principal considerably increased, which allowed financial institutions to soften the requirements for access to loans, and private banks ended up lending more money to riskier firms in comparison to the most recent pre-Covid-19 years.

Given the significant and broad implementation of Covid-19 emergency economic programs in developing economies, and the scarce economic literature evaluating the effect of these programs, our research takes advantage of the emergency setup and the unique financial datasets to which we had access. We evaluated the causal impact of the unexpected FOGAPE and FNG expansions by designing and implementing two randomized control trials (RCTs). Through a collaboration with two local and large private banks, we were able to perform controlled experiments consisting of offering a financial loan to a subset of the 10,072 and 3,379 MSMEs clients (experimental universe) in Chile and Colombia, respectively. When designing our experiments, we noticed that most of these 13,451 MSMEs had already applied for a loan at the beginning the pandemic, prior to the expansion of the Covid-19 economic relief program, but many applications were rejected by the banks as a consequence of their risk assessments. Taking into account the type of riskier small firms that were part of our RCTs and the contemporaneous economic slump, we expect that our experiments better inform policymakers regarding the impact of economic programs that facilitate short-term liquidity to businesses that would not have otherwise had access to financial support during an economic deterioration due to credit constraints. The loan campaign extended from March to June 2021, and from May to December 2021 in the Chilean and Colombian RCT, respectively.

The experimental design and identification strategy of our RCTs was robust. First, we randomized our large experimental groups with public intervention as an instrument. Second, we had access to micro high-frequency firm-level administrative

during Chile's most recent economic recessions, and the Covid-19 pandemic was no exception.

and financial records provided by our private partners for all firms in our experiments from January 2019 to June 2022. These two elements allow us to robustly measure the causal impact of the two experiments in the context of the pandemic. In this research, our main variables of interest are liquidity and earnings at the firm level. We use access to credit in the banking system (total and commercial debt) to measure firms' liquidity and the total amount of monthly deposits to proxy firms' earnings.

With a joint take-up rate of 27.9% (percentage of firms in the treatment group that received and accepted our Covid-19 loan offer), we show that government-guaranteed economic relief programs had a significant positive impact on liquidity. Using as the outcome variable total liquidity and commercial liquidity (the main type of debts that approximate MSMEs' available funding), we find an intent-to-treat effect of 15.7% and 26.4%, both increases being statistically significant at the 99% confidence level. Moreover, the treatment-on-the-treated effect suggests even a larger statistically significant increase in total liquidity (101.4% impact).

Our expectation is that our results will provide insights about the relevance of economic programs focused on small businesses–like FOGAPE and Unidos por Colombia–which positively impact MSMEs' economic performance and probability of survival during economic deterioration by increasing their liquidity. Additionally, the results of our RCTs should help to quantify better the cost-efficiency analysis of expanding economic programs, so that governments in developing economies can make more informed decisions to better mitigate the negative impacts of potential future economic slumps. Lastly, we believe that this research takes into account the unanticipated pandemic shock and the disproportionate negative impact that Covid-19 mobility and gathering restrictions generated on small firms that, besides being the backbone of the economy in countries like Chile and Colombia, are also family businesses.[3]

Our main contribution to the literature consists of showing that relaxing short-

[3]MSMEs represent 98.6% of the total number of businesses, and they employ more than two-thirds of the workforce in Chile (OECD, 2020). Moreover, the pandemic disproportionately impacted small businesses in Chile: 63% of the MSMEs reported a decrease in sales, amounting to an average of -37%. Also, while the employment rate of medium enterprises declined by -6.1%, the reduction observed for SMEs was -8.9% (Chilean Economic Department, 2021).

term financial constraints to firms under stress during economic recessions improves their economic performance and increases survival rates, which generates a positive impact on the economy as a whole. Despite the high prevalence and large size of the government-guaranteed economic relief programs that targeted MSMEs during the Covid-19 pandemic, the economic literature studying the causal impact of these policies on relevant economic variables (such as revenues, employment, access to credit) is still limited. The implementation of these emergency economic programs to face the negative shock of the pandemic sets up the perfect scenario to perform causal impact analyses by allowing commercial banks to extend loans to firms that would not have had access to credit due to the higher risk of default.

The main piece of evidence measuring the effects of these type of credits as public policy is Cai and Szeidl (2018) [6]. The authors quantify the impact of loan offers by a government-subsidized lender running a randomized experiment with 3,100 Chinese firms located in 78 different local markets. The experimental setting allowed the authors to exploit variation within and across markets. Cai and Szeidl's experiments reached a slightly higher take-up than ours (33%) and found that easier access to loans increased firms' revenues by 9%. Although their setting seems to be similar to ours, the economic context behind the experiment is different. In our setting, access to credit is due to government-backed loan programs, which were almost exclusively offered to MSMEs that had been previously rejected due to the high risk of default. Additionally, our RCTs were implemented in the middle of a pandemic, so we should expect a greater impact of the policy on outcomes such as sales, employment, and firm survival, taking into consideration the economic scenario and the type of firms that were part of our experiments. Regarding the cost-benefit analysis of these government-backed relief programs, the only paper related to ours, to the best of our knowledge, is Kaufmann (2020) [14]. Kaufmann estimates the benefits and costs of the Swiss Covid-19 lending program by exploiting regional variation in a non-experimental setting. The authors find that an increase of CHF 100,000 in the amount of the loans saved between 0.22 and 0.29 jobs. Taking into consideration the costs that some borrowers may face because of firms' defaults, the paper finds that the cost of saving these 0.22-0.29 jobs is about CHF 11,500. Since we lack studies

determining the cost-benefits of similar policies, a systematic review by Kersten et al. (2017) [15] notes that "given the lack of a clear picture of the costs of different SME financing programs, it remains difficult to estimate cost effectiveness." A systematic review by Grimm and Paffhausen (2015) [13] notes that "a significant shortcoming of the literature is that almost nothing is known about cost effectiveness."

The rest of our paper is organized as follows. Section 2 describes the experimental setting. Here, we highlight the relevance of FOGAPE and the FNG as active and well-established economic programs in Chile and Colombia. Section 3 describes the randomization process and shows the results of the baseline balance tests, which allow us to conclude that most of the MSMEs' relevant covariates are uncorrelated with the treatment assignment. Section 4 shows the main results of our joint RCT. We show the ITT estimates, month-by-month regressions, and the event study results. (In Appendix A.6, we also perform TOT regressions and run different robustness checks that confirm our main conclusions.) Section 5 shortly describes the main policy implications we extract from our RCT, the next steps, and how our results may help to better understand not only the impact but also the mechanisms by which a financial loan can support small businesses not only during but also ex post economic declines. Section 6 concludes.

2 Institutional Context

2.1 Fogape Chile

We first conducted a randomized controlled trial to evaluate the impact of Covid-19 government-guaranteed commercial loans offered through the long-term and well-established Chilean program called Fondo de Garantia para Pequenos Empresarios (FOGAPE). FOGAPE has been one of the largest and most well-known Chilean financial programs aiming to help and foster the nationwide growth and development of micro, small and medium-sized businesses by facilitating access to private credit to firms that otherwise may face significant credit constraints in the private banking system. The loans (and other financial services), which are administered

and offered by private financial institutions, are partially or fully guaranteed by the government. The program started operation in 1980 and is therefore the oldest credit guarantee scheme in the country. To date, FOGAPE is still the main public program supporting and facilitating access to credit for most of the MSMEs that require formal funding. Before the Covid-19 pandemic, the program had a yearly application process open to all national firms that could fulfill a number of standard financial requirements. Historically, the loans were partially guaranteed by the government, so commercial banks were also responsible for managing and ensuring the compliance of each requirement and for the payment of the principal.

During pre-pandemic years, FOGAPE awarded an average of US81.25 billion per year and provided financial support to more than 6% of the total number of Chilean MSMEs. Although this percentage seems small, it is important to mention that Chile experienced stable economic growth in recent years, so many small businesses did not apply for FOGAPE-backed loans. Economic programs strongly expanded, however, as a response to the Covid-19 pandemic, and FOGAPE awarded a total of US813.9 billion and granted access to financial credit to more than 32% of MSMEs. The share guaranteed by the government also substantially increased to 60-90%. The final percentage guaranteed to a specific MSME depends on several factors, including the firm's size and the economic sector in which the firm sells its goods or offers services. This financial expansion, together with the increase in the percentage guaranteed, allowed many private banks to offer more loans to higher-risk businesses than they would have otherwise been able to.

2.2 FNG and the Covid-19 Unidos por Colombia Program

The analogue to FOGAPE in Colombia is the Fondo Nacional de Garantías S.A. (FNG). The FNG is a specialized department that facilitates access to credit for MSMEs and independent workers through government-guaranteed financial loans and other financial products. The FNG began operation in 1982 and, similar to FOGAPE in Chile, has continuous growth regarding the number of guaranteed loans and the geographic scope of the program; to date, the FNG has provided support

to small firms in all 32 Colombian departments. The total amount of government-guaranteed approved loans in 2010 was 86.1 trillion COP and the total approved amount in 2019 expanded to 815 trillion COP.

With the arrival of the Covid-19 pandemic, the FNG played an important role in the economy: the Fondo became the main mechanism for providing financial support to small businesses during the crisis. In fact, while the average total amount of approved government-guaranteed loans was 810.9 trillion COP between 2010 and 2019 (distributed among 397,000 loans), 819.8 COP trillions were approved in 2020 alone (distributed among 623,000 loans).[4] During the pandemic, the Fondo has given support not only to MSMEs, but also to the self-employed and large firms. This is the result of a large increase in public funds allocated by the Central Government to help firms across all regions of the country.

In the Colombian case, the intervention in the randomized experiment is an offer for a loan guaranteed by the Colombian government, as part of its pandemic response plan. In April 2020, the Colombian Government launched the "Unidos por Colombia" program, which implemented a series of measures for MSMEs to access loans through the National Guarantee Fund (Fondo Nacional de Garantías, henceforth FNG). Among the measures are loans which are guaranteed by the FNG for 80% of the principal and allow for a grace period of up to 4 months from the start of the loan. Until December 2021, the Government made approximately COP 36 trillion available (about USD 89 billion) to guarantee loans to MSMEs, formal and informal microenterprises, and self-employed individuals, to help them to cover payroll and working capital needs in order to survive the pandemic (Fondo Nacional de Garantías, 2021). By the end of 2021, more than 600,000 firms had benefited from this guarantee program.

The relevant expansion of public funds was highlighted by the World Bank, which ranked Colombia second only to Mexico in a survey studying the performance and scope of economic programs that different Latin American governments implemented

[4]Source: FNG Annual Reports. Available at: https://www.fng.gov.co/nosotros/rendicion-de-cuentas/historico-de-indicadores

to face the Covid-19 pandemic.[5]

Our Colombian RCT was possible due to the implementation of the special Covid-19 subprogram called Unidos por Colombia, which focused fully on helping MSMEs and self-employers, giving them support to increase their liquidity in the short term. According to FNG, Unidos por Colombia increased loan guarantees from 50% to 90% and generated larger commissions (70-75%).

2.3 Government-backed Loan Programs in Latin America

Besides Chilean and Colombian programs, government-backed loans programs were common and one of the most significant policy responses to the Covid-19 crisis in Latin American economies. Many of them expanded programs already established to help small businesses during mobility constraints, which allowed firms to survive, pay rent, and meet payrolls during these times.

Before this research, we conducted a survey with more than 50 private banks in different Latin American countries. Out of all banks, 54% of them mentioned that they were offering government-backed loans at the start of the pandemic. Furthermore, the banks also reported that they would only lend to higher-risk MSMEs if they had access to partial or full government guarantees of the principal. Thus, the innovation is likely to generalize to other contexts in which banks issue government-backed loans to higher-risk MSMEs, which occurred in many countries in response to the Covid-19 crisis. It would also likely generalize to government-backed loan programs implemented in response to other crises. However, it may be unlikely to generalize to the effect of non-government-backed loans (as banks do not issue these loans to higher-risk MSMEs) or to the effect of government-backed loans during non-crisis times.

The United Nations published a report at the end of 2021 that describes and analyzes the main policies to support MSMEs during the pandemic.[6] The report

[5] According to the survey, Colombia was ranked second in the region in terms of government-guaranteed loans as a percentage of the total number of loans approved in the financial system.

[6] Available here: https://www.cepal.org/en/publications/47145-analysis-policies-support-smes-confronting-covid-19-pandemic-latin-america

highlights the relevance of the policies that were focused on increasing and maintaining short-term liquidity and facilitating access to credit.

3 Experimental Design

3.1 Implementation of the RCTs

As a result of two collaboration agreements with private formal financial institutions, one in each country, we conducted two controlled experiments including 10,072 and 3,379 MSMEs in Chile and Colombia, respectively. The initial number of micro, small, and medium-sized businesses in Chile was 5,575 experimental firms. However, we increased the number of participant firms by 4,497, as a result of the second FOGAPE tender that the federal government launched early in January 2021. One special characteristic of the Chilean experimental firms is that most of them had already requested a loan at the beginning of the pandemic (before the execution of the first emergency Covid-19 FOGAPE tender). The controlled intervention thus, as a result of the extraordinary expansion of FOGAPE public funds, permitted high-risk MSMEs to receive a loan offer despite the fact that they still had the same insufficient credit score that did not allow them access to funding in the past under normal economic conditions.

We randomized the 10,072 firms, splitting them evenly (50-50) into the control and treatment groups. The randomization randomly offered government- guaranteed loans to 5,069 MSMEs. The Chilean marketing campaign (loan offer) lasted six months (starting in February and ending in July, 2021). However, the six loans approved in July were assigned to the treated firms the first day of the month. Similarly, the six loans that were approved in February were finally assigned during the last five days of the month. Therefore, during our impact evaluation, we assume that the Chilean RCT extended instead from March to June only (four months).

The Colombian RCT was implemented in two subsequent waves. Initially–i.e., immediately after the implementation of the first tender of Unidos por Colombia–we were able to launch the experiment with only 984 micro, small, and medium-sized

enterprises (Wave 1). As in the Chilean case, the randomization of these 984 MSMEs evenly split (50-50) the experimental the experimental firms into the control and treatment groups. The random process assigned 472 firms to the treatment group.

Once again, as in the Chilean case and as a result of a second expansion of the Colombian emergency Covid-19 program, we were able to increase the number of firms participating in the experiment. However, the program extension occurred after the implementation of the Wave 1. Therefore, we conducted a second experiment (Wave 2) that included 2,375 firms. This time, however, the split of firms into treatment and control groups was 80-20 (as required by the private bank) so that 1,903 MSMEs were assigned to the treatment group.

The final number of firms participating in the Colombian intervention (pooled RGf) was then 3,379, of which 2,375 units were assigned to the treatment group. Lastly, it is worth mentioning that each wave also extended for four months: while Wave 1 extended from May to August 2021, Wave 2 extended from September to December 2021.

Figure 1 shows the timelines of the Chilean (CH) and Colombian (CO) RCTs.

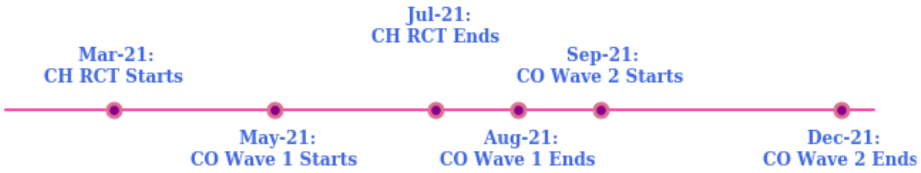


Figure 1: Timeline of the Chilean (CH) RCT and of the Two Waves of the Colombian (CO) RCT

Table 1 summarizes the total number of experimental firms participating in our joint RCT and describes the aggregates split between countries.

Table 1: RCTs, Countries, Total Number of MSMEs, and Experimental Groups

RCT's Description	Chile	Colombia	Joint
- Financial Partner	Private Bank	Private Bank	
- Initial Number of MSME	5,575	984	6,559
- New MSMEs (program expansion) (1)	4,497	2,375	6,872
- Final Number of MSMEs	10,072	3,379	13,451
- Treatment Group	5,069	2,375	7,444
- Control Group	5,003	1,004	6,007

(1) In Chile (Colombia), the extension of FOGAPE (Unidos por Colombia) allowed us to increase the total number of MSMEs before (after) the implementation of the former experiment. The Colombian RCT was then performed in two subsequent waves.

Regarding the experimental design, it is worth mentioning that our RCTs did not involve in-person interactions. The financial loans were offered to firms via either direct phone calls or an online marketing campaign. In this paper, we evaluate the causal impact of the joint RCT using as outcome variables the total amount of debt that firms contracted with the formal financial system (total and commercial liquidity), and the total amount of deposits that each firm in our experiment performed on a monthly basis. The administrative financial data we use in our analyses–which was directly provided by our two private financial partners–include all MSMEs in our experiments and are at the firm level on a daily/weekly basis. The period extends from January 2019 to the most recent available month (July and August 2022 for the Chilean and Colombian cases, respectively).

