The unexpected de-dollarization effect of a public guaranteed credit program

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Abstract

At the onset of the Covid-19 pandemic, a sharp increase in local currency loans and a significant decline in foreign currency loans were observed among firms. While there is a growing body of literature on the real and risk-taking effects of credit policies during the pandemic, little attention has been given to their impact on dedollarization. This study examines the unintended dedollarization effects of the Reactiva program by exploiting variation in loan recipients. To date, no causal evidence has been established on this relationship. Using data from Peru's Credit Register, we employ a difference-in-differences approach to show that Reactiva had a U-shaped effect on firm-level dedollarization. These findings remain robust under a triple-differences framework, incorporating exporters and highly dollarized firms prior to the pandemic.

Keywords: De-dollarization of credit, Reactiva program, exchange rate depreciation, interest rate differentials.

JEL Classification: C32, ES1, GO1.

1 Introduction

The effects of government interventions in credit markets during the pandemic have been the subject of a growing body of research. In particular, credit guarantee programs have been widely implemented in multiple crises as mechanisms to prevent credit market collapses (Goel & Thakor 2020, Norden et al. 2021, Colak & Öztekin 2021). However, their impact on credit composition and bank risk-taking remains a topic of debate (Céspedes et al. 2020, Bigio et al. 2020).

While recent studies on Peru have documented the effects of the Reactiva program on credit dynamics and bank incentives (Acurio et al. 2023, Burga et al. 2023, Casavilca & Sarmiento 2024, Acurio & Tomarchio 2024), the program's impact on dollar loans and credit dollarization has not been explored in the previous literature. Specifically, it remains unclear whether the observed decline in credit dollarization during the program's implementation represented a structural shift or a temporary phenomenon. This paper seeks to address this question by leveraging granular data from Peru.

In addition to guarantees, the Reactiva program included central bank auctions to lower interest rates. We propose that the combination of government-backed loans and lower interest rates, facilitated through central bank auctions to lending institutions, led to a sharp expansion of credit in local currency, triggering a rapid decline in credit dollarization. However, as market conditions normalized, a partial reversal of this effect occurred. This hypothesis predicts a U-shaped pattern in credit dollarization: the initial phase of the program induced a temporary shift in firms' financing structure, but part of this effect dissipated once policy incentives disappeared.

To test this hypothesis, we use firms that received loans under the Reactiva Peru program as a quasi-experiment to identify the effect of government-backed lending programs on corporate credit de-dollarization. First, if the expansion of local currency credit under Reactiva Peru had a significant impact, it should have differentially affected firms with greater exposure to the program, allowing us to measure its effect through variation in access to guaranteed credit. Second, credit dollarization should exhibit a nonlinear pattern over time, with a sharp initial decline followed by a partial reversal as market conditions return to normal, consistent with the predicted U-shaped effect.

We employ a difference-in-differences approach to show that Reactiva had a U-shaped effect on firm-level dedollarization. These findings hold when estimating triple-difference regressions comparing the evolution of dollar-denominated loans and credit dollarization across exporting firms and firms with high and low exposure to Reactiva Peru. Preliminary evidence suggests that the decline in dollarization was more pronounced in sectors that received greater funding under the program. However, this effect began to reverse once government guarantees expired and market forces regained influence.

Previous studies have documented that credit guarantee programs can induce temporary changes in credit composition. For instance, Gropp et al. (2014) find that a credit guarantee scheme in Germany led to an increase in credit supply without permanently altering banks' portfolio composition. Similarly, in the U.S. context, Black & Strahan (2002) show that regulations aimed at incentivizing credit for small businesses did not necessarily produce persistent shifts in credit structure. Céspedes et al. (2020) argue that pessimistic expectations can push the economy into a low-equilibrium state with limited borrowing and low productivity, while loan guarantees can sustain a high-productivity equilibrium. Levy Yeyati et al. (2021) classifies de-dollarization measures, and although Reactiva was not designed for this purpose, it had an unintended de-dollarizing effect, acting as a micro measure that reinforced a local currency bias.

This paper contributes to the growing literature on the implications of credit guarantee programs for

policymaking in emerging economies. Tomarchio (2022) shows that the de-dollarization of credit increased during the pandemic due to Reactiva. Acosta-Henao et al. (2023) show that firms with access to government support policies increased their domestic debt relative to foreign debt, despite the latter often being cheaper. Unlike their study, we specifically identify the impact on credit dollarization using a difference-in-differences approach.

2 Background and data

2.1 Reactiva Program and loan dollarization of firms

At the onset of the COVID-19 pandemic, Peru's credit markets saw a sharp currency reallocation. Within a year, firms' dollar-denominated credit fell by 14.3%, while local currency credit surged by 37.5%, leading to a sustained drop in business credit dollarization (Figure 1, left panel).

Disaggregating by firm size shows heterogeneous effects. While corporative firms maintained stable dollarization, large and medium-sized firms sharply reduced foreign currency borrowing. Micro and small firms, with limited access to dollar loans, consistently exhibited low dollarization. This suggests that de-dollarization was mainly driven by firms with greater pre-existing exposure to foreign currency debt (Figure 1, right panel).
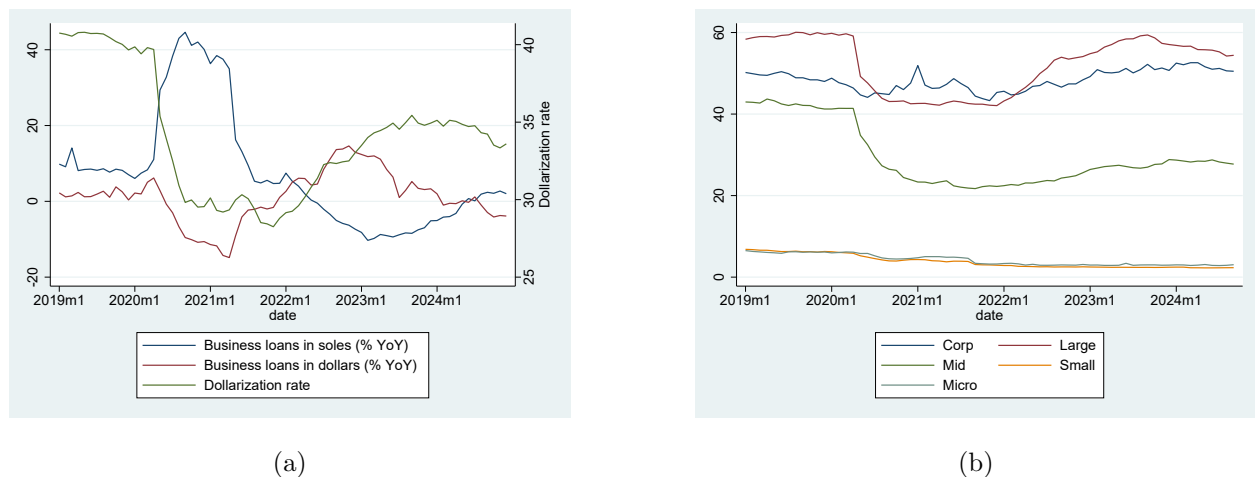

| (a) | (b) |

Figure 1: (a) Temporary shift in credit composition and the concurrent decline in the dollarization rate of business credits. (b) Evolution of credit dollarization by firm size.

