What Policy Combinations Worked?

The Effect of Policy Packages on Bank Lending during COVID-19

Divya Kirti[1], Soledad Martinez Peria[1], Prachi Mishra[1], and Jan Strasky[2*]

International Monetary Fund[1] and Organisation for Economic Co-operation and Development[2]

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Abstract

In response to COVID-19, countries frequently adopted multiple types of policies to address the economic and financial effects of the pandemic. This paper analyzes the impact on bank lending of combinations or packages of policies (fiscal, monetary, and prudential) adopted across a broad sample of countries. Using a comprehensive policy announcement level dataset together with bank level information, we find that lending grew faster at banks in countries which announced large packages combining fiscal, monetary, and prudential measures ("All-out" packages), especially when uncertainty was high. Both the scope and size of policy packages were important: packages combining all three types of policies, but where only some were large, were relatively less effective in enhancing credit. The impact was stronger among more constrained banks with low equity levels. "All-out" packages also increased liquidity for bank dependent firms but did not disproportionately benefit unviable firms.

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* Emails: dkirti@imf.org; mmartinezperia@imf.org; pmishra@imf.org; jan.strasky@oecd.org (previously at the IMF). We are grateful to Giovanni Dell'Ariccia, Andrew Metrick (discussant), Matthew Plosser (discussant), Raghuram Rajan, Yunhui Zhao, and seminar and conference participants at the 5th IMF Annual Macro-Financial Research Conference, IBRN, and 2023 CEBRA Annual Meetings for valuable comments and suggestions. Ariadne Checo de los Santos, Dalya Elmalt, Chenxu Fu, Herman Lange, Yang Liu, Fujie Wang, and Gianluca Yong Gonzalez provided excellent research assistance. All errors remain our own. The views expressed here are those of the authors and do not necessarily represent those of the IMF, its Management and Executive Board, or IMF policy and should not be reported as representing the official views of the OECD or of its member countries.

I – Introduction

The onset of the COVID-19 pandemic triggered a dramatic—and somewhat peculiar—global economic downturn. Countries faced rapid and sharp negative supply and demand shocks simultaneously. Deep uncertainty was a defining feature of the shock. Throughout 2020, countries responded to the large shock by adopting different combinations of fiscal, monetary, and prudential policies. Many of these policies either directly targeted the banking sector or had the potential to affect it.[1]

This paper evaluates the effectiveness of combinations or packages of economic and prudential policies in supporting bank lending during the pandemic, across a large sample of advanced and emerging economies. In assessing the impact on bank lending of policies adopted during COVID-19, we find that it is crucial to account for how different types of policies were combined, as standalone policies were rare. While the literature has focused on the impact of the pandemic and of individual policies, our paper is the first to explore the effect of different combinations of policies on bank lending for a large sample of countries. We find the composition and size of policy packages to be strongly related to the impact of policies on bank lending. Lending grew faster at banks in countries that announced large packages that combined fiscal, monetary, and prudential measures (or the "All-out" package) relative to those that relied on small size packages or some, but not all, policy dimensions, and relative to a no-policy counterfactual.

We rely on a new granular dataset that measures policy actions taken by countries to respond to COVID-19 (Kirti et al., 2022). The dataset includes detailed information on 27 different policies which are classified into three categories: fiscal, monetary, and prudential policies. The dataset also contains announcement dates and wherever possible measures of size of policies and programs. We combine this policy announcement dataset with quarterly bank-level information across 49 countries to examine the behavior of bank lending in response to different policy combinations or packages. To support our analysis at the bank level, we also collect quarterly firm-level data across 39 countries and examine whether countries' COVID-19 policy packages translated into additional liquidity support for non-financial firms during the pandemic.

Exploring policy combinations is important: over the course of 2020, more than 80 percent of country-quarters in our sample include combinations of more than one of fiscal, monetary, or prudential policies that we refer to as "packages".[2]

Different policies could have affected bank lending through diverse channels. First, certain policies could have changed banks' incentives to lend at the margin. Such policies include those with the potential to lower the probability of borrower default (e.g., direct transfers and tax relief or deferrals to firms and households), reduce expected losses in the case of defaults (e.g., credit guarantees), or lower the cost of funding (e.g., conventional and unconventional monetary policies). Second, some policies may have changed the tightness of constraints faced by banks, for example, by increasing balance sheet capacity to

[1] Given the regulatory reforms implemented after the 2008 Global Financial Crisis, banks generally entered the crisis seemingly in good shape. There are exceptions, of course, as in the case of some countries dealing with legacy asset quality concerns (e.g., Ukraine) or rising NPLs even prior to the pandemic (India and China to some extent).

[2] Even with more granular policy classifications and at higher frequencies, policies were introduced in packages (Kirti et al., 2022).

lend (e.g., temporary relaxations of capital, provisioning, or liquidity requirements) or by affecting bank balance sheets more generally (e.g., restrictions on dividend distributions). Third, several macro policies could have shifted the demand for credit (e.g., relaxations of monetary or fiscal tools). As the pandemic unfolded, there was significant uncertainty about whether only some or all of these channels were relevant.