3.2 Relevance of Our Experiment

Taking into account the contemporary state of the Chilean and Colombian economies together with the evolution of the Covid-19 pandemic, the setting and the timing of our experiments are relevant. First, in both countries MSMEs are, by far, the most relevant type of firms in terms of both employment and economic growth (there are approximately 900,000 and 1,500,000 MSMEs in Chile and Colombia,

respectively). According to the OECD [17], more than 98% of the total number of Chilean businesses are classified as MSMEs, and they employ around two-thirds of the Chilean workforce (5.8 million workers in total). Second, FOGAPE and the FNG are the main public policy levers for fostering and providing financial support to the growth of small businesses. In fact, the formal banking system has approved 283,000 FOGAPE-guaranteed loans since the Covid-19 pandemic hit in February 2020. In other words, if we assume that a firm could get at most one loan during the pandemic, nearly 32% of the total number of MSMEs have received government-backed loans due to the expansion of these programs.[7]

Using raw estimations, and given the actual size of the Chilean FOGAPE program, we think that the enlargement of the program may directly impact 12% of the Chilean workforce (1.1 million workers). If we assume that all these workers live in different households, the FOGAPE Covid-19 program's scope may impact 19% of households in Chile. Although these estimates may be crude approximations, we believe that our RCTs will help policymakers to widen the understanding of the impact of the program, since our experiment studies high-risk small businesses during a recession: firms face greater financial stress in difficult times.

If these programs helped MSMEs to survive during an economic crisis, the Chilean economy could better face future recessions if the government decides to broaden FOGAPE again. So, taking into account the significance and relevance of the FOGAPE expansion during the economic crisis caused by the pandemic, we believe that the results we obtain from our RCTs will be key when deciding whether to broaden or keep the magnitude and scope of these programs after the Covid-19 pandemic is over. Additionally, performing RCTs that include high-risk businesses during an economic slump will inform policymakers about the effectiveness of these programs, allowing them to define better strategies so that the use of limited public resources is efficiently rationalized.

Another relevant feature of our experiments is that they incorporate not only MSMEs located in the capital but also in the rest of the country. In fact, more than half of the firms that took part in the experiments were located outside of the

[7] Although the share could be lower, since firms could receive more than one loan from FOGAPE.

capital. This is also relevant when taking into account the effort that the federal governments have taken to decentralize the economy in both countries.

3.3 Randomization

3.3.1 Chilean RCT

The 10,072 MSMEs in the Chilean experiment were randomly assigned (50-50 split) into the treatment group (firms that received the loan offer) and the control group (firms that did not receive the offer). To stratify, we used three relevant economic variables associated with each firm (two continuous and one categorical variable): credit score, annual sales, and specific type of firm. For the first two variables, score and sales, we stratified based on their quartiles. However, to avoid a sparse matrix post-stratification, we finally decided to merge the bottom two quartiles, such that our three-level modified quartiles are the following:

- *Score Q1 (Sales Q1)*: MSMEs having a score (annual sales) below the median;
- *Score Q2 (Sales Q2)*: MSMEs having a score (annual sales) above the median but below the 75^{th} percentile;
- *Score Q3 (Sales Q3)*: MSMEs having a score above the 75^{th} percentile

The type of firm is a three-category variable that distinguishes MSMEs according to the loan and campaign decisions made by the bank during its last marketing loan campaign. We classified experimental firms into the following three types:

- *Type 1*: MSMEs that received a Covid-19 loan offer and finally accepted the offer before our experiment.
- *Type 2*: MSMEs that received a Covid-19 loan offer but did not accept the offer before our experiment.
- *Type 3*: MSMEs that were rejected by the bank and thus did not receive any offer before our experiment.

The total number of strata was, thus, 27. Table 6 in Appendix A.1 shows the distribution of the Chilean MSMEs by type of firm, and score and sales quartiles. The final randomization resulted in 5,069 and 5,003 MSMEs assigned to the treatment and control groups, respectively.

Lastly, it is important to mention that, before implementing our stratification, we studied whether the correlation between sales and scores was relevant. Our concern was that MSMEs having higher sales may also have, at the same, lower risk scores. If both variables were strongly correlated, we should only have included one of them to stratify firms. However, as Table 7 in Appendix A.1 shows, the correlation between the modified score and sales quartiles was not significant.

3.3.2 Colombian RCT

In a similar fashion, we stratified the Colombian MSMEs using a similar three-category variable that defines the type of firm. The type of firm, then, categorizes MSMEs according to the decision made by the Colombian bank regarding the loan petition/response that our financial partner received during its last marketing campaign. We group the 3,379 micro, small, and medium-sized firms into the following three categories:

- *Type 1*: MSMEs that received and accepted a loan in the previous credit campaign.
- *Type 2*: MSMEs that did not receive an offer before based on their credit score.
- *Type 3*: MSMEs that either received an offer in the previous credit campaign but did not accept it or were not contacted in the previous campaign but should have received the offer given their credit score.

The stratification process performed in Wave 1 also included the total number of months in which the MSMEs made at least one deposit during 2020 (we decided to include this variable once a large proportion of firms from the initial universe we received from the bank did not make any deposit that year). The total number of

strata in this wave was 36 ($3x12$), and the 984 firms that took part of the experiment were split evenly (50-50) into the treatment and control groups. The stratification process for Wave 2, in contrast, only used the type of firm as a variable, and 80% of the 2,395 firms were assigned to the treatment group (80-20 split). Table 8 in Appendix A.1 shows the final distribution of the Colombian MSMEs in our RCT by type of firm and type of experiment (Wave 1, Wave 2, and Pooled RCT).

3.4 Balance Checks

To check the balance between MSMEs assigned to the control group and MSMEs assigned to the treatment group, we ran a set of balance checks with a blocking dummy control variable using the main economic variables that we associated with the firms. Balance checks include: i) the total amount of deposits; ii) the liquidity (total debt) that MSMEs contracted with the formal financial system; iii) the age of the firm; iv) the nature of the firm: legal entity (recognized as a business) or natural person; v) the geographical location (capital or rest of the country); and vi) the gender of the owner. The total number of MSMEs included in a specific balance check varies with the covariate we test. The reason explaining this variation is that our partners did not fully characterize every single MSME in the experiment.

The main specification for our balance checks is the following:

$$y_i = \alpha + \beta \cdot Treat_i + \sum_{j=1}^{J} \gamma_j \cdot Stratum_{i,j} + \varepsilon_i \tag{1}$$

where y_i is the metric or MSME economic feature that we are interested in testing, $Treat_i$ is a dummy variable indicating the treatment status of firm i, and $Stratum_{i,j}$ is a dummy variable indicating whether the *i-th* MSME belongs to the *stratum* j. The parameter of interest is β. We estimate equation (1) with and without strata fixed effects as a robustness checks.

To check the correct balance between MSMEs assigned to the control group and MSMEs assigned to the treatment group, we ran a set of balance checks with a blocking dummy control variable using the main economic variables that we could

associate with the firms. Balance checks include: *i*) the total amount of deposits; *ii*) the liquidity (total debt) that MSMEs contracted with the formal financial system; *iii*) the age of the firm; *iv*) the nature of the firm: legal entity (recognized as a business) or natural person; *v*) the geographical location (capital or rest of the country); and *vi*) the gender of the owner. Table 2 shows the results of our baseline balance checks. The total number of MSMEs that were included in a specific balance check varies with the covariate we test. The reason explaining this variation is that our partners could not fully characterized every single MSME in the experiment.

The results of our balance checks indicate that there are no statistically significant differences between the control and the treatment groups for almost all metrics we test (for some specifications, either the liquidity or deposits are significant in the Colombian case). Last, we run an F-Test and conclude that the covariates do not jointly exhibit a statistically significant relationship with the treatment assignment.

Table 2: Baseline Balances, Chilean and Colombian (Pooled) RCTs

Variable	Chilean RCT				Colombian RCT			
	N Firms	Control Mean	Mean Diff.	Mean Diff. w/strata FEs	N Firms	Control Mean	Mean Diff.	Mean Diff. w/strata FEs
Deposits per month (1)	10,072	1.906	0.007	0.007	3,379	2.165	-0.255***	-0.048
		(0.016)	(0.022)	(0.020)		(0.050)	(0.060)	(0.058)
		[0.000]	[0.758]	[0.720]		[0.000]	[0.000]	[0.412]
Liquidity per month (1)	10,072	2.599	0.033	0.041	3,379	4.280	-0.097	-0.025
		(0.023)	(0.033)	(0.029)		(0.062)	(0.074)	(0.075)
		[0.000]	[0.317]	[0.154]		[0.000]	[0.190]	[0.739]
Firm Age (2)	10,052	10.813	-0.018	-0.022	2,892	13.403	0.678*	-0.447
		(0.097)	(0.137)	(0.135)		(0.308)	(0.367)	(0.372)
		[0.000]	[0.897]	[0.852]		[0.000]	[0.065]	[0.229]
Firm nature (3)	10,069	0.746	0.001	0.002	3,379	0.387	-0.070***	0.020
- Legal Entity = 1		(0.006)	(0.009)	(0.009)		(0.015)	(0.018)	(0.016)
		[0.00]	[0.900]	[0.852]		[0.000]	[0.000]	[0.215]
Location	10,007	0.520	0.001	0.001	3,378	0.248	-0.038**	0.012
- Capital = 1		(0.007)	(0.010)	(0.010)		(0.013)	(0.016)	(0.016)
		[0.000]	[0.890]	[0.910]		[0.000]	[0.016]	[0.452]
Gender Owner	9,390	0.324	-0.013	-0.012	3,300	0.242	-0.005	-0.013
- Female = 1		(0.007)	(0.010)	(0.010)		(0.014)	(0.016)	(0.017)
		[0.000]	[0.179]	[0.199]		[0.000]	[0.741]	[0.457]

(1) Dependent variable: winsorized top 5%, with log(y+1). Variable measured as the mean per month taking into account the six months pre-RCT implementation. Liquidity is defined as the total debt contracted with the formal banking system.

(2) For the Chilean case, firm age is defined as the number of years that the small business has been a bank's client.

(3) Firm nature is a dummy variable equal 1 (0) when the SME is registered as a legal entity (natural person).

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

Table 9 in Appendix A.2 shows the baseline balance results for each of the two

Colombian waves separately. The table confirms that there are no statistically significant differences between the control and treatment groups in either wave. On the other hand, Tables 10-12, also in Appendix A.2, show the results of the main baseline balances when using the variables we use to stratify in each of the RCTs. As expected, all mean difference estimates are not statistically significant at the 99% confidence level. Therefore, we conclude that our randomization process is well-designed and statistically valid.

Lastly, Tables 13 and 14 in Appendix A.3 compare the main metrics and firm characteristics between experimental groups. The comparison includes the average total amount of deposits and liquidity per month pre-RCT implementation, the gender of the owner, location, firm size, and economic sector. The tables show that there is no statistically significant difference between groups.

4 RCTs Ex post Main Results

4.1 Take-up Rates and Loan Amounts

Among the firms assigned to the treatment groups, 1,377 Chilean and 700 Colombian businesses (2,077 in total) accepted and received the offer (27.2% and 29.5% take-up rates, respectively, and 27.9% in the joint RCT -). Although MSMEs belonging to the control group did not receive any offer, 107 non-treated Chilean firms had access to the loan (2.1% of the total number of MSMEs assigned to the control group).[8] We consider the marketing financial campaigns a success taking into consideration the ex ante estimates that our partners suggested, taking into account the take-ups from the most recent previous marketing loan campaigns. Because of recent loan offers, the Chilean bank was expecting a take-up rate closer to 20%, and the Colombian bank was expecting a take-up of 16-18%.

Table 3 shows, by country (and the joint RCT), the total number of firms that received the loan, the take-up rates, and the average amount of approved loans in

[8]These 107 MSMEs were not contacted by us when implementing our RCT campaign. They instead contacted the bank directly as business clients.

millions of local currency and thousands of US dollars. As the table shows, the total amount approved by our partners summed up to US$ 824.2M and US$ 825.5M in the Chilean and Colombian experiment respectively (taking into account only the loans approved to treated firms). The average loan size was US$ 817.6K and US$ 836.4K in the Chilean and Colombian RCT, respectively.

Table 3: Take-up Rates and Average Loan Amount

Variable	Chile			Colombia Pooled			Joint		
	Treat	Control	Total	Treat	Control	Total	Treat	Control	Total
N MSMEs	5,069	5,003	10,072	2,375	1,004	3,379	7,444	6,007	13,451
N Compliers	1,377	107	1,484	700	-	700	2,077	107	2,184
Take-up	27.2%	2.1%	14.7%	29.5%	-	20.7%	27.9%	1.8%	16.2%
Loan Amount (1)	12.5	20.9	13.1	136.1	-	136.1	-	-	-
Loan Amount (2)	17.6	29.4	18.4	36.4	-	36.4	23.9	29.4	24.2

(1) Average amount in millions of Chilean and Colombian pesos.

(2) Average amount in thousands of US dollars. We use the exchange rate of May 2021 in each. country to transform local currencies to US dollars. Exchange rates: Chile = 711.6 CLP/US dollar; Colombia = 3,735.7 COP/US dollar.

Table 15 in Appendix A.4 describes the take-up rates and average loan sizes for each of the two Waves in the Colombian RCT. Figures 2 and 3 shows the distribution of the assigned Covid-19 loans by month, treatment group, and country. As Figure 2 shows, most of the 1,377 loans (99.3% of the total) in the Chilean RCT were approved between March and June 2021. Although the RCT campaign extended from February to July, only 10 loans were assigned in these two months (the six loans approved in July were assigned to the MSMEs on July 1). Given the timing and distribution of approved loans, when running the ITT and TOT regressions, we instead assume that the Chilean RCT extended from March to June only.

Lastly, Appendix A.5 performs the power calculations using the Duflo et al. (2007) methodology [10] for the joint and country-specific RCTs.

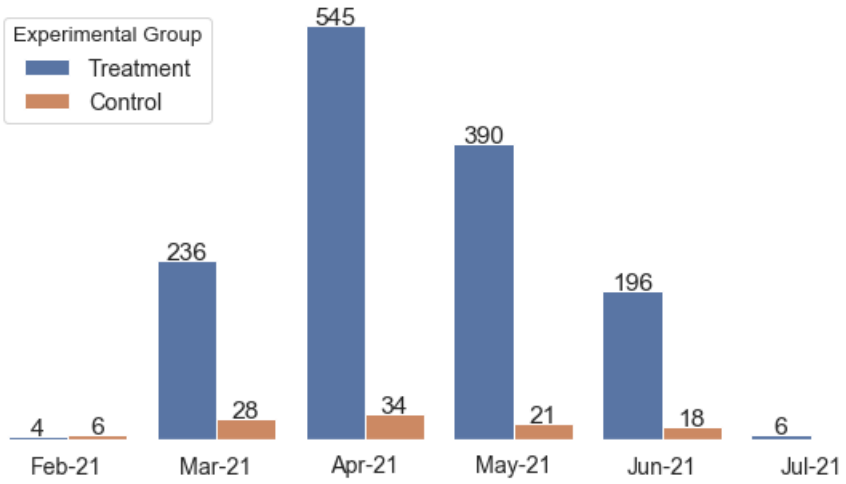


Figure 2: Loans Approved by Month and Experimental Group, Chilean RCT

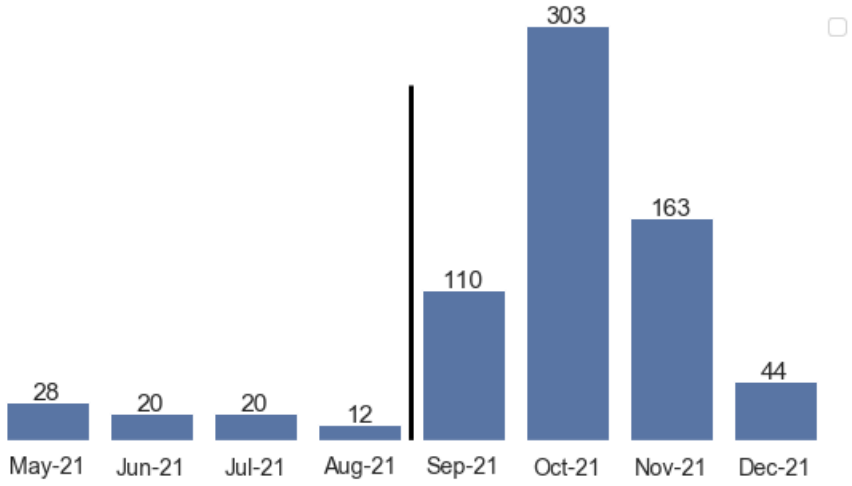


Figure 3: Loans Approved by Month, Treatment Group, Colombian RCT. *Note: Wave 1: May-Aug ; Wave 2: Sep-Dec.