The sharp initial shift in credit composition suggests not only a substitution effect but also a potential overshooting dynamic. The significant reduction in soles-denominated interest rates during the same period, alongside a sharp decline in the soles-dollar interest rate differential, may have amplified the response beyond what would be expected from a gradual adjustment. This overshooting effect could reflect both credit supply shocks—such as government-sponsored loan programs like Reactiva Perú and firms' precautionary demand for local currency credit due to heightened exchange rate uncertainty.

While a reduction in the interest rate differential can explain part of the decline in credit dollarization, the role of policy interventions—including central bank liquidity injections and government-backed credit programs—remains an open question. This paper aims to establish a causal link between the relative cost

of borrowing in different currencies and firms' loan choices, using variation of firms' recipient of loans under the Reactiva Peru program during the Covid-19 pandemic as an identification strategy.

Figure 2 (left panel) compares the annual change in dollar loans between firms that received Reactiva loans (treated group) and those that did not (control group). The treated firms experienced a sharper decline in dollar loans immediately after the program's implementation, followed by a stronger recovery. Figure 2 (right panel) shows that the dollarization ratio dropped significantly for the treated firms relative to the control group, suggesting that Reactiva Perú contributed to accelerating de-dollarization by shifting credit composition toward local currency.
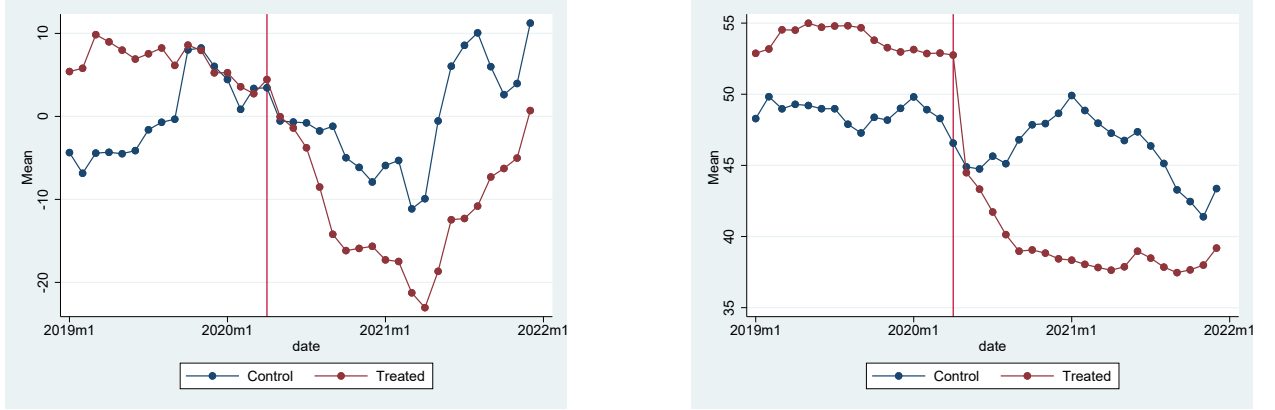
Annual Change in dollar loans   Dollarization ratio

Figure 2: Reactiva program incidence on loan dollarization by treated and control groups

Overall, these findings underscore the importance of policy-driven credit supply shocks in shaping firms' financing decisions. While some reversion in dollarization is expected as market conditions normalize, the question remains whether this shift represents a permanent structural change or a temporary policy-induced effect. The next sections explore this issue through a formal empirical analysis.

2.2 Data

We use loan-entity level data from the Reporte Crediticio de Deudores (RCC) provided by the Central Bank of Peru. This is a monthly panel going from 2019 to 2021 where we observe the balance of loans that firms hold with each bank established in Peru. We analyze a subset of firms that have continuously maintained credit with the financial system from October 2010 to February 2024.[1] This subset includes a total of 40,960 firms, categorized by size as follows: 114 corporate companies, 765 large companies, 3,553 medium-sized companies, 15,284 small companies, and 21,244 microenterprises. Our data set also includes the economic sector in which the firm operates, the type of loan and the city where the loans are originated.

In addition we follow Colak & Öztekin (2021) and Norden et al. (2021) to control for a range of bank level financial and macroeconomic factors. The financial variables include bank's capital and liquidity ratios, deposit dollarization and bank liabilities. Finally, we include macroeconomic indicators as GDP growth, exchange rate depreciation, and interest rates at bank-firm size level.

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[1] Restricting the sample to firms with consistent credit history helps mitigate selection bias by ensuring that observed effects are not driven by firms entering or exiting the credit market. For example Casavilca & Sarmiento (2024) show an increase in total number of debtors due to Reactiva.

Table 1 presents summary statistics for the covariates used in the estimation.

Table 1: Covariate Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Global capital ratio$_{bt}$	396	15.3	2.6	12.1	30.8
FX liquidity ratio$_{bt}$	396	65.8	33.5	35.3	228.4
Deposit dollarization$_{bt}$	396	35.7	15.5	4.8	79.7
Bank liabilities (log)$_{bt}$	367	11.8	1.9	6.0	14.9
GDP growth$_t$	396	2.5	17.3	-39.2	59.8
Depreciation$_t$ (YoY %)	396	5.8	4.5	-0.5	15.5
Interest rate of loans in soles$_{bst}$	1814	9.7	7.9	0.4	41.7
Interest rate of loans in dollars$_{bst}$	1569	8.3	7.0	0.5	60.5
Interest rate differential$_{bst}$	1569	1.5	5.7	-34.4	28.4

Figure 3 displays the distribution of dollar loans in annual change (left panel) and the dollarization ratio (right panel). The distributions of dollar loans are truncated to exclude potential outliers, and dollarization ratios equal to 0 or 100 are omitted. The distribution of the dollarization ratio appears to be bimodal, with peaks near zero and 100, suggesting a polarization of firms between very low and very high dollarization levels.

Annual Change in dollar loans   Dollarization ratio
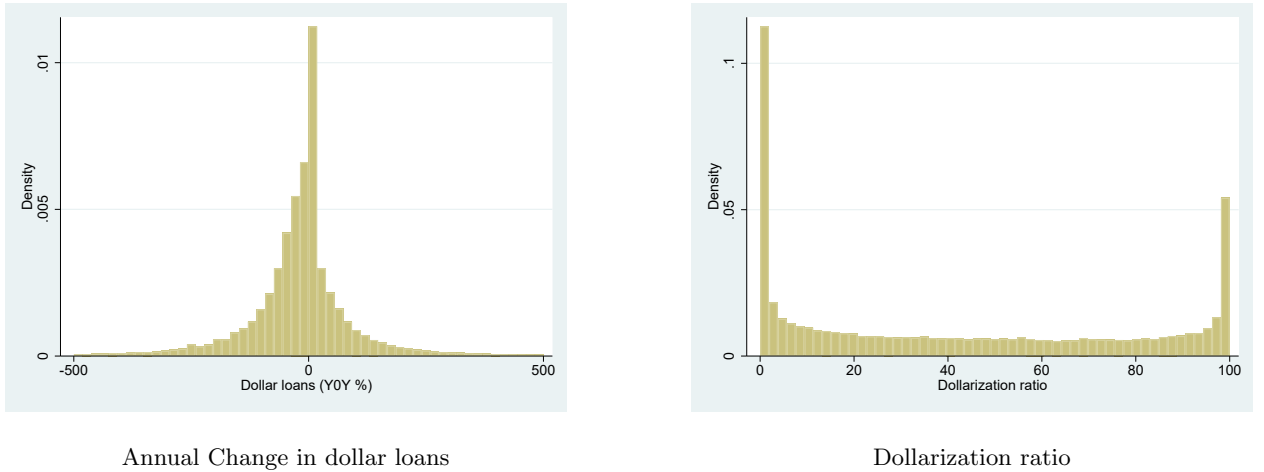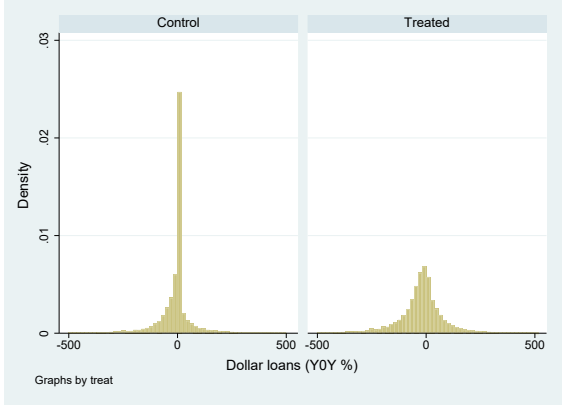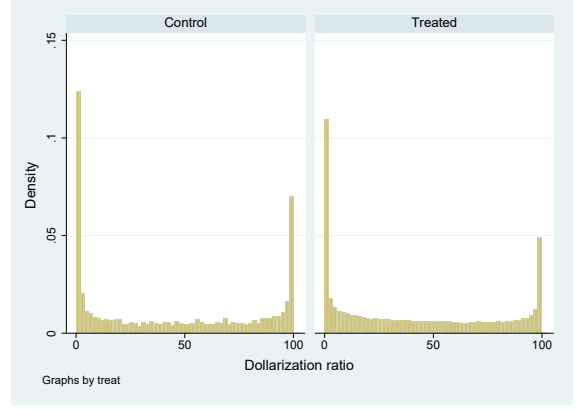
Figure 3: Histograms of Annual Growth in Dollar Loans and the Dollarization Ratio

We also present in Fig. 4 the distributions of firms that received loans from the Reactiva program (treated) versus those that did not (control). The left panel illustrates the annual change in dollar loans, showing a significant concentration of firms around zero, particularly in the control group. The treated group, however, exhibits a more dispersed distribution, suggesting heterogeneous effects of the program. The right panel depicts the dollarization ratio, revealing a bimodal distribution with peaks near zero and 100. This pattern indicates that firms tend to cluster into two groups—those with very low and very high levels of dollarization. Notably, the treated group appears to have a slightly more dispersed dollarization ratio, possibly reflecting different borrowing strategies among firms that accessed Reactiva loans.

Annual Change in dollar loans   Dollarization ratio

Figure 4: Histograms of annual growth in dollar loans and the dollarization Ratio by treated and control groups.

2.3 Empirical models

We first estimate the effect of the Reactiva Perú program on the dollar loan growth and dollarization of total loans using the following DD regression model:

$$Y_{ibt} = \beta \text{Reactiva}_i \times \text{Post}_t + \delta X_{bt} + \alpha_{sr} + \gamma_{yb} + \varepsilon_{ibt}, \tag{1}$$

where Y_{ibt} represents either the interannual dollar loan growth $\Delta_{12} Log(\text{Dollar Loans}_{ibt})$ or the dollarization of total loans (Dol_{ibt}) for firm i, bank b at time t. Moreover, Reactiva_i is an indicator variable equal to one if a firm i receive Reactiva loans, Post_t is an indicator variable equal to 1 from May 2020 onward and zero otherwise. In addition, X_{bt} is a vector of macroeconomic controls, including loan rate spread, global capital ratio, foreign exchange liquidity ratio, deposit dollarization, bank liabilities, exchange rate depreciation, inflation, and economic activity. The model also includes sector-region fixed effects α_{sr} and year-bank fixed effects γ_{yb} to account for unobserved heterogeneity.

Alternately, we estimate the DD using equation (1) with an interaction term that consists of month-specific treatment interaction terms to capture the differential effect of the program over time, defined as $\beta_{ym} \text{Reactiva}_i \times \text{DT}_{ym}$, where DT_{ym} is an indicator variable for months and years before and after the start of the program. The parameters of interest are β_{ym}, which capture the monthly impact of the program on credit dollarization and total firm debt. We estimate the model separately for firm size clasification. Standard errors are robust to heteroskedasticity.

If the hypothesis that *Reactiva Perú* reduced credit dollarization is correct, then the estimated $\hat{\beta}_{ym}$ coefficients should be negative and statistically significant during the program's implementation period, especially for firms with initially high levels of dollarization.

To further test the hypothesis, we estimate a triple-difference (DDD) model, incorporating an additional comparison group of exporters, which were less constrained by domestic liquidity conditions prior to the program. Moreover, we include the group of firms with high ex-ante dollarization.

$$Y_{ibt} = \beta \text{Reactiva}_i \times \text{Post}_t \times \text{Group}_i + \delta X_{bt} + \alpha_{sr} + \gamma_{yb} + \varepsilon_{ibt}, \tag{2}$$

6

Group$_i$ is an indicator that alternatively consider High_USD$_i$ the indicator for firms in the highest pre-Reactiva dollarization decile, and Export$_i$ is an indicator for exporting firms. The coefficients of interest, β allow us to identify whether the reduction in dollarization was stronger among highly dollarized firms and whether exporters were affected differently. If the program mainly affected firms that were initially credit-constrained in local currency, we expect $\hat{\beta} < 0$ or alternatively that the dollarization response was concentrated among exporters.

3   Results

The differences in exposure to Reactiva Perú suggest two testable predictions regarding the evolution of loan dollarization. First, during the program's implementation period, firms more exposed to Reactiva Perú should have experienced a sharper decline in dollarization compared to less exposed firms. However, this effect should be temporary, as firms gradually adjust their debt composition, and new credit dynamics emerge once the program ends.

Second, the treatment effect should follow a U-shaped pattern. Initially, the difference in dollarization between highly exposed and less exposed firms widens, as the treated firms rapidly substitute foreign currency debt with domestic currency credit under the program's favorable conditions. However, as the liquidity provided by the program dissipates and firms face renewed borrowing constraints, the gap in dollarization narrows, leading to a partial reversal of the initial effect.