5 Estimating Loans Effects

5.1 Data Sources and Main Outcomes

Given our experimental design, the randomization strategy, and the results from our balance baseline tests, we were able to track the potential causal impact of our RCTs over time on relevant economic outcomes that approximate MSMEs' performance during the pandemic. In this paper, we study the impact of the Covid-19 loan offers on liquidity (defined either as the total amount of debt or the total amount of commercial debt that MSMEs contracted with the formal banking system) and earnings (using as proxy the total amount of deposits they performed each month). Liquidity is a relevant economic outcome for MSMEs since it tells us about the capacity of high-risk small firms to obtain funding during economic recessions, which will allow them to continue paying short-term commitments (payrolls and payments to suppliers), and to have a higher probability of survival when mobility and gathering restrictions are in place.

The liquidity data consist of monthly information provided directly by our partners. The banks, however, get the information directly from the Chilean financial regulator (Comision para el Mercado Financiero, CMF) and the second largest and most recognized private credit bureau in Colombia respectively (both official sources that compile and deliver trustworthy data on liquidity). In both countries, we are able to disaggregate total liquidity into commercial, consumption and mortgage debt. We are exclusively focused on commercial and total liquidity since the Covid-19 loans were loans approved to businesses, so that new injection of liquidity may only affect total debt through the commercial channel. However, we include the other two types of liquidity in our regressions to perform additional robustness checks. We expect either null or negative (substitution effect) impact when we take the consumption and mortgage liquidity as an outcome of interest.

We proxy earnings by using direct transactional information from the banks' internal systems, which provided us with high-frequency transactions (at the daily and weekly basis for Chile and Colombia respectively) containing the total number

and the total amount of deposits made by each firm. However, in our analyses, earnings are aggregated at the monthly level (liquidity is only available on a monthly basis). Although the time period of the data is the same for each country, the disaggregation of deposits is different. While we could distinguish in-person, online and POS deposits in the Colombian case, the Chilean data do not contain information regarding POS, and the bank was not able to disaggregate the information into in-person and online deposits.

The period of analysis extends from January 2019 to July 2022, the most recent update of information at the time of writing. However, we expect to update the results once we receive new data. Liquidity and earnings are measured in real terms using January 2019 as the base month and are then converted into US dollars. (However, when we perform the analysis for each country independently in Appendices A.7 and A.8, the data are in millions of real Chilean (CLP) and Colombian (COP) pesos, respectively).

Lastly, as a note of caution, we acknowledge that our earnings proxy (total amount of deposits) may be partial and have measurement issues. To further study the impact of our experiment, we continue working with our partners to incorporate new relevant outcome variables that more thoroughly capture MSMEs' economic performance.

5.2 Methodology

Our experimental design and valid randomization strategy allows us to estimate in reduced form the impact of the FOGAPE and Unidos por Colombia Covid-19 government-guaranteed loan relief economic programs. Our baseline intention-to-treat (ITT) regression to estimate is the following:

$$y_{i,post} = \alpha + \beta \cdot Treat_i + \sum_{k=1}^{K} \gamma_k \cdot Stratum_{i,j} + \delta \cdot y_{i,pre} + \varepsilon_i \tag{2}$$

where $y_{i,post}$ is the outcome of interest (average liquidity or average earnings per month post treatment) of $MSME\ i$ post treatment, $Treat_i$ is an indicator variable

denoting treatment assignment, $Stratum_{i,j}$ is a strata FE, $y_{i,pre}$ is the lagged outcome of interest, i.e., the average outcome of interest per month ex ante the RCT's execution), and ε_i are heteroskedastic-robust standard errors. Our parameter of interest is β. For robustness, we estimate 4quation (2) using three different specifications: including or excluding both strata FEs and the lagged outcome of interest. Our preferred specification, given the covariate regression adjustments, is the one that includes both as explanatory variables. Dependent and lagged variables were transformed to logarithms and upper-winsorized at the 5% level to avoid the impact of outliers. The winsorizing was done at the monthly-treatment group levels. Lastly, regardless of the specification of equation (2), the main results (sign and significance of our parameter of interest) remain the same in most cases.

The regressions we show in this section endogenize the month in which the treated firm i was exposed to the experiment. For treated firms that received and accepted the Covid-19 loan offer, we use the month in which the loan was delivered as the month in which they were exposed to the treatment. For those treated MSMEs that did not take the offer, we use the month when they were contacted by phone as the experiment's exposed month. Lastly, for those treated firms that did not receive the Covid-19 loan and could not be contacted (797 MSMEs out of 7,444) and the firms assigned to the control group, we assume that they were exposed to the experiment the first month of each RCT-wave implementation.

Additionally, we run alternative ITT regressions using three different scenarios as additional robustness checks. The three alternative specifications, described in Table 17 in Appendix A.6, assume different exogeneous and general ex ante and ex post RCT periods. The results of these three robustness checks are also shown in Appendix A.6.

Our final robustness check uses an instrumental variable (IV) strategy. Given that there was imperfect compliance in both RCTs, we explore whether we obtain different results by using an IV methodology to localize the impact of the loan offer based on firms who took up the loan as a result of the offer. To this end, we run the

following specification for the two-stage least squares (TSLS):

$$y_{i,post} = \alpha + \beta \cdot \widehat{Compliance}_i + \sum_{k=1}^{K} \gamma_k \cdot Stratum_{i,j} + \delta \cdot y_{i,pre} + \varepsilon_i \tag{3}$$

where $\widehat{Compliance}_i$ is the fitted value for the take-up dummy variable. The rest of the variables are the same as those defined in equation (2). The first stage consists of regressing the compliance dummy, $Compliance_i$, using the treatment assignment dummy variable as instrument. The first-stage equation is then the following:

$$Compliance_i = \theta \cdot Treat_i + \mu_i$$

The TSLS estimates for the specific country RCTs are also shown in Appendix A.6. The results from the first stage show that the coefficient associated with the treatment variable is positive and statistically significant at the 99% confidence level (see Table 22). However, as Table 23 in the same Appendix shows, the second-stage estimate impact from the fitted take-up variable remains not statistically significant at the 99% confidence level when the variable of interest is MSME's earnings. Conclusions do not change when using as dependent variable the total or commercial liquidity: the impact is positive and statistically significant at the 99% confidence level.

Lastly, Appendix A.6 also shows the results from the treated-on-treat (TOT) regressions. The TOT regressions on liquidity show a positive but even larger statistically significant impact of our experiments. Interestingly, the TOT regressions show that the impact of our experiments on firms' earnings are robust and statistically significant at the 99% level of confidence (see Table 25).

5.3 ITT Estimates, Main Results

5.3.1 ITT Effects on Liquidity

Table 4 shows the ITT estimates for each of the four types of liquidity using three different specifications of equation (2). The ex post RCT period goes from the month

after the treated MSME either received the Covid-19 loan or was contacted by phone to June 2022. When we include strata FE and the lagged outcome, our results show a positive and significant estimate of our parameter of interest when we use as dependent variable either total liquidity (15.7%) or commercial liquidity (26.4%) that MSMEs contracted with the formal banking system. As expected, we did not find any positive significant increase in either consumption or mortgage liquidity.

Table 4: ITT Liquidity Effects, Joint RCTs (1), (2)

	y_i = log(Mean Debt per Month +1) ($US real)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
Treat	-0.011	0.194***	0.089*	0.250***	0.127***	-0.138***	-0.103***	0.066*	0.264***	-0.042	-0.046***	0.157***
	(0.069)	(0.063)	(0.047)	(0.058)	(0.043)	(0.026)	(0.018)	(0.036)	(0.042)	(0.026)	(0.018)	(0.036)
	[0.868]	[0.002]	[0.056]	[0.000]	[0.003]	[0.000]	[0.000]	[0.068]	[0.000]	[0.100]	[0.010]	[0.000]
C-Mean	8.142	2.013	0.785	8.876	8.142	2.013	0.785	8.876	8.142	2.013	0.785	8.876
Adj. R-Sq	-0.000	0.001	0.000	0.001	0.603	0.819	0.838	0.611	0.634	0.827	0.841	0.640
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period goes from the month after the treated MSME either received the Covid-19 loan or was contacted by phone to June 2022.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

5.3.2 Monthly ITT Effects on Liquidity

We now estimate equation (2) month by month to obtain monthly point estimates of our parameter of interest (we only include strata FE in the regressions). The idea here consists of inspecting whether significant differences are present in the estimates before and after the implementation of the experiment, which extends from March to December 2021 when we evaluate the impact of the joint RCT. Figures 4 and 5 show the monthly estimates from January 2019 to June 2022 for the log of total and commercial liquidity, respectively. The figures show a strong and sustained positive impact of the Covid-19 loan offer immediately after the execution of the Chilean RCT (red vertical lines in the plots). Lastly, Figures 4 and 5 also show that the increase stabilized beginning in January 2022 (end of the Colombian Wave 2) and has since then slightly decreased over time.

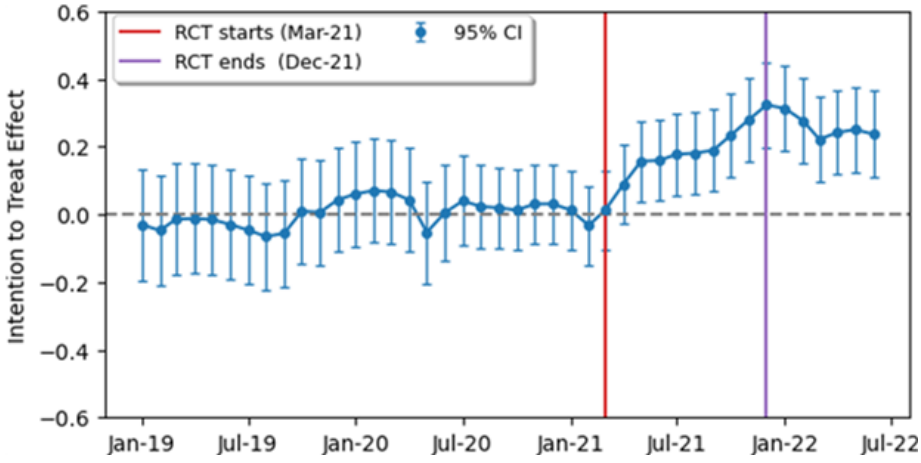


Figure 4: Monthly ITT Estimates (Log-) Total Liquidity, Joint RCT (January 2019 to June 2022)

5.3.3 ITT Effects on Earnings

Although we have access to disaggregated data by type of deposits for the Colombian MSMEs (in-person, online, and POS), we could not perform the analysis at that level since the Chilean data are only at the aggregate level. While Appendix A.8 shows the

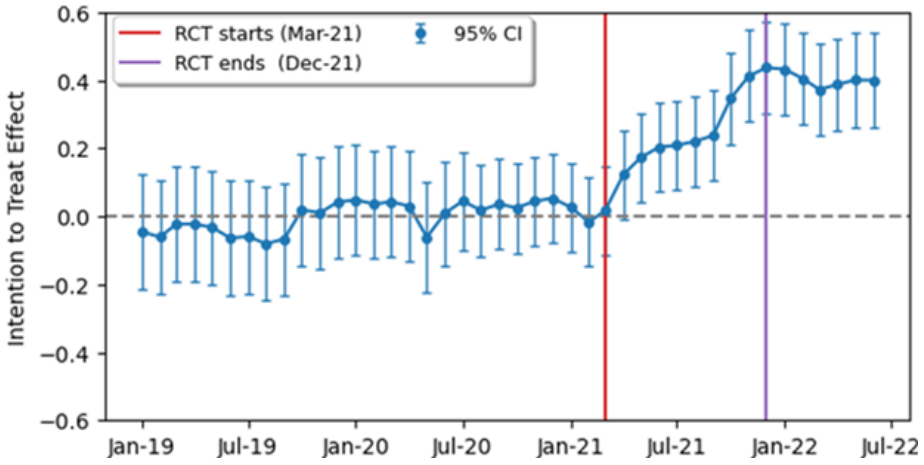


Figure 5: Monthly ITT Estimates (Log-) Commercial Liquidity, Joint RCT (January 2019 to June 2022)

disaggregated estimates for Colombia, here we perform the analysis using as outcome variable the average of total earnings (total amount of deposits) per month that each MSME performed ex post they were exposed to the experiment. Table 5 shows that the parameter of interest is not statistically significant from zero at the 10% level of confidence when strata FE and the lagged outcome are included. The conclusion remains the same regardless of the alternative we use to define the ex post RCT period (see Appendix A.6). As the table shows, the lack of significance is mainly due to the almost negligible magnitude of the estimates. Although the ITT robustness checks, the monthly estimates, and the event study approach confirm the lack of significance, the conclusion changes when estimating TOT regressions. Table 25 in Appendix A.6 shows that the Covid-19 loan offer led to a significant 45% increase in treated-on-treat MSMEs' earnings.

Table 5: ITT Earning Effects, Joint RCT (1), (2)

y_i = log(Mean Total Deposits per Month + 1) ($US K real)			
	(1)	(2)	(3)
Treat	-0.422***	-0.241***	-0.039
	(0.045)	(0.032)	(0.031)
	[0.000]	[0.000]	[0.209]
C-Mean	8.389	0.432	1.139
Adj. R-Sq.	0.006	0.484	0.532
N	13,451	13,451	13,451
Lag Debt	No	Yes	Yes
Strata FE	No	No	Yes

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period goes from the month after the treated MSME either received the Covid-19 loan or was contacted by phone to July 2022.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

5.3.4 Monthly ITT Effects on Earnings

Similar to the liquidity case, we next estimate equation (2) month by month to obtain monthly estimates of our parameter of interest. Figure 6 confirms the results obtain from our ITT estimations. The figure - which shows the estimates of equation (2) from January 2019 to July 2022 - shows no impact of the Covid-19 loan offer on firms' earnings, whether immediately after implementation, during or after the execution of the joint RCT.

5.3.5 Event Study

Once we had access to MSMEs' liquidity over a long period of time, we were able to estimate the effects of FOGAPE and Unidos por Colombia Covid-19 loan offers using a dynamic framework (generalized difference-in-differences strategy). The dynamic estimation allows us to incorporate into the analysis the fact that treated MSMEs

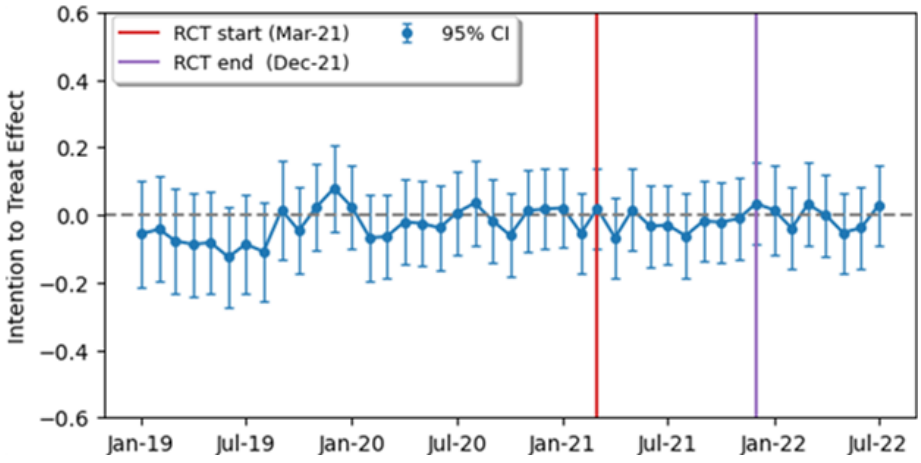


Figure 6: Monthly ITT Estimates (Log-) Total Earnings, Joint RCT (January 2019 to June 2022)

were exposed to the offer at different points in time. We exploit the panel data structure and estimate a generalized diff-in-diff model which includes 42 periods in total (from January 2019 to June 2022). The outcomes of interest, y_{it}, corresponds to either the liquidity (total or commercial) that the $MSME_i$ undertook with the banking system during the month t or the total amount of deposits that the firm performed during month t. The panel event regression specification is the following:

$$y_{it} = \lambda_i + \delta_t + \sum_{j=1}^{J} \beta_j \cdot Lag_{j,it} + \sum_{k=1}^{K} \gamma_k \cdot Lead_{k,it} + \varepsilon_{it} \tag{4}$$

where λ_i and δ_t are MSMEs and months fixed effects, respectively, and ε_{it} is an unobserved error term. $Lag_{j,it}$ and $Lead_{k,it}$ are dummy variables indicating that, at time t, $MSME_i$ was j and k periods away from either the effective loan offer date. The effective loan offer date is defined as the month when the treated $MSME_i$ either received the Covid-19 loan or was reached by the bank regarding the loan offer. For firms in the control group, $Lag_{j,it} = Lead_{k,it} = 0$ for all k, j, t and i. Also, since we measure effects relative to the month before starting the experiment, we omit the first Lag dummy in our estimations. Lastly, we drop the largest four lags and the

largest two leads estimates to avoid the influence of extreme points when plotting the results of our estimations (since only a smaller number of firms did have those extremes lags and leads).

As previously mentioned, we primarily use the date for when treated MSMEs received the loan as the date for when they were exposed to the treatment. For those treated firms that never received the loan, we instead use the date when they were contacted by the bank. Lastly, there are 797 treated MSMEs (out of 7,444) that ultimately could not be reached by the bank during the experiment. For those uncontacted treated firms, we assume that they were exposed to the treatment in the first month of the RCT-wave.

Figures 7 show the results of the event study estimation for total and commercial liquidity when the dependent variable is measured in US dollars and in logs. Both figures show the positive and significant impact on liquidity that the joint RCT generates. Figure 8 shows the results when the dependent variable is total earnings. As expected, given the ITT and monthly estimates analyses described above, the figure shows that the experiment did have a statistically significant impact on firms' earnings.

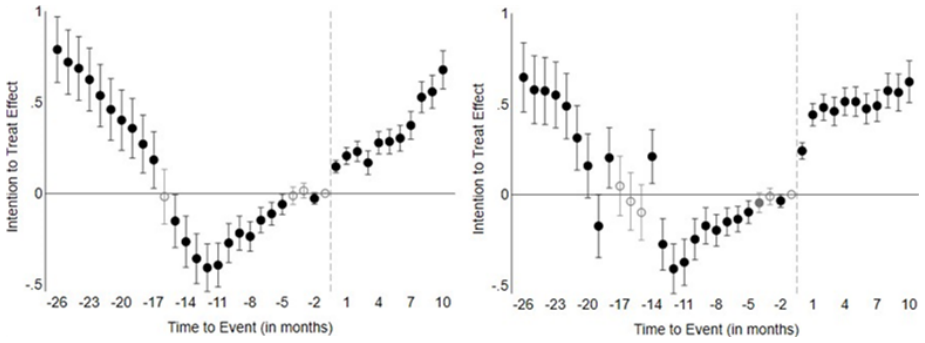


Figure 7: Event Study: Treatment Effects on Total Liquidity (left) and Commercial Liquidity (right), Joint RCT,

Appendix A.9 reproduces the same analysis for each country independently. The main results regarding the significance of the impacts on liquidity and earnings remain unchanged.

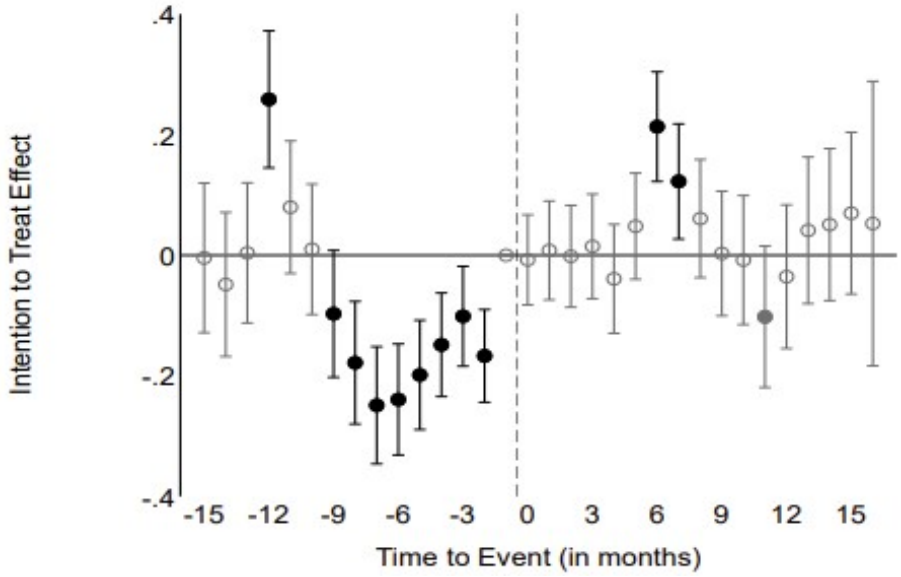


Figure 8: Treatment Effects on Total Earnings, Joint RCT, Event Study

6 Policy Implications and Limitations

This research provides one of the first rigorous impact evaluations of government-guaranteed loan programs during the Covid-19 pandemic in Latin America. Our randomized controlled trials were possible as a result of the significant expansions of well-established economic policies that aim to support the development and growth of micro, small, and medium-sized businesses in Chile and Colombia. The experimental design and the effective randomization technique allowed us to causally identify the positive and statistically significant impact that the loan offers generated on firms' access to credit. The increase in short-term liquidity may potentially impact positively MSMEs' economic performance during the pandemic's economic deterioration. The channels by which the larger access to credit may help businesses face better the pandemic include better chances of survival and being able to continue paying rent, salaries to employees and short-term obligations with suppliers. The statistically significant difference between treated and controlled firms regarding the total liquidity they accessed during the Covid-19 pandemic also inform us that the

implementation of our experiments was relevant and precise in time since firms that did not receive the loan offer could not obtain resources from other formal financial institutions.

In this research, we study, as one of the many potential MSMEs' economic outcomes, whether the loan offers impacted firms' performance by proxy earnings using the total amount of deposits per month that each firm made with our partners. Although we did not find statistically significant positive results, we were aware that this proxy may be limited and biased downward. First, some small businesses may still operate with cash so they do not make deposits on a regular basis. Second, firms can have different bank accounts in which they may make deposits. A question that remains open is to understand the contrasting results of our ITT regressions with the estimates when considering as the main regressor the dummy variable identifying only treated firms that effectively received the loan (taking into account the TOT results, these MSMEs made significantly more deposits).

The results of our experiments, then, will directly inform policymakers concerning the relevance of restructuring FOGAPE and FNG public budgets and the relaxation of some criteria that MSMEs must fulfill to access to the programs' benefits. At the same time, the results of our research may inform private banks and the Department of Finance about key aspects of the program and will help them to decide whether to scale up or down the existing public funds accordingly to the economic phase. Lastly, our policy implications may also be relevant taking into account that the Covid-19 pandemic may be close to an end, and the most negatively impacted Chilean and Colombian industries are starting to enjoy economic growth again.

7 Conclusion

The implementation of policies that aimed to support and financially help micro, small and medium enterprises in Latin America during the Covid-19 pandemic were key to avoiding an even larger economic deterioration in these developing economies. Longstanding economic programs were boosted after the implementation of mobility and gathering constraints as one of the main tools implemented by governments.

The understanding and quantification of both direct and indirect impacts–and their main economic channels–that these economic relief programs generated are key if we want to explore the cost-effectiveness of programs whose goal is to help mitigate negative shocks in the economy that impact MSMEs in these countries.

This research studied the implementation of two randomized control trials in Chile and Colombia. These experiments were possible as a result of the large expansion of well-established economic programs (FOGAPE and FNG, respectively), and the partnerships with two private banks. We exploited rich high-frequency datasets provided directly by our partners to quantify the causal impact of the Covid-19 emergency relief programs on firms' liquidity and earnings. We show that the financial loans associated with our experiments had a positive and statistically significant impact on liquidity (total and commercial), not only in our joint analysis but also in both countries independently. These results may suggest that the Covid-19 guaranteed loans helped small businesses to face the economic crisis in a better position since the short-term liquidity to which treated firms had access may have been used productively. Although we did not find any positive result when using deposits as a proxy for earnings as our outcome of interest, we were also aware that deposits may not be a good proxy. We nonetheless still suspect that the new funds may be used to support the business and confront short-term commitments such as rent and salaries.

References

[1] Arráiz, I., Meléndez, M. and Stucchi, R. "Partial Credit Guarantees and Firm Performance: Evidence from Colombia". *Small Bus Econ 43: 711–724 (2014).* https://doi.org/10.1007/s11187-014-9558-4

[2] Banerjee, A. V., and E. Duflo. "Do Firms Want to Borrow More? Testing Credit Constraints Using a Directed Lending Program." *Review of Economic Studies 81, no. 2 (April 1, 2014)*: 572–607. https://doi.org/10.1093/restud/rdt046

[3] Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015a). "The Miracle of Microfinance? Evidence from a Randomized Evaluation." *American Economic Journal: Applied economics, 7(1): 22-53.*

[4] Banerjee, A., Karlan, D., & Zinman, J. (2015b). "Six Randomized Evaluations of Microcredit: Introduction and Further Steps." *American Economic Journal: Applied Economics 7(1): 1-21.*

[5] Benavente, José and Crespi, Gustavo and Figal Garone, Lucas & Maffioli, Alessandro. (2012). The Impact of National Research Funds: A Regression Discontinuity Approach to the Chilean FONDECYT". *Research Policy. 41. 1461-1475.* 10.1016/j.respol.2012.04.007

[6] Cai, Jing, & Adam Szeidl, "Interfirm Relationships and Business Performance", *Quarterly Journal of Economics, Volume 133, Issue 3, August 2018, Pages 1229–1282.* https://doi.org/10.1093/qje/qjx049

[7] Cassano, Francesca, Karin Jõeveer, and Jan Svejnar. "Cash Flow vs. Collateral-Based Credit: Performance of Micro, Small and Medium-Sized Firms in Transition Economies." Economics of Transition 21, no. 2 (April 2013): 269–300. https://doi.org/10.1111/ecot.12016

[8] Clarke D., and Tapia Schythe K. "Implementating the Panel Event Study". *The Stata Journal: Promoting Communications on Statistics and Stata, January 2022*

[9] De Mel, Suresh, David McKenzie, and Christopher Woodruff. "Enterprise Recovery Following Natural Disasters." *The Economic Journal 122, no. 559 (March 1, 2012): 64–91.* https://doi.org/10.1111/j.1468-0297.2011.02475.x

[10] Duflo, E., Glennerster R., and Kremer M. "Using Randomization in Development Economics Research: A Toolkit" *Handbook of Development Economics Volume 4*, 2007: *3895-3962*

[11] Fondo Nacional de Garantías. (2021, December 30). Así vamos, programa de garantía "Unidos por Colombia" . Retrieved from Movilización Programa Unidos por Colombia: https://www.fng.gov.co/ES/Paginas/Asi_Vamos_Unidos_por_Colombia.aspx

[12] Guerrero-Amezaga, Maria Elena, John Eric Humphries, Christopher A. Neilson, Naomi Shimberg, and Gabriel Ulyssea. "Small Firms and the Pandemic: Evidence from Latin America." *Journal of Development Economics 155 (March 2022): 102775.* https://doi.org/10.1016/j.jdeveco.2021.102775

[13] Grimm, Michael, and Anna Luisa Paffhausen. "Do Interventions Targeted at Micro-Entrepreneurs and Small and Medium-Sized Firms Create Jobs? A Systematic Review of the Evidence for Low and Middle Income Countries." *Labour Economics 32 (January 2015): 67–85.* https://doi.org/10.1016/j.labeco.2015.01.003

[14] Kaufmann, Daniel. "Does Government-Backed Lending Prevent Unemployment? An Assessment of the Swiss COVID–19 Lending Program," n.d., 21. https://www5.unine.ch/RePEc/ftp/irn/pdfs/WP20-10.pdf

[15] Kersten, Renate, Job Harms, Kellie Liket, and Karen Maas. "Small Firms, Large Impact? A Systematic Review of the SME Finance Literature." *World Development 97 (September 2017): 330–48.* https://doi.org/10.1016/j.worlddev.2017.04.012

[16] Ministerio de Economía, Fomento y Turismo (2021), Boletín: Análisis Descriptivo del Impacto de la Pandemia sobre las Empresas en Chile, Gobierno de Chile, Santiago. https://www.economia.gob.cl/wp-content/uploads/2021/07/Boletin-Analisis-descriptivo-del-impacto-de-la-pandemia-sobre-las-empresas-en-Chile-1.pdf.

[17] OECD (2020), Financing SMEs and Entrepreneurs 2020: An OECD Scoreboard, OECD Publishing, Paris, https://doi.org/10.1787/061fe03d-en.

[18] OECD (2021), OECD Economic Surveys: Chile, OECD Publishing, Paris, http://www.oecd.org/economy/chile-economic-snapshot/.

[19] Romano, Joseph P., and Michael Wolf. "Balanced Control of Generalized Error Rates". *The Annals of Statistics 38, no. 1 (2010): 598–633.* http://www.jstor.org/stable/25662253.

[20] Tan, Hong. 2009. Evaluating SME Support Programs in Chile Using Panel Firm Data. *Impact Evaluation series ; no. IE 39,Policy Research Working Paper 5082. World Bank.* © World Bank. https://openknowledge.worldbank.org/handle/10986/4274 License: CC BY 3.0 IGO.

[21] World Bank (2015), "SME Finance in Chile: Enhancing Efficiency of Support Programs", Finance and Private Sector Development, https://openknowledge.worldbank.org/bitstream/handle/10986/34954/SME-finance-in-Chile-enhancing-efficiency-of-support-programs.pdf?sequence=1&isAllowed=y.

A. Appendix

A.1 MSMEs Distribution by Stratification Variables

Table 6: MSMEs Distribution by Stratification Variables, Chilean RCT

Firms' Type	Qs Score			Qs Sales			Total
	Q1	Q2	Q3	Q1	Q2	Q3	
Type 1	1,987	1,338	1,282	1,980	1,257	1,370	4,607
Type 2	2,593	909	830	2,410	1,008	914	4,332
Type 3	5,036	271	406	646	253	234	1,133
Total	5,036	2,518	2,518	5,036	2,518	2,518	10,072

Table 7: Correlation Matrix: Q-Scores and Q-Sales

Qs Sales/Qs Score	Q1 Score	Q2 Score	Q3 Score
Q1 Sales	0.47	0.26	0.28
Q2 Sales	0.51	0.26	0.23
Q3 Sales	0.56	0.23	0.21

Table 8: MSMEs Distribution by Stratification Variables, Colombian RCT

Firm			Wave 1 (Number of Months with deposits)											Wave 2	Pooled
Type	1	2	3	4	5	6	7	8	9	10	11	12	Total	Total	Total
Type 1	38	18	26	19	19	25	14	12	18	24	31	40	284	233	517
Type 2	16	11	17	14	10	12	13	10	8	7	6	19	143	422	565
Type 3	90	68	63	41	38	33	25	32	26	31	40	70	557	1,740	2,297
Total	144	97	106	74	67	70	52	54	52	62	77	129	984	2,395	3,379

A.2 Baseline Balances and Variables Used to Stratify

Table 9: Baseline Balances by Waves, Colombian RCT

	Wave 1				Wave 2			
Variable	N	Control	Mean	Mean Diff.	N	Control	Mean	Mean Diff.
	Firms	Mean	Diff.	w/strata FEs	Firms	Mean	Diff.	w/strata FEs
Deposits per month (1)	984	2.487	-0.051	-0.045	2,395	1.830	-0.051	-0.049
		(0.071)	(0.102)	(0.089)		(0.070)	(0.078)	(0.075)
		[0.000]	[0.619]	[0.614]		[0.000]	[0.518]	[0.513]
Liquidity per month (1)	984	4.489	-0.118	-0.221*	2,395	4.063	0.091	0.095
		(0.092)	(0.133)	(0.130)		(0.087)	(0.097)	(0.093)
		[0.000]	[0.158]	[0.090]		[0.000]	[0.351]	[0.308]
Firm Age	873	11.326	0.118	0.198	2,019	15.646	-0.863*	-0.865*
		(0.385)	(0.550)	(0.542)		(0.452)	(0.507)	(0.493)
		[0.000]	[0.830]	[0.716]		[0.000]	[0.089]	[0.079]
Firm Nature (2)	984	0.518	0.054*	0.048	2,395	0.252	0.002	0.003
- Legal entity=1		(0.022)	(0.032)	(0.030)		(0.02)	(0.022)	(0.019)
		[0.000]	[0.087]	[0.115]		[0.000]	[0.917]	[0.864]
Location	983	0.323	0.031	0.024	2,395	0.171	0.004	0.005
- Capital =1		(0.021)	(0.030)	(0.031)		(0.017)	(0.019)	(0.019)
		[0.000]	[0.306]	[0.433]		[0.000]	[0.825]	[0.801]
Gender of the Owner	905	0.222	-0.010	-0.003	2,395	0.260	-0.018	-0.018
- Female = 1		(0.019)	(0.027)	(0.028)		(0.019)	(0.022)	(0.022)
		[0.000]	[0.716]	[0.916]		[0.000]	[0.397]	[0.399]

(1) Dependent variable: winsorized top 5%, with log(y+1). Variable measured as the mean per month taking into account the six months pre-RCT-wave implementation. Liquidity is defined as the total debt contracted with the formal banking system.