3.1   Difference in difference analysis

Table 2 presents the estimated coefficients from the difference-in-differences regression for the impact of Reactiva on the growth of dollar loans by firm size. The dependent variable in each specification is the growth rate of dollar-denominated loans. The analysis spans the period from January 2019 to December 2021, incorporating bank-year and sector-region fixed effects to account for time-invariant heterogeneity and robust standard errors are reported in parentheses.

Column (1) reports the results for the full sample of firms. The coefficient on the interaction term is negative and statistically significant at the 1% level, indicating a contraction in dollar loan growth following the implementation of Reactiva Perú. In column (2), which focuses on corporate firms, the coefficient is positive but statistically insignificant, suggesting a limited effect on this segment. Columns (3) through (6) examine the impact across different firm size categories. For large firms (column 3), the estimated effect is negative and highly significant suggesting that Reactiva Perú led to a decline in dollar loan growth among this group. The effect intensifies for mid-sized firms (column 4), where the coefficient reaches 23.11. Among small firms (column 5), the estimated effect is smaller in magnitude and not statistically significant, while for micro firms (column 6), the effect remains negative but is only marginally significant at the 10% level.

Table 2: Diff-in-diff regression of dollar loans growth by firm size

Sample	(1) Full	(2) Corp	(3) Large	(4) Mid	(5) Small	(6) Micro
$\text{Treatment}_i \times \text{Post}_t$	-20.57***	5.017	-18.19***	-23.11***	-2.301	-28.41*
	(1.235)	(5.582)	(3.017)	(1.736)	(4.021)	(15.49)
Loan rate spread	5.511***	0.610	-2.002***	-0.849***	0.474*	-0.0203
	(0.125)	(1.752)	(0.574)	(0.279)	(0.262)	(0.264)
Global capital ratio	-4.206***	0.326	-4.770***	-1.064	-3.898*	-3.559
	(0.632)	(3.027)	(1.134)	(0.851)	(1.995)	(3.099)
FX liquidity ratio	-0.392***	-1.008***	-0.483***	-0.357***	0.165	-0.184
	(0.0660)	(0.322)	(0.120)	(0.0969)	(0.126)	(0.424)
Deposit dollarization	0.461**	0.900	1.118***	0.247	0.808	3.576**
	(0.188)	(0.716)	(0.310)	(0.261)	(0.679)	(1.575)
Bank liabilities (log)	18.84***	15.80***	10.10***	14.50***	5.032	-0.871
	(1.040)	(4.174)	(1.839)	(1.474)	(3.314)	(5.469)
Exchange rate depreciation	-0.559***	-0.447	-0.553*	-0.883***	-0.488	-0.985
	(0.176)	(0.884)	(0.321)	(0.238)	(0.492)	(0.751)
Inflation	6.964***	10.88***	11.43***	7.955***	0.386	3.791**
	(0.445)	(2.140)	(0.831)	(0.607)	(1.181)	(1.751)
GDP growth	0.0261	0.0305	0.0989**	0.0448	-0.00428	0.150
	(0.0240)	(0.116)	(0.0431)	(0.0318)	(0.0740)	(0.123)
Stock of total loans (logs)	19.14***	29.12***	26.38***	22.53***	13.29***	12.74***
	(0.168)	(0.723)	(0.348)	(0.274)	(0.696)	(0.947)
Constant	-475.5***	-671.2***	-496.4***	-480.0***	-203.8***	-188.6
	(19.48)	(81.64)	(33.74)	(26.48)	(69.74)	(124.6)
Observations	317,507	19,791	98,745	161,275	28,717	10,297
R-squared	0.136	0.190	0.188	0.163	0.110	0.119

The dependent variable in each model is the growth of dollar loans. Robust standard errors reported in parenthesis. All regressions include bank-year fixed effects and sector-region fixed effects. The analysis covers the period from January 2019 to December 2021. *** Statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%. Robust standard errors.

Figures 5 and 6 illustrate the temporal pattern of the effects of the Reactiva Perú program on the growth of dollar-denominated credit at the bank-firm level. In Figure 5, the estimated coefficients follow a statistically significant U-shaped trajectory, with an initial decline in credit growth immediately after the program's implementation (May 2020), reaching its lowest point between months 6 and 10, and subsequently recovering in the following periods. The joint significance of the estimated effects suggests that the program induced a substantial contraction in dollar credit, followed by a gradual reversion toward pre-intervention levels.

Figure 6 further explores heterogeneity in the temporal dynamics across firm size. For medium-sized firms, the U-shaped pattern is particularly pronounced, with a steep decline in the first months post-implementation, followed by a significant recovery. Large firms exhibit a similar but less pronounced pattern, with a relatively faster rebound. By contrast, small and micro firms show more volatile responses, with no clear evidence of a systematic decline or recovery, suggesting weaker sensitivity to the intervention.

Figure 5: This figure plots the monthly effects of the program on dollar loans growth at the bank-firm level. The program is implemented in may of 2020. Each dot is the coefficient on the interaction of treatment and month fixed effects. We depict April 2020 (a month before the implementation of the program as period zero. The confidence interval is at the 95% level.

Figure 6: This figure plots the monthly effects of the program on dollar loans growth at the bank-firm level by firm size. The confidence interval is at the 95% level.

Furthermore, we show in Table 3 the results for dollarization ratio. The results are qualitatively similar to the results for dollar loan growth, observing a significant negative impact of Reactiva on dollarization ratio.

Table 3: Diff-in -diff regression of loan dollarization ratio by firm size

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Full	Corp	Large	Mid	Small	Micro
$\text{Treatment}_i \times \text{Post}_t$	-14.46***	-2.057**	-16.81***	-14.58***	-12.01***	-19.42***
	(0.308)	(0.979)	(0.677)	(0.415)	(0.764)	(2.181)
Loan rate spread	1.155***	0.300	-0.156	-0.0362	0.0502	-0.0608
	(0.0265)	(0.361)	(0.130)	(0.0508)	(0.0627)	(0.0774)
Global capital ratio	-0.770***	-0.0696	-1.032***	-0.575***	0.276	0.0567
	(0.142)	(0.528)	(0.249)	(0.188)	(0.455)	(0.982)
FX liquidity ratio	-0.0930***	0.0130	-0.0545*	-0.0799***	-0.0616	0.000670
	(0.0164)	(0.0559)	(0.0286)	(0.0230)	(0.0416)	(0.123)
Deposit dollarization	0.139***	-0.0885	0.196**	0.284***	-0.169	0.674*
	(0.0477)	(0.155)	(0.0816)	(0.0636)	(0.174)	(0.371)
Bank liabilities (log)	2.605***	-0.215	0.976***	1.530***	1.384*	-1.209
	(0.212)	(0.657)	(0.370)	(0.298)	(0.798)	(1.682)
Exchange rate depreciation	-0.0795**	0.139	-0.106	-0.162***	-0.0535	0.511**
	(0.0377)	(0.152)	(0.0688)	(0.0488)	(0.115)	(0.236)
Inflation	-0.342***	-0.374	0.149	-0.00998	0.0497	-0.980*
	(0.0901)	(0.367)	(0.169)	(0.118)	(0.292)	(0.580)
GDP growth	-0.00727	0.0317	-0.000294	-0.00637	0.0119	-0.101***
	(0.00532)	(0.0210)	(0.00953)	(0.00696)	(0.0174)	(0.0378)
Stock of total loans (logs)	6.178***	6.614***	6.896***	6.644***	7.414***	10.40***
	(0.0147)	(0.0762)	(0.0326)	(0.0206)	(0.0631)	(0.216)
Constant	-52.13***	-42.58***	-39.70***	-45.54***	-37.05**	-38.13
	(4.280)	(14.22)	(7.178)	(5.864)	(16.51)	(33.51)
Observations	225,064	14,872	67,631	121,644	17,670	3,884
R-squared	0.437	0.456	0.447	0.480	0.559	0.586

The dependent variable in each model is the dollarization ratio of loans. Robust standard errors reported in parenthesis. All regressions include bank-year fixed effects and sector-region fixed effects. The analysis covers the period from January 2019 to December 2021. *** Statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%. Robust standard errors.