(2) Firm nature is a dummy variable equal 1 (0) when the SME is registered as a legal entity (natural person).

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

Table 10: Baseline Balance for Variables Used to Stratify, Chilean RCTs (1)

Variable	Control Mean	Mean Diff.	Variable	Control Mean	Mean Diff.
Risk Score Q1	0.501	-0.003	Sales Q3	0.251	-0.003
	(0.007)	(0.010)		(0.006)	(0.009)
	[0.000]	[0.765]		[0.000]	[0.739]
Risk Score Q2	0.249	0.001	Firm Type 1	0.461	-0.008
	(0.006)	(0.009)		(0.007)	(0.010)
	[0.00]	[0.899]		[0.000]	[0.433]
Risk Score Q3	0.249	0.002	Firm Type 2	0.425	0.010
	(0.006)	(0.009)		(0.007)	(0.010)
	[0.000]	[0.827]		[0.000]	[0.318]
Sales Q1	0.503	-0.007	Firm Type 3	0.114	-0.002
	(0.007)	(0.010)		(0.014)	(0.006)
	[0.000]	[0.511]		[0.000]	[0.742]
Sales Q2	0.245	0.009			
	(0.006)	(0.009)			
	[0.000]	[0.274]			

(1) In all balance checks, the number of firms is 10,072.

Table 11: Baseline Balance and Variables Used to Stratify, Colombian RCTs (1)

	Wave 1		Wave 2		Joint	
Variable	Control Mean	Mean Diff.	Control Mean	Mean Diff.	Control Mean	Mean Diff.
Firm Type 1	0.270	0.038	0.098	-0.000	0.185	-0.046***
	(0.020)	(0.029)	(0.013)	(0.015)	(0.011)	(0.014)
	[0.000]	[0.193]	[0.000]	[0.982]	[0.000]	[0.001]
Firm Type 2	0.146	0.006	0.179	-0.003	0.162	0.009
	(0.016)	(0.023)	(0.017)	(0.019)	(0.012)	(0.014)
	[0.000]	[0.790]	[0.000]	[0.862]	[0.000]	[0.542]
Firm Type 3	0.584	-0.044	0.724	0.004	0.652	0.038**
	(0.022)	(0.032)	(0.020)	(0.023)	(0.015)	(0.018)
	[0.000]	[0.167]	[0.000]	[0.870]	[0.000]	[0.032]

(1) In all balance checks, the number of firms are 984 in Wave 1, and 2,395 in Wave 2.

Table 12: Baseline Balance and Variables Used to Stratify, Colombian Wave 1

				Wave 1				
N	Control	Mean	N	Mean	Control	N	Control	Mean
months	Mean	Diff.	months	Diff.	Mean	months	Mean	Diff.
1	0.144	0.006	5	0.068	-0.004	9	0.044	0.016
	(0.016)	(0.023)		(0.011)	(0.016)		(0.010)	(0.014)
	[0.000]	[0.785]		[0.000]	[0.822]		[0.000]	[0.260]
2	0.088	0.024	6	0.068	0.005	10	0.066	-0.004
	(0.013)	(0.019)		(0.011)	(0.017)		(0.011)	(0.016)
	[0.000]	[0.221]		[0.000]	[0.763]		[0.000]	[0.812]
3	0.120	-0.023	7	0.058	-0.009	11	0.078	-0.001
	(0.014)	(0.020)		(0.010)	(0.015)		(0.012)	(0.017)
	[0.000]	[0.243]		[0.000]	[0.553]		[0.000]	[0.966]
4	0.072	0.007	8	0.058	-0.004	12	0.134	-0.014
	(0.012)	(0.017)		(0.010)	(0.015)		(0.015)	(0.022)
	[0.000]	[0.664]		[0.000]	[0.769]		[0.000]	[0.520]

A.3 Experimental Groups and Main Firms' Features: A Comparison

Table 13: MSMEs Features and Metrics: Groups' Comparison, Chilean RCT

Variables	Category	Missing [N]	Overall [Mean (SD) / /N (% of Total)]	Control [Mean (SD) / /N (% of Total)]	Treat [Mean (SD) / /N (% of Total)]	P-Value
Deposits Pre RCT (1)	Mean	0	1.9 (1.1)	1.9 (1.1)	1.9 (1.1)	0.758
	Max	0	2.4 (1.2)	2.4 (1.2)	2.4 (1.2)	0.464
	Min	0	1.1 (1.1)	1.1 (1.1)	1.1 (1.1)	0.876
	Last Pre-Month	0	1.7 (1.3)	1.7 (1.2)	1.7 (1.3)	0.878
Deposits Post RCT	Mean	0	2.0 (1.1)	2.0 (1.1)	2.0 (1.1)	0.862
	Max	0	2.8 (1.2)	2.8 (1.2)	2.8 (1.2)	0.766
	Min	0	0.9 (1.0)	0.9 (1.0)	0.9 (1.0)	0.807
Liquidity Pre RCT (1)	Mean	0	2.6 (1.6)	2.6 (1.6)	2.6 (1.7)	0.317
	Max	0	2.7 (1.6)	2.7 (1.6)	2.7 (1.6)	0.373
	Min	0	2.4 (1.7)	2.4 (1.7)	2.4 (1.7)	0.265
	Last Pre-Month	0	2.6 (1.7)	2.6 (1.6)	2.6 (1.7)	0.396
Liquidity Post RCT	Mean	0	2.6 (1.6)	2.6 (1.6)	2.7 (1.6)	<0.001
	Max	0	2.8 (1.6)	2.8 (1.6)	2.9 (1.6)	<0.001
	Min	0	2.3 (1.7)	2.2 (1.7)	2.3 (1.7)	<0.001
Econ Sector	Agriculture	2,706	448 (6.1)	218 (6.0)	230 (6.2)	0.700
	Construction		652 (8.9)	313 (8.6)	339 (9.1)	
	Education		91 (1.2)	45 (1.2)	46 (1.2)	
	Finance		714 (9.7)	347 (9.5)	367 (9.9)	
	Healthcare		308 (4.2)	164 (4.5)	144 (3.9)	
	Manuf.		632 (8.6)	297 (8.1)	335 (9.0)	
	Others		1,126 (15.3)	563 (15.4)	563 (15.2)	
	Retail		2,881 (39.1)	1,441 (39.4)	1,440 (38.8)	
	Social		99 (1.3)	55 (1.5)	44 (1.2)	
	Transp-Tourm		415 (5.6)	211 (5.8)	204 (5.5)	
Gender Owner	Female	682	2,986 (31.8)	1,516 (32.4)	1,470 (31.2)	0.186
	Male		6,404 (68.2)	3,156 (67.6)	3,248 (68.8)	
Capital Flag	Capital	65	5,206 (52.0)	2,579 (52.0)	2,627 (52.1)	0.906
	No Capital		4,801 (48.0)	2,385 (48.0)	2,416 (47.9)	
MSME Size	Medium	3,996	70 (1.2)	34 (1.1)	36 (1.2)	0.940
	Micro		1909 (31.4)	957 (31.6)	952 (31.2)	
	Small		4097 (67.4)	2,038 (67.3)	2,059 (67.6)	
Sample Size			**10,072**	**5,003**	**5,069**	

- Mean per-month using a pre-RCT period of six months. Variable winsorized top 5%, with log(y+1). Liquidity here is defined as the total debt in the banking system.

Table 14: MSMEs Features and Metrics: Groups' Comparison, Colombian RCT

Variables	Category	Missing [N]	Overall	W1 Control	W1 Treat	W2 Control	W2 Treat	P-Value
			[Mean (SD) //N (Percent)]					
Deposits Pre RCT (1)	Mean	0	2.0 (1.6)	2.5 (1.6)	2.4 (1.6)	1.8 (1.6)	1.8 (1.5)	<0.001
	Max	0	2.6 (1.8)	3.1 (1.7)	3.1 (1.7)	2.5 (1.8)	2.4 (1.8)	<0.001
	Min	0	1.0 (1.5)	1.4 (1.6)	1.3 (1.6)	0.9 (1.4)	0.9 (1.4)	<0.001
	Last Pre-Month	0	1.8 (1.8)	2.1 (1.8)	2.0 (1.8)	1.7 (1.8)	1.6 (1.8)	0.056
Deposits Post RCT	Mean	0	2.0 (1.6)	2.5 (1.7)	2.4 (1.6)	1.9 (1.6)	1.8 (1.6)	<0.001
	Max	0	2.7 (1.8)	3.3 (1.8)	3.2 (1.7)	2.5 (1.8)	2.4 (1.8)	<0.001
	Min	0	1.0 (1.5)	1.3 (1.7)	1.2 (1.6)	0.9 (1.4)	0.9 (1.5)	<0.001
Liquidity Pre RCT (1)	Mean	0	4.2 (2.0)	4.5 (2.1)	4.3 (2.1)	4.1 (2.0)	4.2 (1.9)	<0.001
	Max	0	4.4 (1.9)	4.7 (2.0)	4.5 (2.1)	3.7 (2.1)	3.8 (2.1)	0.001
	Min	0	3.8 (2.2)	4.2 (2.3)	4.0 (2.3)	3.7 (2.1)	3.8 (2.1)	0.001
	Last Pre-Month	0	4.1 (2.1)	4.4 (2.2)	4.2 (2.2)	3.9 (2.1)	4.0 (2.1)	0.001
Liquidity Post RCT	Mean	0	4.2 (2.0)	4.4 (2.2)	4.2 (2.1)	3.9 (2.0)	4.3 (2.0)	0.001
	Max	0	4.5 (2.0)	4.8 (2.1)	4.6 (2.1)	4.2 (2.1)	4.5 (2.0)	<0.001
	Min	0	3.5 (2.4)	3.6 (2.5)	3.6 (2.4)	3.1 (2.3)	3.5 (2.3)	0.001
Econ Sector	Agriculture	1,169	110 (5.0)	7 (1.6)	9 (2.2)	22 (7.6)	72 (6.6)	<0.001
	Construction		54 (2.4)	14 (3.3)	14 (3.5)	5 (1.7)	21 (1.9)	
	Education		84 (3.8)	3 (0.7)	3 (0.7)	18 (6.2)	60 (5.5)	
	Finance		57 (2.6)	13 (3.0)	12 (3.0)	4 (1.4)	28 (2.6)	
	Healthcare		48 (2.2)	8 (1.9)	12 (3.0)	2 (0.7)	26 (2.4)	
	Manuf.		260 (11.8)	79 (18.5)	67 (16.7)	20 (6.9)	94 (8.6)	
	Others		155 (7.0)	39 (9.1)	40 (10.0)	12 (4.1)	64 (5.9)	
	Retail		1,280 (57.9)	232 (54.3)	219 (54.5)	187 (64.3)	642 (58.9)	
	Social		23 (1.0)	7 (1.6)	3 (0.7)	5 (1.7)	8 (0.7)	
	Transp-Tourm		139 (6.3)	25 (5.9)	23 (5.7)	16 (5.5)	75 (6.9)	
Gender Owner	Female	79	785 (23.8)	105 (22.2)	92 (21.2)	128 (26.0)	460 (24.2)	0.300
	Male		2,515 (76.2)	367 (77.8)	341 (78.8)	364 (74.0)	1,443 (75.8)	
Capital Flag	Capital	1	749 (22.2)	165 (32.3)	167 (35.4)	84 (17.1)	333 (17.5)	<0.001
	No Capital		2,629 (77.8)	346 (67.7)	305 (64.6)	408 (82.9)	1,570 (82.5)	
MSME Size	Medium	22	220 (6.6)	51 (10.0)	32 (6.8)	38 (7.8)	99 (5.2)	<0.001
	Micro		623 (18.6)	120 (23.6)	123 (26.2)	68 (13.9)	312 (16.5)	
	Small		2,514 (74.9)	338 (66.4)	314 (67.0)	383 (78.3)	1,479 (78.3)	
Sample Size			**3379**	**512**	**472**	**492**	**1903**	

- Mean per-month using a pre-RCT period of six months. Variable winsorized top 5%, with log(y+1). Liquidity here is defined as the total debt in the banking system.

A.4 Take-up Rates and Loan Sizes, Colombian Waves

Table 15: Take-up Rates and Average Loan Amount, Colombian Waves

Variable	Colombia Wave 1			Colombia Wave 2		
	Treat	Control	Total	Treat	Control	Total
N MSMEs	472	512	984	1,903	492	2,395
N Compliers	80	-	80	620	-	620
Take-up (%)	16.9	-	8.1	32.6	-	25.9
Loan Amount (1)	118.2	-	118.2	138.4	-	138.4
Loan Amount (2)	31.6	-	31.6	37.0	-	37.0

(1) Average Amount in millions of Colombian pesos.

(2) Average Amount in thousands of US dollars. We use the exchange rate of May 2021. to transform local currencies to US dollars. Exchange rate: 3,735.7 COP/dollar

A.5 Power Calculations

We measure our MDE in standard deviation, so are able to perform *ex-post* power calculations using different outcomes of interest (such as access to credit, earnings, employment, wages, and profits). We follow Duflo, Glennerster, and Kremer (2007) [10] to compute standardized minimum detectable effects ($MDEs$) when imperfect compliance is present. The MDE is defined as follows:

$$MDE = (t_{(1-\kappa)} + t_{\alpha}) \times \sqrt{\frac{1}{p(1-p)}} \sqrt{\frac{\sigma^2}{N}} \frac{1}{(c-s)} \tag{5}$$

where $t_{(1-\kappa)}$, t_{α} are the standard critical values for the standard 80% power and 5% significance levels ($t_{(1-\kappa)} = 0.84$ and $t_{\alpha} = 1.96$ when using the standard normal distribution), respectively. The parameter σ is equal to 1, since the effects we want to estimate are standardized to allow comparability with other studies, N is the sample size, p is the proportion of treatment firms, p, and $(c-s)$ is the take-up rate. The MDE decreases (and thus the power increases) exponentially with N and $p(1-p)$, meaning drops in the experimental sample size, or a larger difference between the proportion of treated and controlled firms, will disproportionately affect the power of the study. The MDE also decreases proportionally with the take-up rate.

Table 16 shows the power calculations for the joint RCT, but also by country and wave (Colombian RCT). As a result of the larger number of MSMEs taking part in the experiment, the joint RCT delivers a MDE of 0.17 standard deviations. For the Colombian case, Wave 1 is highly underpowered due to the small sample size. The results indicate that more than a full standard deviation impact is required to reliably identify the regression results on the outcome. Merging both waves give us a slightly better results since the required impact to detect statistical significance falls to 0.35 standard deviations, which is still high. The Chilean experiment is more powered ($MDE = 0.21$) due to the larger number of small businesses that participated in the RCT. Lastly, it is important to mention that (as we will see in the next section), since we have not yet been able to find robust and statistically significant impact on earnings, we may need deeper insights from the power of the sample to make sure

our conclusions regarding firms' earnings are valid.

Table 16: Power Calculations: Joint, Chilean and Colombian RCTs

RCT / Wave	N MSMEs	N Treatment	N Control	Take-up	MDE
Joint	13,451	7,444 (55%)	6,007 (45%)	27.9%	0.17
Chile	10,072	5,069 (50%)	5,003 (50%)	27.2%	0.21
Colombia, Pooled	3,379	2,375 (70%)	1,004 (30%)	29.5%	0.35
Colombia, Wave 1	984	472 (48%)	512 (52%)	16.9%	1.06
Colombia, Wave 2	2,395	1,903 (79%)	492 (21%)	32.6%	0.43

A.6 Additional Results: Joint RCT

Table 17: Alternative Specifications, ITT Regressions, Robustness Checks

Alternative	Pre-RCT Period	Post-RCT Period
A	Jan-19 to the month before the RCT	First month of the RCT - onwards
B	Jan-19 to the last month of the RCT	First month after the RCT - onwards
C	Jan-19 to the month before the RCT	First month after the RCT - onwards

Table 18: ITT Liquidity Effects, Joint RCT, Alternative A (1), (2)

	y_i = log(Mean Debt per Month +1) ($US real)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
Treat	0.012	0.229***	0.105**	0.27***	0.211***	-0.098***	-0.081***	0.123***	0.342***	-0.016	-0.026	0.215***
	(0.068)	(0.064)	(0.047)	(0.057)	(0.043)	(0.025)	(0.018)	(0.036)	(0.041)	(0.025)	(0.018)	(0.035)
	[0.864]	[0.000]	[0.026]	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]	[0.000]	[0.512]	[0.135]	[0.000]
C-Mean	8.190	2.031	0.790	8.920	8.190	2.031	0.790	8.920	8.190	2.031	0.790	8.920
Adj. R-Sq.	-0.000	0.001	0.000	0.002	0.591	0.831	0.84	0.607	0.625	0.838	0.842	0.64
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt	No				Yes				Yes			
Strata FE	No				No				Yes			

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-treat period starts the month of the RCT implementation (Mar-19). Pre-treat period goes from Jan-19 to the month previous to the RCT (Feb-19).