Examining the persistence of these effects, the results reveal a sustained divergence in borrowing patterns across firm types. While the immediate response to the program was a sharp reduction in foreign currency borrowing, the gradual recovery of private credit markets did not fully reverse this shift, implying longer-term structural changes in firms' debt composition. This persistence is consistent with the hypothesis that temporary distortions in credit supply can have durable effects when they alter firms' perceptions of currency risk or reshape lending relationships. The evidence further suggests that policy-driven reductions in the interest rate differential may induce firms to reassess the relative advantages of foreign currency debt, reinforcing the role of financial stability policies in shaping credit market dynamics beyond the crisis period.
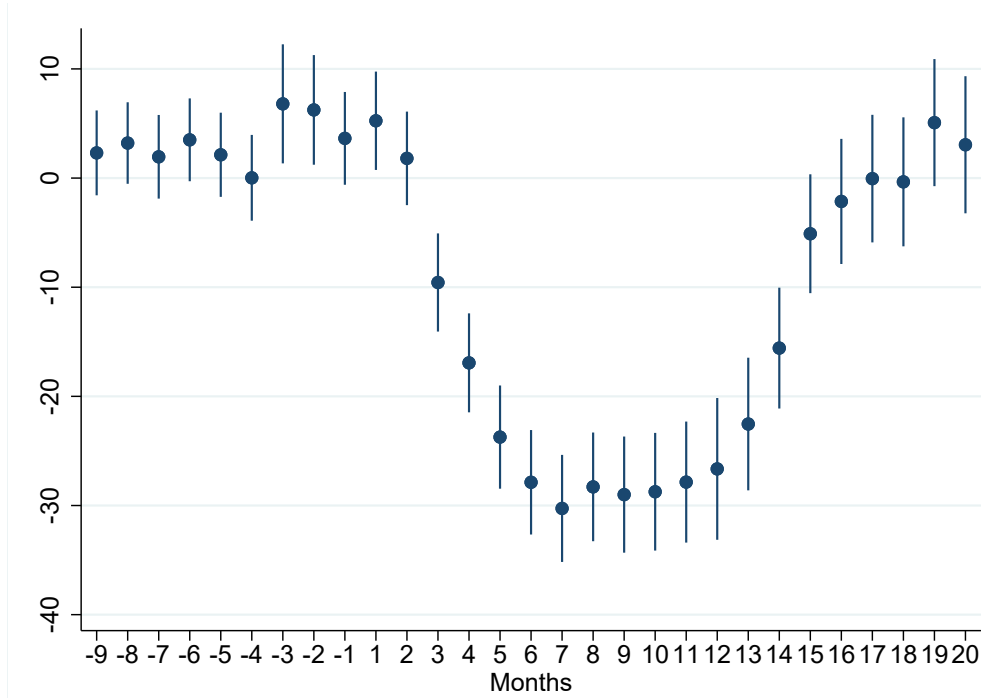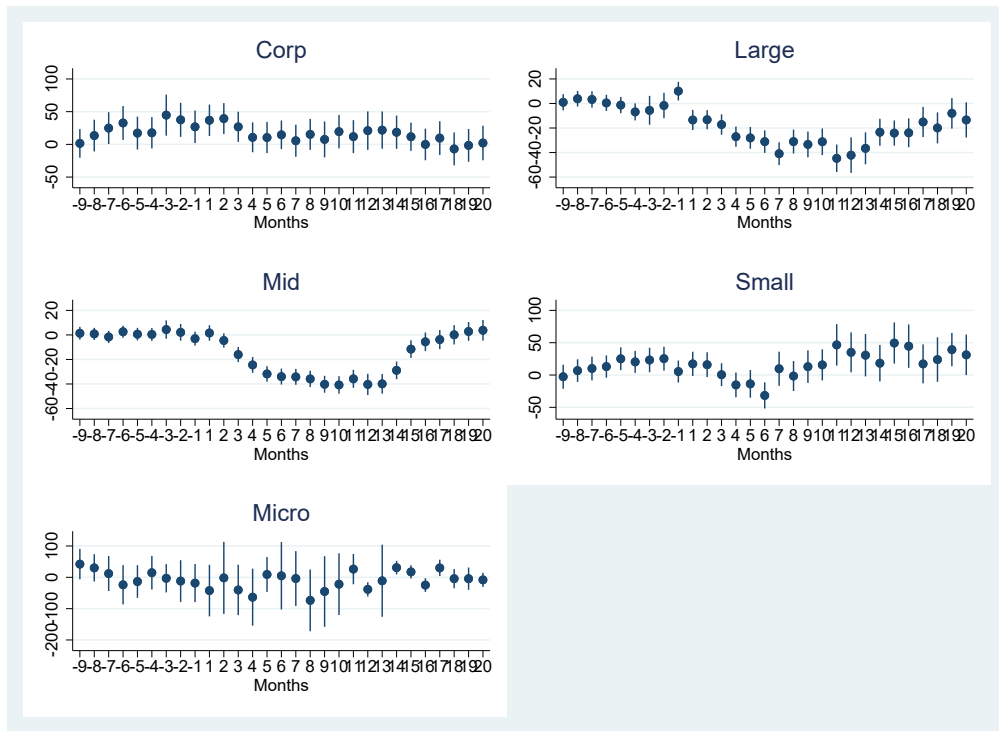
Figure 7: This figure plots the monthly effects of the program on loan dollarization ratio at the bank-firm level. The program is implemented in may of 2020. Each dot is the coefficient on the interaction of treatment and month fixed effects. We depict April 2020 (a month before the implementation of the program as period zero. The confidence interval is at the 95% level.
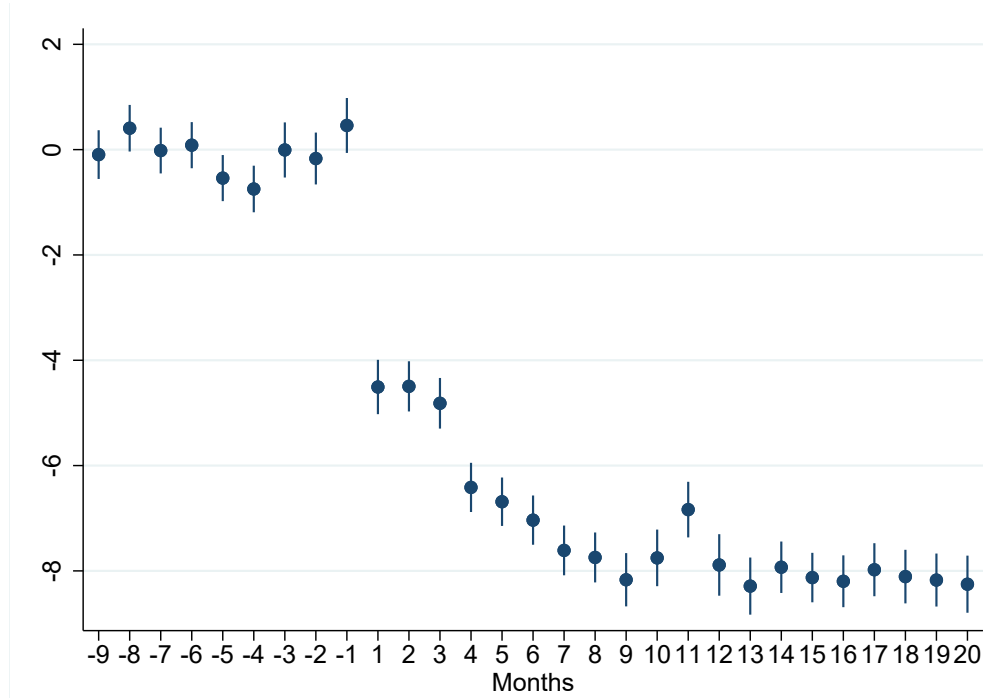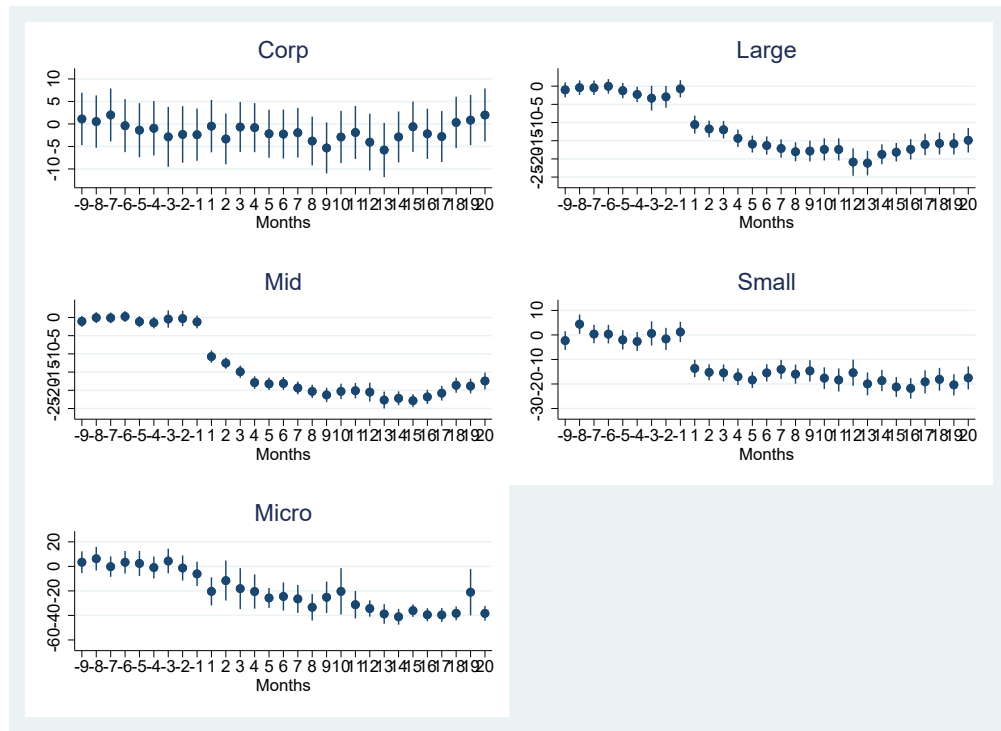

Figure 8: This figure plots the monthly effects of the program on loan dollarization ratio at the bank-firm level by firm size. The confidence interval is at the 95% level.

3.2 Triple difference analysis

To further explore the causal impact of the Reactiva Perú program on credit dollarization and test the robustness of the U-shaped effect, we extend our analysis using a triple-difference (DDD) framework. This approach incorporates additional dimensions of heterogeneity—exporting status and pre-program dollarization levels—to isolate the program's effect on firms with distinct financial profiles. By comparing treated and untreated firms before and after the program's implementation, while also differentiating across these groups, we can assess whether the de-dollarization response was amplified among firms with specific characteristics, such as reliance on foreign markets or high initial exposure to dollar-denominated debt.

The triple-difference model leverages two key comparison groups: exporters, which typically face different liquidity constraints due to their access to foreign currency revenues, and firms with high ex-ante dollarization, defined as those in the top decile of dollarization ratios prior to May 2020. These groups allow us to test whether the program's impact was stronger among firms with greater pre-existing dependence on dollar loans or those potentially less constrained by domestic credit conditions. The results are presented in Tables 4 through 7, which report the effects on dollar loan growth and dollarization ratios across firm sizes, controlling for macroeconomic and bank-level covariates, as well as bank-year and sector-region fixed effects.

For dollar loan growth, Tables 4 and 6 show the program's effect when interacting treatment with exporting status and high pre-program dollarization, respectively. Similarly, Tables 5 and 7 examine the impact on the dollarization ratio under the same interactions. The findings confirm a significant de-dollarization effect, particularly among medium and small firms, with the magnitude varying by firm type and group. The triple-difference approach strengthens the causal inference by accounting for potential confounding factors, such as differential access to foreign currency or pre-existing borrowing patterns, and supports the hypothesis that Reactiva Perú induced a temporary shift in credit composition, followed by a partial reversal.

In Table 4, examines the effect of Reactiva Perú on dollar loan growth, for the full sample, the interaction term (Treatment $\times$ Post $\times$ Exporter) is negative and significant, indicating that exporting firms exposed to the program experienced a stronger decline in dollar loan growth compared to non-exporters in the treated group. Across firm sizes, the effect is most pronounced for medium and small firms, where the coefficients are negative and highly significant, suggesting that exporters in these segments reduced dollar borrowing more sharply. For corporate and large firms, the effect is insignificant, while for micro firms, it is negative but not statistically robust, possibly due to their limited initial exposure to dollar loans.