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

Table 19: ITT Liquidity Effects, Joint RCT, Alternative B (1), (2)

	y_i = log(Mean Debt per Month +1) ($US real)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
Treat	0.020	0.194***	0.090**	0.283***	0.112***	-0.130***	-0.089***	0.100***	0.278***	-0.018	-0.024	0.191***
	(0.071)	(0.063)	(0.046)	(0.06)	(0.044)	(0.027)	(0.018)	(0.038)	(0.043)	(0.026)	(0.018)	(0.038)
	[0.777]	[0.002]	[0.050]	[0.000]	[0.010]	[0.000]	[0.000]	[0.008]	[0.000]	[0.497]	[0.174]	[0.000]
C-Mean	8.015	1.969	0.757	8.762	8.015	1.969	0.757	8.762	8.015	1.969	0.757	8.762
Adj. R-Sq.	-0.000	0.001	0.000	0.002	0.623	0.809	0.829	0.606	0.651	0.817	0.833	0.632
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt	No				Yes				Yes			
Strata FE	No				No				Yes			

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-treat period starts the month after the RCT ended (Jan-20). Pre-treat period goes from Jan-19 to the last month of the RCT (Dec-19).

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

Table 20: ITT Liquidity Effects, Joint RCT, Alternative C (1), (2)

	y_i = log(Mean Debt per Month +1) ($US real)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
Treat	0.020	0.194***	0.09**	0.283***	0.215***	-0.12***	-0.087***	0.138***	0.368***	-0.016	-0.022	0.237***
	(0.071)	(0.063)	(0.046)	(0.06)	(0.048)	(0.028)	(0.02)	(0.041)	(0.046)	(0.028)	(0.019)	(0.041)
	[0.777]	[0.002]	[0.050]	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]	[0.000]	[0.576]	[0.255]	[0.000]
C-Mean	8.015	1.969	0.757	8.762	8.015	1.969	0.757	8.762	8.015	1.969	0.757	8.762
Adj. R-Sq.	-0.000	0.001	0.000	0.002	0.534	0.788	0.803	0.539	0.574	0.796	0.806	0.576
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt	No				Yes				Yes			
Strata FE	No				No				Yes			

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-treat period starts the month after the RCT ended (Jan-20). Pre-treat period goes from Jan-19 to the month previous to the RCT (Feb-19).

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

Table 21: ITT Liquidity Effects, Joint RCT, IV Strategy (1), (2)

	y_i = log(Mean Debt per Month +1) ($US real)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
Compliance	-0.044	0.744***	0.342*	0.956***	0.483***	-0.533***	-0.395***	0.255*	1.044***	-0.166*	-0.181***	0.619***
	(0.266)	(0.242)	(0.179)	(0.219)	(0.163)	(0.101)	(0.069)	(0.139)	(0.163)	(0.1)	(0.069)	(0.141)
	[0.868]	[0.002]	[0.056]	[0.000]	[0.003]	[0.000]	[0.000]	[0.066]	[0.000]	[0.097]	[0.009]	[0.000]
C-Mean	8.143	2.000	0.779	8.859	8.143	2.000	0.779	8.859	8.143	2.000	0.779	8.859
Adj. R-Sq.	-0.002	0.002	-0.002	0.036	0.615	0.815	0.836	0.618	0.652	0.826	0.841	0.649
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt	No				Yes				Yes			
Strata FE	No				No				Yes			

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period goes from the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

The results of the first stage are shown in the following table. The parameter of interest is statistically significant at the 99% confidence level, and its magnitude is similar to the take-up rate. Note also that these first-stage estimates are the same regardless of whether we are interested in measuring the RCT impact on liquidity or earnings.

Table 22: First Stage, IV Strategy, Joint RCT

y_i = Compliance Dummy Variable	
Treat	0.279***
	(0.005)
	[0.000]
N	13,451
Adj. R-Sq.	0.265

Table 23: ITT Earning Effects, Joint RCT, Robutsness Checks (1), (2)

	y_i = log(Mean Total Deposits per Month + 1) ($US real)											
	Alternative A			Alternative B			Alternative C			IV Strategy		
Treat	-0.385***	-0.202***	0.007	-0.411***	-0.192***	0.011	-0.411***	-0.225***	0.014	-1.615***	-0.919***	-0.154
	(0.044)	(0.032)	(0.030)	(0.047)	(0.034)	(0.032)	(0.047)	(0.036)	(0.034)	(0.177)	(0.126)	(0.122)
	[0.000]	[0.000]	[0.813]	[0.000]	[0.000]	[0.736]	[0.000]	[0.000]	[0.688]	[0.000]	[0.000]	[0.208]
C-Mean	8.416	8.416	8.416	8.287	8.287	8.287	8.287	8.287	8.287	8.418	8.418	8.418
Adj. R-Sq.	0.006	0.475	0.531	0.006	0.493	0.534	0.006	0.427	0.486	-0.081	0.451	0.529
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Alternative A: Post-treat period starts the month of the RCT implementation. Pre-treat period goes from Jan-19 to the month previous to the RCT. Alternative B: Post-treat period starts the month after the RCT. Pre-treat period goes from Jan-19 to the last month of the RCT. Alternative C: Post-treat period starts the month after the RCT. Pre-treat period goes from Jan-19 to the month previous to the RCT. IV Strategy: post-RCT period goes from the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

Table 24: TOT Liquidity Effects, Joint RCT (1), (2)

	y_i = log(Mean Debt per Month +1) ($US real)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
Compliance	2.790***	0.529***	0.012	2.019***	1.792***	0.067*	-0.047*	1.164***	1.691***	0.055	-0.017	1.014***
	(0.047)	(0.092)	(0.064)	(0.040)	(0.045)	(0.039)	(0.028)	(0.031)	(0.048)	(0.039)	(0.028)	(0.032)
	[0.000]	[0.000]	[0.853]	[0.000]	[0.000]	[0.089]	[0.090]	[0.000]	[0.000]	[0.156]	[0.533]	[0.000]
C-Mean	7.682	2.035	0.832	8.686	7.682	2.035	0.832	8.686	7.682	2.035	0.832	8.686
Adj. R-Sq.	0.066	0.003	-0.000	0.050	0.630	0.819	0.838	0.628	0.655	0.827	0.841	0.651
N	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451	13,451
Lag Debt	No				Yes				Yes			
Strata FE	No				No				Yes			

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period goes from the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

Table 25: TOT Earnings Effects, Joint RCT (1), (2)

y_i = log(Mean Total Deposits per Month + 1) ($US real)			
	(1)	(2)	(3)
Compliance	0.456***	0.387***	0.450***
	(0.053)	(0.038)	(0.037)
	[0.000]	[0.000]	[0.000]
C-Mean	8.082	8.082	8.082
Adj. R-Sq.	0.004	0.485	0.536
N	13,451	13,451	13,451
Lag Debt	No	Yes	Yes
Strata FE	No	No	Yes

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period goes from the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

A.7 Chilean RCT, Main Results

Since the Chilean RCT was performed in just one round and we could not access disaggregated information by type of deposits, we included in the analysis different post treatment periods to discern whether the FOGAPE Covid-19 loan offers impacted firms differently in the short term *vs* . the medium term. We estimate ITT regressions using three alternative post-RCT ending periods: September 2021 (short-term impact), January 2022, and July 2022 (medium-term impact). As the tables and figures highlight in the following subsections, the parameters of interest remain similar and the conclusions regarding their significance and sign do not change regardless of the post-treatment period extension we use.

A.7.1 ITT Effects on Liquidity

Table 26 shows the results for the ITT regressions for each of the four different types of liquidity. In all regressions, we use the firm-specific date in which each treated

MSME was exposed to the experiment as the first month post treatment. Our estimates show a positive and significant estimate for our parameter of interest, *treat*, when we use as dependent variable either the total or the commercial liquidity. As expected, we did not find significant positive results for consumption and mortgage liquidity. Using the medium-term ex post RCT period and the full specification, i.e., including the outcome lagged and the dummies by strata variables), our estimates show that the Chilean RCT increased total and commercial liquidity by 10.1% and 10.5%, respectively.

Table 26: ITT Liquidity Effects, Chilean RCT (1), (2)

y_i = log(Mean Debt per Month +1) ($MM real CLP)

	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
	A. Post-treat period: Approval/Contact Month - Sep21											
Treat	0.136***	0.004	0.023	0.126***	0.088***	-0.014**	-0.009***	0.081***	0.096***	-0.014**	-0.009***	0.087***
	(0.032)	(0.014)	(0.015)	(0.032)	(0.017)	(0.006)	(0.004)	(0.017)	(0.016)	(0.006)	(0.004)	(0.016)
	[0.000]	[0.802]	[0.128]	[0.000]	[0.000]	[0.019]	[0.009]	[0.000]	[0.000]	[0.018]	[0.008]	[0.000]
C-Mean	2.391	0.308	0.191	2.568	2.391	0.308	0.191	2.568	2.391	0.308	0.191	2.568
	B. Post-treat period: Approval/Contact Month - Jan22											
Treat	0.150***	0.004	0.023	0.139***	0.103***	-0.014**	-0.009**	0.096***	0.111***	-0.014**	-0.009**	0.096***
	(0.032)	(0.014)	(0.015)	(0.032)	(0.017)	(0.006)	(0.004)	(0.017)	(0.016)	(0.006)	(0.004)	(0.017)
	[0.000]	[0.793]	[0.123]	[0.000]	[0.000]	[0.025]	[0.025]	[0.000]	[0.000]	[0.022]	[0.021]	[0.000]
C-Mean	2.376	0.313	0.188	2.555	2.376	0.313	0.188	2.555	2.376	0.313	0.188	2.555
	C. Post-treat period: Approval/Contact Month - Jun22											
Treat	0.143***	0.005	0.018	0.133***	0.098***	-0.012*	-0.012***	0.09***	0.105***	-0.013*	-0.013***	0.101***
	(0.031)	(0.014)	(0.014)	(0.032)	(0.018)	(0.007)	(0.004)	(0.018)	(0.017)	(0.006)	(0.004)	(0.016)
	[0.000]	[0.702]	[0.212]	[0.000]	[0.000]	[0.057]	[0.002]	[0.000]	[0.000]	[0.051]	[0.002]	[0.000]
C-Mean	2.354	0.316	0.185	2.536	2.354	0.316	0.185	2.536	2.354	0.316	0.185	2.536
N	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

A.7.2 Monthly ITT Effects on Liquidity

Figure 9 shows the monthly estimates for the Chilean RCT from January 2019 to June 2022. The figure shows a strong and sustained positive impact of the Covid-19 loans program immediately after the RCT implementation (red vertical line) in commercial and total liquidity (the same does not happen when we study the impact on consumption liquidity). Figure 9 also shows that the increasing positive impact stabilized in January 2022 and since then has slightly decreased over time.

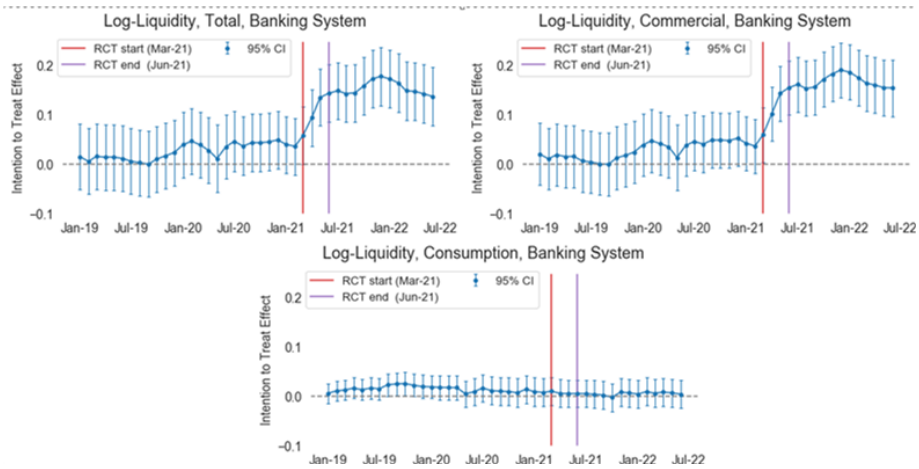


Figure 9: Monthly ITT Estimates by Type of Debt in the Banking System, Chilean RCT (January 2019 - June 2022)

A.7.3 ITT Effects on Earnings

Table 27 shows the estimates when running the ITT regressions using as dependent variable the mean of the total amount of deposits per month that each MSME performed ex post exposition to the RCT. The parameter of interest, *treat*, is not statistically significant from zero at the 90% confidence level. The conclusion remains the same regardless of the specification and the length of the ex post RCT period we use. The lack of significance is mainly due to the almost negligible magnitude of the estimate.

Table 27: ITT Earnings Effects, Chilean RCT (1), (2)

	y_i = log(Mean Total Deposits per Month + 1) ($MM real CLP)								
	A. End post-treat period: Sep21			B. End post-treat period: Jan22			C. End post-treat period: Jul22		
Treat	-0.013	-0.021	-0.018	-0.008	-0.015	-0.012	-0.012	-0.019	-0.016
	(0.023)	(0.014)	(0.014)	(0.022)	(0.014)	(0.014)	(0.021)	(0.014)	(0.013)
	[0.562]	[0.152]	[0.208]	[0.715]	[0.270]	[0.360]	[0.577]	[0.165]	[0.221]
C-Mean	2.005	2.005	2.005	2.044	2.044	2.044	1.993	1.993	1.993
N	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072
Lag Debt	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata FE	No	No	Yes	No	No	Yes	No	No	Yes

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

A.7.4 Monthly ITT Effects on Earnings

Similarly to the liquidity case, Figure 10 shows the monthly Chilean estimates for the outcome variable total earnings from January 2019 to July 2022. Figure 10 confirms the conclusions we obtain when running the ITT estimations. The figure shows no impact of the FOGAPE Covid-19 loans program after either the implementation or the completion of the RCT.

A.7.5 TOT Effects on Liquidity and Earnings

Tables 28 and 29 shows the results of the TOT regressions using as dependent variable the mean of liquidity and total earnings post-RCT, respectively. Regardless of the specification, the parameter of interest is always positive and statistically significant from zero at the 99% confidence level for total liquidity, commercial liquidity, and total earnings. Using the medium-term post-treat period and the full specification, we find a statistically significant FOGAPE Covid-19 loan impact of 57.6% and 19.4% in total liquidity and total earnings, respectively.