Table 4: Diff-in-diff-in-diff regression of dollar loan growth, by firm size

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Full	Corp	Large	Mid	Small	Micro
$\text{Treatment}_i \times \text{Post}_t \times \text{Exporter}_i$	-5.589**	29.72	-1.701	-26.62***	-49.22***	-61.69
	(2.687)	(23.23)	(6.648)	(3.965)	(14.99)	(46.92)
Loan rate spread	4.763***	0.622	-1.970***	-0.849***	0.473*	-0.0206
	(0.125)	(1.752)	(0.574)	(0.279)	(0.262)	(0.264)
Global capital ratio	-3.989***	0.319	-4.789***	-1.027	-3.857*	-3.403
	(0.630)	(3.026)	(1.133)	(0.850)	(1.994)	(3.094)
FX liquidity ratio	-0.391***	-1.006***	-0.479***	-0.357***	0.172	-0.188
	(0.0657)	(0.322)	(0.120)	(0.0968)	(0.126)	(0.423)
Deposit dollarization	0.486***	0.912	1.114***	0.267	0.828	3.541**
	(0.187)	(0.716)	(0.310)	(0.261)	(0.678)	(1.575)
Bank liabilities (log)	18.02***	15.79***	10.12***	14.47***	5.007	-0.749
	(1.035)	(4.173)	(1.838)	(1.471)	(3.314)	(5.467)
Exchange rate depreciation	-0.576***	-0.451	-0.553*	-0.884***	-0.500	-0.994
	(0.176)	(0.883)	(0.321)	(0.237)	(0.492)	(0.751)
Inflation	7.181***	10.90***	11.47***	8.008***	0.368	3.807**
	(0.444)	(2.138)	(0.830)	(0.606)	(1.181)	(1.749)
GDP growth	0.0301	0.0297	0.0992**	0.0443	-0.00879	0.153
	(0.0239)	(0.116)	(0.0430)	(0.0318)	(0.0740)	(0.123)
Stock of total loans (logs)	19.98***	29.11***	26.64***	22.73***	13.30***	12.77***
	(0.173)	(0.724)	(0.351)	(0.276)	(0.700)	(0.950)
Constant	-460.9***	-696.7***	-494.8***	-475.4***	-203.8***	-189.0
	(19.41)	(83.05)	(33.85)	(26.43)	(69.70)	(124.7)
Observations	317,507	19,791	98,745	161,275	28,717	10,297
R-squared	0.141	0.191	0.189	0.165	0.111	0.121

The dependent variable in each model is the growth of dollar loans. Robust standard errors reported in parenthesis. All regressions include bank-year fixed effects and sector-region fixed effects. The analysis covers the period from January 2019 to December 2021. *** Statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%. Robust standard errors.

Table 5 focuses on the dollarization ratio with the exporter interaction. The full sample shows a significant negative effect, indicating that exporting firms in the treated group reduced their dollarization ratio more than non-exporters post-Reactiva. The effect is strongest for medium, small, and micro firms, where the coefficients are negative and significant, reinforcing that these segments, even among exporters, shifted toward local currency borrowing. Large firms show a marginally significant reduction, while corporate firms exhibit no significant change, consistent with their stable dollarization patterns.

Table 5: Diff-in-diff-in-diff regression of loan dollarization ratio, by firm size

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Full	Corp	Large	Mid	Small	Micro
$\text{Treatment}_i \times \text{Post}_t \times \text{Exporter}_i$	-4.986***	-1.599	-2.476*	-13.06***	-8.771***	-12.28**
	(0.655)	(3.198)	(1.407)	(1.137)	(3.125)	(5.347)
Loan rate spread	1.143***	0.302	-0.159	-0.0338	0.0499	-0.0633
	(0.0265)	(0.362)	(0.130)	(0.0504)	(0.0626)	(0.0776)
Global capital ratio	-0.740***	-0.0720	-1.014***	-0.551***	0.308	0.0332
	(0.142)	(0.528)	(0.249)	(0.187)	(0.453)	(0.976)
FX liquidity ratio	-0.0932***	0.0139	-0.0546*	-0.0797***	-0.0625	0.00234
	(0.0163)	(0.0559)	(0.0286)	(0.0228)	(0.0427)	(0.123)
Deposit dollarization	0.146***	-0.0888	0.196**	0.287***	-0.170	0.665*
	(0.0476)	(0.155)	(0.0814)	(0.0633)	(0.173)	(0.371)
Bank liabilities (log)	2.612***	-0.228	0.986***	1.564***	1.362*	-1.271
	(0.211)	(0.658)	(0.369)	(0.296)	(0.797)	(1.679)
Exchange rate depreciation	-0.0790**	0.137	-0.108	-0.162***	-0.0532	0.504**
	(0.0376)	(0.152)	(0.0687)	(0.0484)	(0.114)	(0.236)
Inflation	-0.331***	-0.388	0.145	-0.0126	0.0396	-0.956*
	(0.0900)	(0.367)	(0.168)	(0.117)	(0.292)	(0.581)
GDP growth	-0.00713	0.0316	-0.000637	-0.00707	0.0109	-0.0996***
	(0.00531)	(0.0210)	(0.00951)	(0.00692)	(0.0173)	(0.0379)
Stock of total loans (logs)	6.195***	6.613***	6.812***	6.553***	7.429***	10.44***
	(0.0152)	(0.0763)	(0.0331)	(0.0208)	(0.0634)	(0.217)
Constant	-51.32***	-38.73***	-41.65***	-47.60***	-37.79**	-35.72
	(4.272)	(14.42)	(7.190)	(5.834)	(16.47)	(33.47)
Observations	225,064	14,872	67,631	121,644	17,670	3,884
R-squared	0.440	0.457	0.449	0.488	0.562	0.588

The dependent variable in each model is the dollarization ratio of loans. Robust standard errors reported in parenthesis. All regressions include bank-year fixed effects and sector-region fixed effects. The analysis covers the period from January 2019 to December 2021. *** Statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%. Robust standard errors.

Table 6 examines regression of the dollar loan growth adding high dollarization group of firms. The full sample reveals a significant negative effect, suggesting that highly dollarized firms in the treated group experienced a sharper decline in dollar loan growth. This effect is particularly strong for medium and small firms, where the coefficients are large and significant, indicating a substantial substitution away from dollar loans. Corporate firms show a negative but less robust effect, while large firms exhibit a positive, marginally significant coefficient, suggesting some resilience or differing borrowing strategies. Micro firms show no significant effect, possibly due to sample size or lower initial dollar exposure.