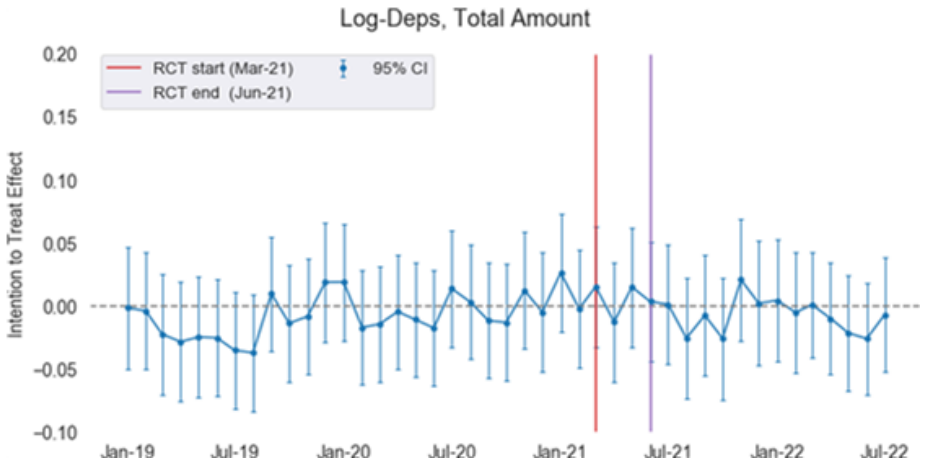


Figure 10: Monthly ITT Estimates Total Earnings, Chilean RCT (January 2019 - June 2022)

Table 28: TOT Liquidity Effects, Chilean RCT (1), (2)

	y_i = log(Mean Debt per Month +1) ($MM real CLP)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
	A. Post-treat period: Approval/Contact Month - Sep21											
Compliance	1.130	0.088***	-0.002	1.051***	0.758***	0.035***	0.004	0.727***	0.603***	0.016*	0.001	0.572***
	(0.030)	(0.022)	(0.021)	(0.031)	(0.019)	(0.009)	(0.005)	(0.018)	(0.019)	(0.009)	(0.005)	(0.019)
	[0.000]	[0.000]	[0.923]	[0.000]	[0.000]	[0.000]	[0.409]	[0.000]	[0.000]	[0.074]	[0.921]	[0.000]
C-Mean	2.293	0.297	0.202	2.477	2.293	0.297	0.202	2.477	2.293	0.297	0.202	2.477
	B. Post-treat period: Approval/Contact Month - Jan22											
Compliance	1.106***	0.092***	-0.001	1.031***	0.746***	0.040***	0.005	0.717***	0.595***	0.020**	0.001	0.566***
	(0.030)	(0.022)	(0.021)	(0.031)	(0.019)	(0.009)	(0.005)	(0.019)	(0.019)	(0.010)	(0.006)	(0.019)
	[0.000]	[0.000]	[0.944]	[0.000]	[0.000]	[0.000]	[0.387]	[0.000]	[0.000]	[0.035]	[0.911]	[0.000]
C-Mean	2.288	0.301	0.200	2.473	2.288	0.301	0.200	2.473	2.288	0.301	0.200	2.473
	C. Post-treat period: Approval/Contact Month - Jun22											
Compliance	1.084***	0.100***	-0.001	1.015***	0.735***	0.048***	0.005	0.735***	0.562***	0.028***	-0.000	0.588***
	(0.030)	(0.023)	(0.021)	(0.031)	(0.020)	(0.010)	(0.006)	(0.020)	(0.020)	(0.010)	(0.006)	(0.020)
	[0.000]	[0.000]	[0.953]	[0.000]	[0.000]	[0.000]	[0.416]	[0.000]	[0.000]	[0.005]	[0.999]	[0.000]
C-Mean	2.266	0.304	0.195	2.454	2.266	0.304	0.195	2.454	2.266	0.304	0.195	2.454
N	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

Table 29: TOT Earnings Effects, Chilean RCT (1), (2)

	y_i = log(Mean Total Deposits per Month + 1) ($MM real CLP)								
	A. End post-treat period: Sep21			B. End post-treat period: Jan22			C. End post-treat period: Jul22		
Compliance	0.259***	0.210***	0.166***	0.277***	0.229***	0.184***	0.268***	0.222***	0.177***
	(0.030)	(0.020)	(0.020)	(0.029)	(0.019)	(0.019)	(0.028)	(0.018)	(0.018)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
C-Mean	1.960	1.960	1.960	1.999	1.999	1.999	1.947	1.947	1.947
N	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072	10,072
Lag Debt	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata FE	No	No	Yes	No	No	Yes	No	No	Yes

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

A.8 Colombian RCT, Main Results

For the Colombian RCT, besides running the ITT and TOT regressions using the full sample (pooled), we also estimate separately the causal regressions for each wave. The goal of performing regressions by waves consists of studying whether significant differences are present in each wave so that they explain the significance and magnitudes of the estimates when estimating the causal impact of the loans under the total universe of 3,379 MSMEs.

To make the analysis concise, we only include in this appendix the results when using the full post-RCT period, i.e., all regressions use data that extend to July 2022). Lastly, similarly to the Chilean case, the parameter of interest remains similar and the conclusions regarding its significance and sign do not change regardless of the specification and experimental universe we use.

A.8.1 ITT Effects on Liquidity

Table 30 shows the results of the ITT specifications for each of the four types of liquidity. Once again, we conclude that the Covid-19 loans program did not have positive and significant impacts on consumption and mortgage liquidity. Table 30 also shows that our experiment positively impacted the total and commercial liquidity when we pool both waves (10.7% and 32.1% both statistically significant at the 99% confidence level). These results are driven by the significant positive impact that the Unidos por Colombia emergency program generated on treated firms that were part of Wave 2. As the table shows, our RCT did not significantly impact any type of liquidity after the implementation of the first wave.

Table 30: ITT Liquidity Effects, Colombian RCT (1), (2)

y_i = log(Mean Debt per Month +1) ($MM real COP)

	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
						Pooled (N = 3,379)						
Treat	0.180*	0.003	-0.025	0.069	0.283***	-0.056*	-0.077***	0.041	0.321***	-0.039	-0.052**	0.107***
	(0.096)	(0.063)	(0.048)	(0.078)	(0.051)	(0.034)	(0.022)	(0.04)	(0.053)	(0.037)	(0.024)	(0.042)
	[0.062]	[0.956]	[0.604]	[0.375]	[0.000]	[0.099]	[0.001]	[0.306]	[0.000]	[0.292]	[0.029]	[0.009]
C-Mean	2.976	1.09	0.481	4.162	0.135	0.075	0.065	-0.108	0.367	0.138	0.074	0.108
						Wave 1 (N = 984)						
Treat	0.007	-0.212**	0.019	-0.179	0.013	-0.075	0.002	-0.024	0.01	-0.081	-0.000	-0.033
	(0.163)	(0.105)	(0.085)	(0.138)	(0.073)	(0.054)	(0.038)	(0.062)	(0.075)	(0.056)	(0.038)	(0.064)
	[0.964]	[0.043]	[0.823]	[0.195]	[0.856]	[0.163]	[0.954]	[0.705]	[0.899]	[0.146]	[0.998]	[0.603]
C-Mean	3.384	1.082	0.485	4.378	-0.079	0.054	0.024	-0.052	0.02	0.084	0.002	0.006
						Wave 2 (N = 2,395)						
Treat	0.545***	0.051	-0.033	0.302***	0.515***	-0.007	-0.083***	0.196***	0.518***	-0.006	-0.083***	0.201***
	(0.126)	(0.082)	(0.063)	(0.101)	(0.072)	(0.05)	(0.03)	(0.055)	(0.071)	(0.05)	(0.03)	(0.055)
	[0.000]	[0.531]	[0.603]	[0.003]	[0.000]	[0.889]	[0.005]	[0.000]	[0.000]	[0.911]	[0.005]	[0.000]
C-Mean	2.552	1.097	0.477	3.937	0.075	0.051	0.071	-0.223	0.32	0.079	0.064	0.062
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

A.8.2 Monthly ITT Effects on Liquidity

Similarly to the Chilean case, we proceed to estimate equation (2) month by month to obtain monthly estimates of our parameter of interest. Figure 11-13 show the monthly estimates from January 2019 to June 2022 for all four types of liquidity. The figures confirm the results shown in Table 30. The positive and significant impact of the Covid-19 loans program is only present in the commercial and the total liquidity. Figures 12 and 13 also confirm that the positive and statistically significant impact is mostly totally driven by the results from Wave 2, since we do not find significant impacts in any liquidity when including in our estimations only the MSMEs that participated in Wave 1.

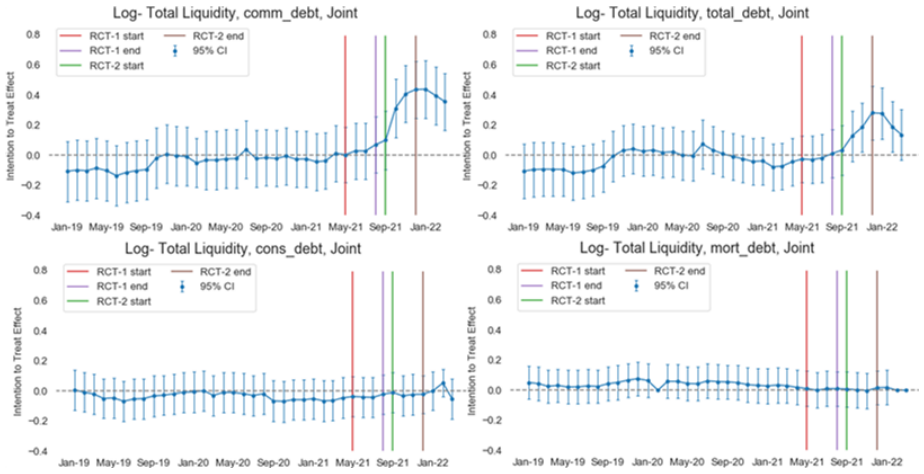


Figure 11: Monthly ITT Estimates by Type of Liquidity, Colombian RCT Pooled (Jan-19 - Mar-22)

A.8.3 ITT Effects on Earnings

We next study the impact of our Colombian RCT on firms' earnings. The Colombian financial partner was able to disaggregate deposits into deposits performed in person and online, and POS. We exploit this categorization to study whether heterogeneous impacts are present since the Covid-19 pandemic may have differentiated impacts among these three types of earnings. Taking into account the specifications that

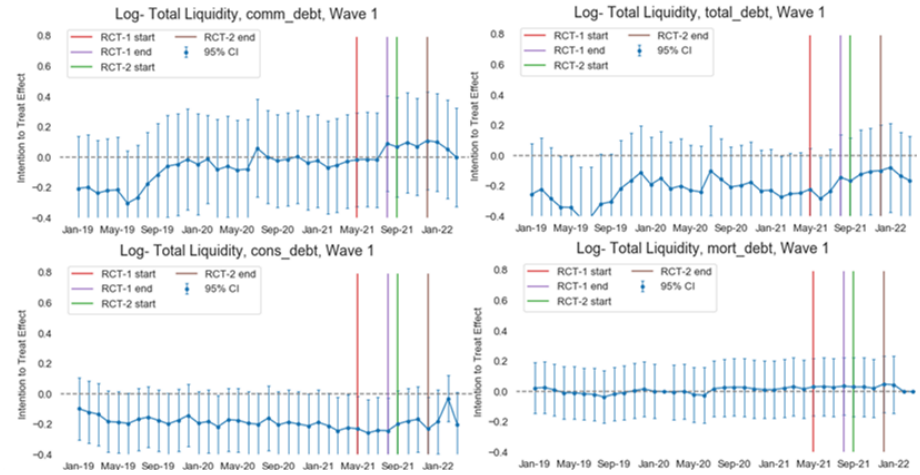


Figure 12: Monthly ITT Estimates by Type of Liquidity, Colombian RCT Wave 1 (Jan-19 - Mar-22)

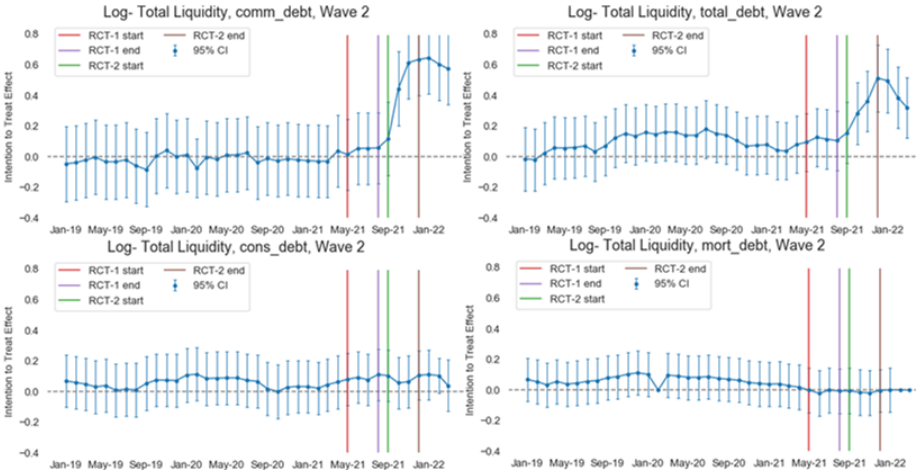


Figure 13: Monthly ITT Estimates by Type of Liquidity, Colombian RCT Wave 2 (Jan-19 - Mar-22)

include both the strata fixed effects and the pre-RCT earnings mean as covariates, we did not find any statistically significant impact regardless of the type of earnings or wave we study. Table 31 shows the results for the pooled sample and each wave separately. Similarly to the Chilean results, the parameters of interest remain non-statistically significant at the 90% confidence level.

Table 31: ITT Earnings Effects, Colombian RCT (1), (2)

	y_i = log(Mean Deposits +1) ($MM real COP)											
	(1)				(2)				(3)			
	In person	Online	POS	Total	In person	Online	POS	Total	In person	Online	POS	Total
	Pooled (N = 3,379)											
Treat	-0.116**	-0.235***	-0.036	-0.238***	-0.083**	-0.093***	0.027	-0.09**	-0.038	-0.042	0.048*	-0.027
	(0.052)	(0.06)	(0.047)	(0.065)	(0.035)	(0.033)	(0.024)	(0.039)	(0.037)	(0.034)	(0.025)	(0.04)
	[0.026]	[0.000]	[0.448]	[0.000]	[0.019]	[0.006]	[0.270]	[0.020]	[0.306]	[0.221]	[0.060]	[0.508]
C-Mean	1.344	1.434	0.491	2.271	1.344	1.434	0.491	2.271	1.344	1.434	0.491	2.271
	Wave 1 (N = 984)											
Treat	-0.02	-0.187*	0.084	-0.123	-0.017	-0.034	0.046	-0.018	-0.015	-0.05	0.042	-0.03
	(0.09)	(0.105)	(0.09)	(0.111)	(0.059)	(0.06)	(0.043)	(0.065)	(0.061)	(0.061)	(0.043)	(0.065)
	[0.825]	[0.075]	[0.349]	[0.267]	[0.777]	[0.574]	[0.277]	[0.784]	[0.801]	[0.407]	[0.328]	[0.643]
C-Mean	1.476	1.757	0.600	2.604	1.476	1.757	0.600	2.604	1.476	1.757	0.600	2.604
	Wave 2 (N = 2,395)											
Treat	-0.034	0.010	0.022	-0.002	-0.052	-0.039	0.049	-0.028	-0.051	-0.038	0.049	-0.027
	(0.068)	(0.073)	(0.057)	(0.084)	(0.046)	(0.041)	(0.031)	(0.051)	(0.046)	(0.04)	(0.031)	(0.051)
	[0.613]	[0.895]	[0.701]	[0.982]	[0.264]	[0.332]	[0.115]	[0.585]	[0.266]	[0.352]	[0.116]	[0.596]
C-Mean	1.206	1.098	0.377	1.925	1.206	1.098	0.377	1.925	1.206	1.098	0.377	1.925
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

A.8.4 Monthly ITT Effects on Total Earnings

Figure 14 shows the monthly estimates when using as outcome variable the total earnings by wave and the pooled RCT from January 2019 to July 2022. The plots confirm the results obtained when running the ITT regressions. The impact of the Unidos por Colombia Covid-19 loans did not generate any positive significant impact during or after the implementation of either wave. Figures 15-17 reproduce the same analysis for each of the three specific typse of deposits we were able to identify (in-person, online, and POS). All three figures show no significant impact.

Figure 14: Monthly ITT Estimates, Total Deposits Colombian RCT, by Wave (Jan-19 - Jul-22)

A.8.5 TOT Effects on Liquidity and Earnings

Tables 32 and 33 show the results of the TOT regressions using as dependent variable the post-RCT mean of either the liquidity or earnings. Regardless of the specification, the parameter of interest is always positive and statistically significant from zero at the 99% confidence level for total liquidity and total earnings. We find a statistically significant positive impact of 84.9% and 21.8% in total liquidity and total earnings, respectively, when we pooled both waves.

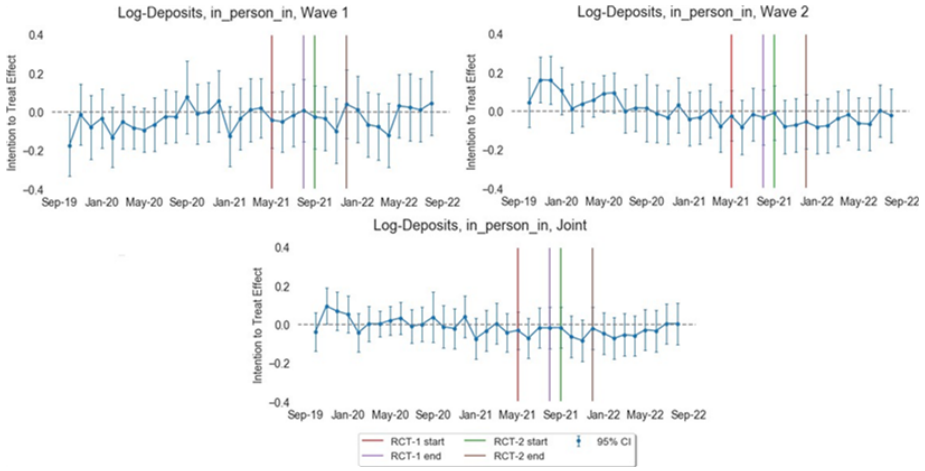


Figure 15: Monthly ITT Estimates, Deposits In-person, Colombian RCT, by Wave (Jan-19 to Jul-22)

Figure 16: Monthly ITT Estimates, Online Deposits, Colombian RCT, by Wave (Jan-19 to Jul-22)

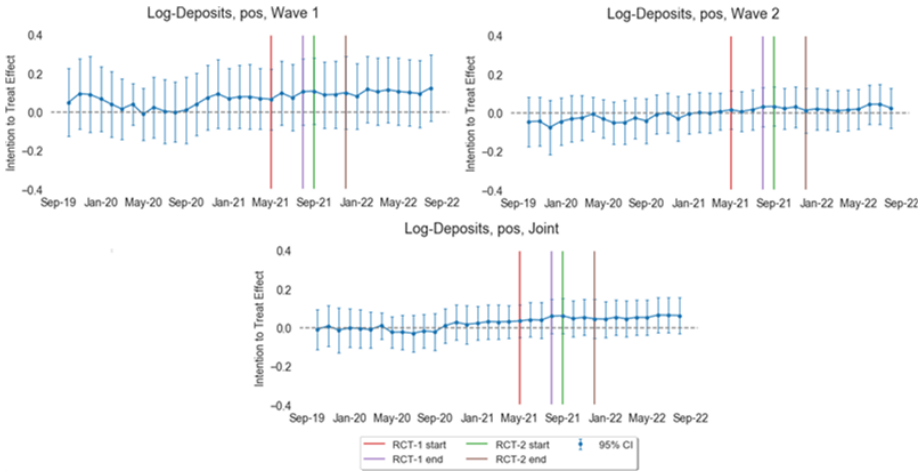


Figure 17: Monthly ITT Estimates, POS, Colombian RCT, by Wave (Jan-19 to Jul-22)

Table 32: TOT Liquidity Effects, Colombian RCT (1), (2)

	y_i = log(Mean Debt per Month +1) ($MM real COP)											
	(1)				(2)				(3)			
	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total	Comm	Cons	Mort	Total
						Pooled (N = 3,379)						
Compliance	2.128***	0.267***	-0.011	1.285***	1.691***	0.012	-0.031	0.847***	1.744***	0.004	-0.017	0.889***
	(0.070)	(0.073)	(0.052)	(0.059)	(0.050)	(0.042)	(0.042)	(0.027)	(0.053)	(0.043)	(0.028)	(0.036)
	[0.000]	[0.000]	[0.839]	[0.000]	[0.000]	[0.781]	[0.781]	[0.000]	[0.000]	[0.922]	[0.537]	[0.000]
C-Mean	2.662	1.037	0.466	3.944	2.662	1.037	0.466	3.944	2.662	1.037	0.466	3.944
						Wave 1 (N = 984)						
Compliance	2.120***	-0.126	0.016	1.392***	0.805***	-0.049	0.009	0.592***	0.799***	-0.073	-0.004	0.577***
	(0.181)	(0.193)	(0.161)	(0.164)	(0.100)	(0.091)	(0.046)	(0.090)	(0.107)	(0.096)	(0.051)	(0.099)
	[0.000]	[0.515]	[0.919]	[0.000]	[0.000]	[0.588]	[0.846]	[0.000]	[0.000]	[0.448]	[0.933]	[0.000]
C-Mean	3.215	0.991	0.493	4.179	3.215	0.991	0.493	4.179	3.215	0.991	0.493	4.179
						Wave 2 (N = 2,395)						
Compliance	2.399***	0.300***	-0.004	1.360***	1.925***	0.049	-0.012	0.981***	1.882***	0.025	-0.019	0.939***
	(0.078)	(0.080)	(0.056)	(0.065)	(0.056)	(0.047)	(0.030)	(0.039)	(0.056)	(0.047)	(0.030)	(0.038)
	[0.000]	[0.000]	[0.944]	[0.000]	[0.000]	[0.296]	[0.684]	[0.000]	[0.000]	[0.597]	[0.529]	[0.000]
C-Mean	2.380	1.060	0.452	3.824	2.380	1.060	0.452	3.824	2.380	1.060	0.452	3.824
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

- Comm=Commercial Debt; Cons=Consumption Debt; Mort=Mortgage Debt; Total=Comm+Cons+Mort Debts

Table 33: TOT Earnings Effects, Colombian RCT (1), (2)

	y_i = log(Mean Deposits +1) ($MM real COP)											
	(1)				(2)				(3)			
	In person	Online	POS	Total	In person	Online	POS	Total	In person	Online	POS	Total
						Pooled (N = 3,379)						
Compliance	0.250***	0.198***	0.028	0.297***	0.099**	0.123***	0.079***	0.176***	0.126***	0.143***	0.094***	0.211***
	(0.058)	(0.064)	(0.053)	(0.070)	(0.039)	(0.038)	(0.021)	(0.041)	(0.041)	(0.039)	(0.022)	(0.042)
	[0.000]	[0.002]	[0.605]	[0.000]	[0.012]	[0.001]	[0.000]	[0.000]	[0.002]	[0.000]	[0.000]	[0.000]
C-Mean	1.211	1.228	0.460	2.043	1.211	1.228	0.460	2.043	1.211	1.228	0.460	2.043
						Wave 1 (N = 984)						
Compliance	0.682***	0.734***	0.136	0.828***	0.217*	0.157	0.185***	0.253*	0.238**	0.133	0.176***	0.215
	(0.173)	(0.190)	(0.188)	(0.180)	(0.117)	(0.139)	(0.058)	(0.133)	(0.122)	(0.144)	(0.063)	(0.137)
	[0.000]	[0.000]	[0.471]	[0.000]	[0.064]	[0.260]	[0.001]	[0.058]	[0.051]	[0.356]	[0.005]	[0.116]
C-Mean	1.411	1.608	0.630	2.478	1.411	1.608	0.630	2.478	1.411	1.608	0.630	2.478
						Wave 2 (N = 2,395)						
Compliance	0.271***	0.274***	0.078	0.394***	0.128***	0.176***	0.081***	0.235***	0.110**	0.145***	0.081***	0.211***
	(0.062)	(0.067)	(0.055)	(0.076)	(0.043)	(0.039)	(0.024)	(0.044)	(0.043)	(0.039)	(0.024)	(0.044)
	[0.000]	[0.000]	[0.156]	[0.000]	[0.003]	[0.000]	[0.001]	[0.000]	[0.011]	[0.000]	[0.001]	[0.000]
C-Mean	1.109	1.035	0.374	1.821	1.109	1.035	0.374	1.821	1.109	1.035	0.374	1.821
Lag Debt		No				Yes				Yes		
Strata FE		No				No				Yes		

(1) Dependent variable: winsorized top 5%, with log(y+1).

(2) Post-RCT period starts the month after the treated MSME either received the Covid-19 loan or was contacted by phone.

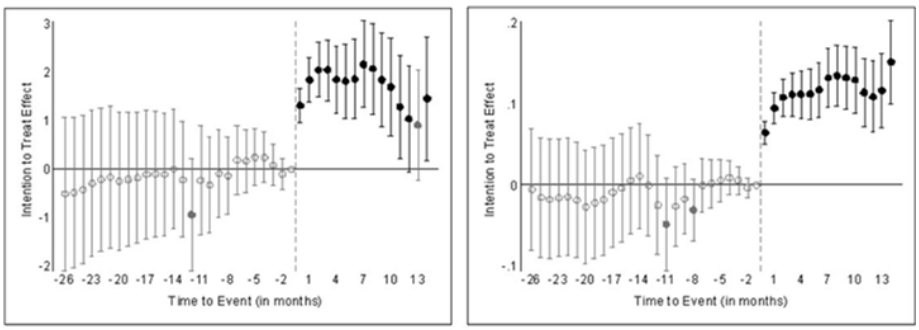
- Robust standard errors in parenthesis. P-values in brackets. *Sign. at 10%. **5%. ***1%

A.9 Generalized Difference-in-Differences (Event Study)

A.9.1 Chilean RCT

We use the total and the commercial debts as main metrics to measure liquidity, and estimate equation (4) using the full available period (from January 2019 to June 2021). For the Chilean RCT, the final specification of Equation (4) contains 30 lags (from Jan-19 to Jun-21) and 15 leads (from Feb-21 to Jun-22).

Figures 18 and 19 show the results of the event study estimation for these two types of debt when the dependent variable is measured in millions of real Chilean pesos, and its logarithmic transformation. We use the date for when treated MSMEs received the loan as the date for when they were exposed to the treatment. For those treated firms that eventually did not receive the loan, we instead use the date when they were contacted by the bank. There are 631 treated MSMEs (out of 5,069) that ultimately could not be reached by the bank during the experiment. For these 631 firms, we assume that they were exposed to the treatment during the month of the RCT implementation (March, 2021).



Panel A. y_{it} = Debt$_{it}$, Wins. Top 5%

Panel B. y_{it} = log(Debt$_{it}$ +1), Wins. Top 5%

Figure 18: Event Study, Chilean RCT: Treatment Effects on Total Liquidity

Figure 20 replicates the methodology described above but uses instead the total amount of deposits as dependent variable.

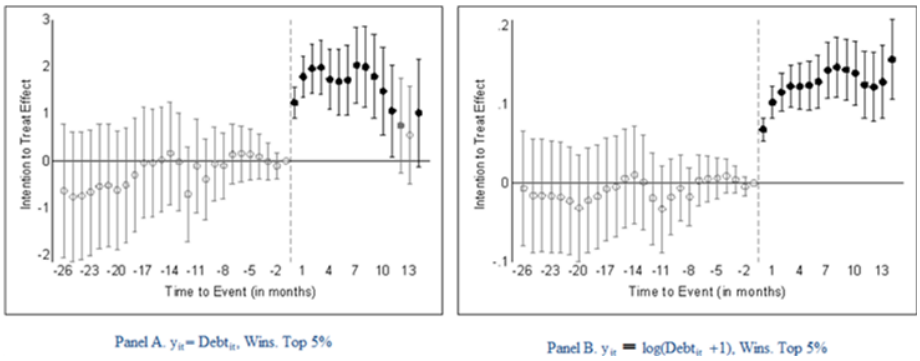


Figure 19: Event Study, Chilean RCT: Treatment Effects on Commercial Liquidity

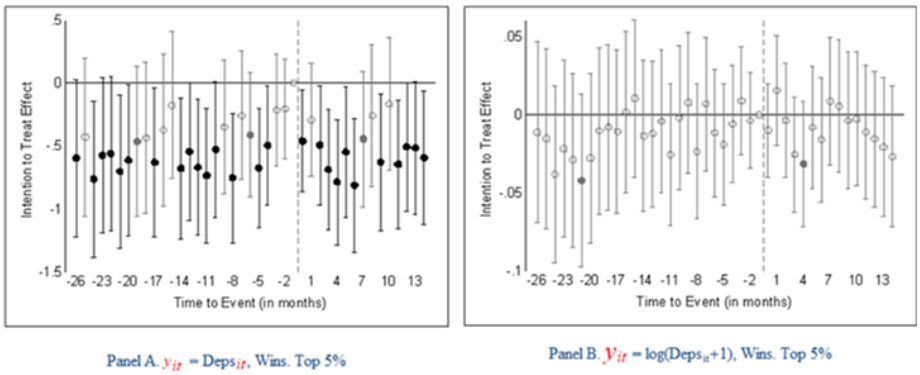
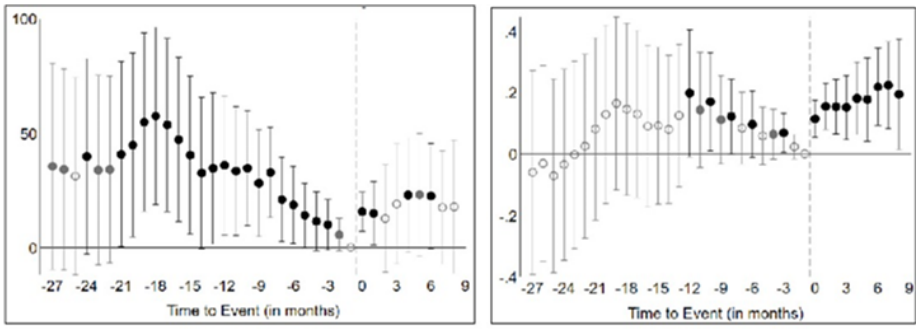


Figure 20: Event Study, Chilean RCT: Treatment Effects on Total Earning

A.9.2 Colombian RCT

Similarly to the Chilean case, we use the total debt and the commercial debt as main metrics to proxy for liquidity. We also estimate equation (4) using the full period which, in this case, extends from January 2019 to March 2022. The total number of lags and leads included in the final specification of equation (4) are function of the RCT-wave: while Wave 1 has 31 lags (from Jan-19 to Jul-21) and 11 leads (from May-21 to Mar-22), Wave 2 has 35 lags (from Jan-19 to Nov-21) and 7 leads (from Sep-21 to Mar-22)

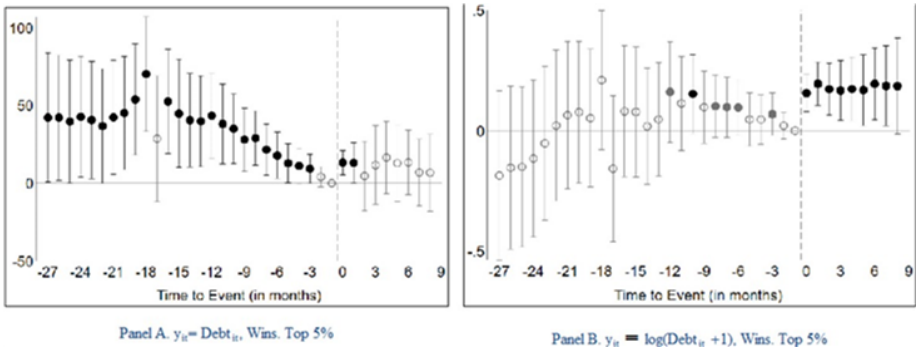
Figures 21-24 show the results of the event study estimation for the two types of liquidity by wave when the dependent variable is measured in millions of real Colombian pesos, and its logarithmic transformation. Here, we also use the specific date for when the treated MSMEs were reached by the bank regarding the loan offer. For those treated firms that eventually did not receive the loan, we use this date as the date for when they were exposed to the treatment. As a note of caution, we still have 166 treated MSMEs (out of 2,375) that ultimately could not be reached during the experiment (37 and 129 MSMEs belong to Wave 1 and Wave 2, respectively). For those 166 treated MSMEs, we assume that they were exposed to the treatment during the first month of the RCT-wave implementation.



Panel A. y_{it}= $Debt_{it}$, Wins. Top 5%

Panel B. y_{it} = log($Debt_{it}$ +1), Wins. Top 5%

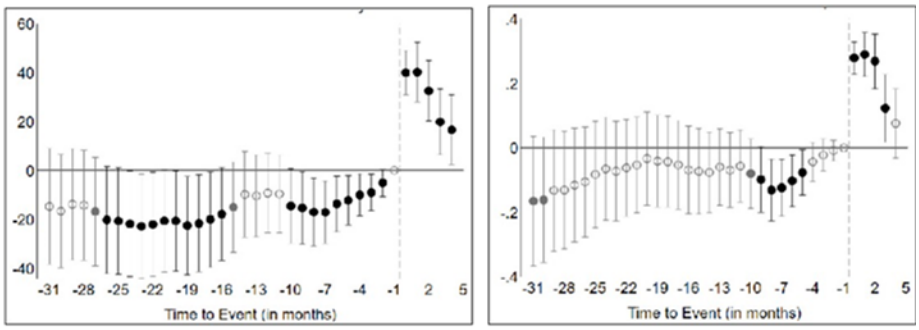
Figure 21: Event Study, Colombian Wave 1: Treatment Effects on Total Liquidity



Panel A. y_{it}= $Debt_{it}$, Wins. Top 5%

Panel B. y_{it} = $\log(Debt_{it}+1)$, Wins. Top 5%

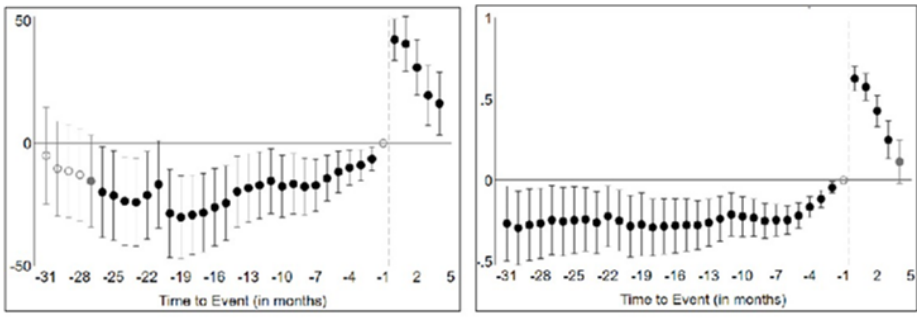
Figure 22: Event Study, Colombian Wave 1: Treatment Effects on Commercial Liquidity



Panel A. y_{it}= $Debt_{it}$, Wins. Top 5%

Panel B. y_{it} = $\log(Debt_{it}+1)$, Wins. Top 5%

Figure 23: Event Study, Colombian Wave 2: Treatment Effects on Total Liquidity



Panel A. y_{it}= $Debt_{it}$, Wins. Top 5%

Panel B. y_{it} = $\log(Debt_{it}+1)$, Wins. Top 5%

Figure 24: Event Study, Colombian Wave 2: Treatment Effects o n Commercial Liquidity