Table 6: Diff-in-diff-in-diff regression of dollar loan growth, by firm size

Sample	(1) Full	(2) Corp	(3) Large	(4) Mid	(5) Small	(6) Micro
Treatment$_i$ × Post$_t$× High Doll.$_i$	-13.87***	-22.50**	12.29*	-18.39***	-46.13***	-23.56
	(2.825)	(11.23)	(7.173)	(3.957)	(7.823)	(33.16)
Loan rate spread	6.348***	0.300	-1.727***	-0.823***	0.364	-0.0131
	(0.127)	(1.723)	(0.564)	(0.275)	(0.258)	(0.264)
Global capital ratio	-4.380***	0.147	-4.820***	-1.052	-3.409*	-3.600
	(0.628)	(2.969)	(1.120)	(0.842)	(1.963)	(3.107)
FX liquidity ratio	-0.394***	-0.952***	-0.457***	-0.372***	0.239*	-0.172
	(0.0658)	(0.317)	(0.118)	(0.0959)	(0.128)	(0.423)
Deposit dollarization	0.458**	0.981	1.051***	0.282	0.981	3.564**
	(0.186)	(0.705)	(0.308)	(0.259)	(0.670)	(1.570)
Bank liabilities (log)	19.67***	15.39***	9.826***	14.30***	5.592*	-0.803
	(1.029)	(4.108)	(1.804)	(1.450)	(3.264)	(5.458)
Exchange rate depreciation	-0.505***	-0.409	-0.593*	-0.797***	-0.469	-1.008
	(0.175)	(0.872)	(0.316)	(0.235)	(0.486)	(0.748)
Inflation	6.848***	10.99***	11.46***	8.049***	0.277	3.619**
	(0.441)	(2.104)	(0.818)	(0.599)	(1.165)	(1.737)
GDP growth	0.0283	0.0429	0.105**	0.0520*	-0.00930	0.145
	(0.0237)	(0.114)	(0.0421)	(0.0314)	(0.0726)	(0.122)
Stock of total loans (logs)	21.65***	34.64***	30.76***	25.95***	18.17***	13.61***
	(0.184)	(0.822)	(0.383)	(0.302)	(0.863)	(0.997)
Constant	-491.1***	-708.9***	-508.5***	-477.3***	-243.6***	-185.5
	(19.37)	(80.60)	(33.38)	(26.16)	(68.84)	(124.1)
Observations	317,501	19,791	98,745	161,269	28,717	10,297
R-squared	0.149	0.219	0.213	0.182	0.133	0.126

The dependent variable in each model is the growth of dollar loans. Robust standard errors reported in parenthesis. All regressions include bank-year fixed effects and sector-region fixed effects. The analysis covers the period from January 2019 to December 2021. *** Statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%. Robust standard errors.

Finally, Table 7 show regression of the dollarization ratio with the high dollarization interaction. The full sample shows a significant negative effect, confirming that highly dollarized firms in the treated group reduced their dollarization ratio post-Reactiva. The effect is most pronounced for medium, small, and micro firms, where the coefficients are negative and significant, highlighting a strong de-dollarization response among these segments. Large firms show a smaller, marginally significant reduction, while corporate firms exhibit no significant change. The consistency across medium and small firms aligns with their greater reliance on dollar loans pre-program, making them more responsive to Reactiva's local currency incentives.

Table 7: Diff-in-diff-in-diff regression of loan dollarization ratio, by firm size

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Full	Corp	Large	Mid	Small	Micro
$\text{Treatment}_i \times \text{Post}_t \times \text{High Doll.}_i$	-21.22***	-8.166***	-17.50***	-24.95***	-31.72***	3.746
	(0.516)	(1.612)	(1.143)	(0.705)	(1.562)	(4.644)
Loan rate spread	1.013***	0.484	-0.230*	-0.0525	0.0402	-0.0404
	(0.0232)	(0.324)	(0.120)	(0.0465)	(0.0531)	(0.0707)
Global capital ratio	-0.704***	0.0263	-1.015***	-0.530***	0.430	-0.0200
	(0.124)	(0.455)	(0.222)	(0.166)	(0.385)	(0.880)
FX liquidity ratio	-0.0930***	-0.0316	-0.0490*	-0.0785***	-0.0872***	-0.00167
	(0.0147)	(0.0509)	(0.0266)	(0.0210)	(0.0311)	(0.113)
Deposit dollarization	0.163***	-0.0970	0.194***	0.309***	-0.101	0.686**
	(0.0428)	(0.140)	(0.0747)	(0.0571)	(0.152)	(0.334)
Bank liabilities (log)	2.550***	0.0116	0.987***	1.708***	1.310*	-0.325
	(0.195)	(0.590)	(0.348)	(0.278)	(0.699)	(1.555)
Exchange rate depreciation	-0.0955***	0.109	-0.0796	-0.187***	-0.103	0.409*
	(0.0330)	(0.129)	(0.0607)	(0.0432)	(0.100)	(0.214)
Inflation	-0.370***	-0.391	0.0332	-0.0726	-0.0904	-0.772
	(0.0815)	(0.319)	(0.153)	(0.107)	(0.259)	(0.541)
GDP growth	-0.0145***	0.0208	-0.00935	-0.0128**	-0.00368	-0.0705**
	(0.00477)	(0.0180)	(0.00860)	(0.00631)	(0.0151)	(0.0351)
Stock of total loans (logs)	4.611***	4.630***	5.091***	5.219***	5.762***	8.310***
	(0.0155)	(0.0759)	(0.0333)	(0.0213)	(0.0696)	(0.225)
Constant	-50.59***	-29.09**	-35.32***	-48.97***	-36.58**	-47.35
	(3.888)	(12.63)	(6.664)	(5.370)	(14.38)	(30.67)
Observations	225,019	14,872	67,631	121,606	17,663	3,884
R-squared	0.569	0.608	0.570	0.592	0.667	0.666

The dependent variable in each model is the dollarization ratio of loans. Robust standard errors reported in parenthesis. All regressions include bank-year fixed effects and sector-region fixed effects. The analysis covers the period from January 2019 to December 2021. *** Statistically significant at 1%, ** statistically significant at 5%, * statistically significant at 10%. Robust standard errors.

The triple-difference results reinforce the difference-in-differences findings, showing that Reactiva Perú significantly reduced dollar loan growth and dollarization ratios, particularly among medium and small firms, with exporters and highly dollarized firms exhibiting amplified responses.

4   Conclusions

This study examines the unintended de-dollarization effects of the Reactiva Perú program during the Covid-19 pandemic, leveraging granular data from Peru's Credit Register to establish a causal link between government-backed credit and shifts in firms' financing composition. Using a difference-in-differences approach, we find that Reactiva induced a U-shaped effect on firm-level de-dollarization: an initial sharp decline in dollar loan growth and dollarization ratios, driven by the program's local currency incentives, followed by a partial reversal as market conditions normalized. This pattern is robust across firm sizes, with medium and large firms showing the most pronounced initial declines, while small and micro firms exhibit more muted or volatile responses, and corporate firms remain largely unaffected.

The triple-difference analysis further confirms these findings, highlighting that exporting firms and those with high pre-program dollarization experienced amplified de-dollarization effects, particularly among medium and small firms. These results suggest that the program's impact was strongest among firms with greater exposure to dollar loans or reliance on domestic credit markets, supporting the hypothesis that Reactiva Perú acted as a supply-side shock that temporarily reshaped credit composition. The persistence of

some effects post-program indicates that policy-driven interventions can influence borrowing patterns beyond their immediate duration, potentially altering firms' perceptions of currency risk or lender relationships.

These findings contribute to the literature on credit guarantee programs by demonstrating their unintended consequences on credit dollarization, a dimension previously underexplored in the context of pandemic-era policies. For policymakers in emerging economies, the results underscore the potential of such programs to accelerate de-dollarization, particularly in crisis periods, but also highlight the temporary nature of these shifts absent sustained incentives. Future research could investigate the long-term implications of these changes, such as their impact on firm resilience to exchange rate shocks, or explore sector-specific responses to disentangle industry-driven heterogeneity from size effects.

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