Whether and which channels were more important to address, and therefore which combinations of policies were effective in influencing overall bank lending, is not obvious. For example, fiscal policies or monetary policies could have independently supported demand and changed banks' incentives to lend at the margin. Similarly, prudential policies alone could have significantly expanded banks' capacity to lend without the need for other policies. At the same time, given that the shock was so unprecedented and uncertainty so large—both surrounding the effects of policies and the channels through which lending could be stimulated—a combination of policies with the potential to work through different channels may have been the most effective. Ultimately, understanding how different policy combinations affect bank lending is an empirical question. So too is assessing the degree to which the size of policies mattered. While in principle larger sized policies could have increased lending more, it is also plausible that non-linearities are important (e.g., larger policies above a certain size could have been ineffective in further supporting lending).

We find that both the scope and size of policy packages were critical: packages combining all three categories of policies, but where only some were large, were relatively less effective. In fact, statistical tests reveal that "All-out" packages—combining large fiscal and monetary along with prudential policies—were economically and statistically more effective in raising bank credit compared to any other policy package observed in the data and relative to a no policy counterfactual. "All-out" packages were associated with 600 basis points higher loan growth compared to small packages, where neither monetary or fiscal policies were large, or when only one of them was of large size. Our main findings are consistent with the interpretation that "All-out" packages were able to target shifts across several key channels—incentives, capacity to lend, and credit demand—and therefore, were more effective in increasing bank lending. This was particularly important in times of high uncertainty. Indeed, we find evidence that the effects were larger in the presence of more uncertainty, as measured by greater disagreement among forecasters on the impact of the pandemic and the future path of economic output.

Furthermore, because the impact of policies likely varied depending on banks' capacity to lend at the start of the pandemic, it is important to consider the interaction of countries' policies with pre-crisis bank characteristics, and in particular capitalization levels. Across banks within the same country, we find that the impact of policies was larger for banks that were a priori more constrained to lend due to low equity levels. These findings suggest that binding constraints and factors affecting banks' marginal incentives to lend were jointly relevant in holding back credit growth.

Our baseline methodology and key robustness exercises confirm that our results can indeed be attributed to the scope and size of policy packages. Potential sources of bias could, in principle, apply in either direction. For example, countries may have incorporated expectations about future outcomes in credit markets in designing their policy responses. Importantly, as we relate lagged policies to subsequent outcomes, such concerns about reverse causality would push against our ability to find meaningful effects. Equally, large reductions in credit at the depth of the pandemic could set the stage for strong mean reversion, biasing our results upwards. Our results remain similar if we control for lagged credit growth, suggesting that such dynamics do not drive our results.

Additional robustness exercises show that our bank-level results are not driven by our specific approach to defining large policies. In our baseline estimations, we define large policies as those in the top decile of the distribution across countries. In additional estimations we confirm that the results are qualitatively similar if we define as large packages those with policies in the top quartile, tercile, and median of the distribution.

We combine bank level evidence with findings at the firm level which allows us to understand whether policy packages increased firms' ability to meet pre-crisis expenses, as well as to consider whether bank lending supported ex-ante weak firms. Consistent with our results at the bank level, we find that packages combining large fiscal, monetary, and prudential measures helped provide bank-dependent firms with additional liquidity to allow them to stay afloat and pay their expenses while pandemic-linked health measures constrained their ability to generate revenue. Within bank-dependent firms, we do not find differential effects in the extent to which liquidity was available to firms displaying poor pre-pandemic performance. While economic and financial policy packages during COVID-19 were generally not narrowly targeted, this latter evidence suggests that policy support at least did not disproportionately benefit unviable firms.

The rest of the paper is organized as follows. Section II reviews the relevant literature and this paper's contribution to it. Section III describes the data we use, while section IV presents the empirical methodology. Section V summarizes our main results. Section VI concludes.

II – Literature Review

Our paper is related to three strands of the literature on the impact of COVID-19 on firms and banks. First, several papers explore the effects of the pandemic and of individual policies on bank credit. This literature includes studies on the impact of the Paycheck Protection Program (Granja et al., 2022; Bartik et al., 2023; Berger et al., 2021; Beck and Keil, 2021) and of the pandemic on bank lending in the U.S. Dursun-de Neef and Schandlbauer (2022) document that U.S. banks with higher exposure to COVID-19 decreased their lending less when their deposits increased due to a reduction in household spending. Other studies, typically focused on other individual countries, examine the impact of guarantees on bank lending (Acosta-Henao et al., 2023 for Chile; Cascarino et al., 2022 for Italy; Jiménez et al., 2022 for Spain; Altavilla et al., 2021 for several euro area economies) or countercyclical capital buffer releases (BCBS 2021; Couaillier et al., 2022) on bank lending. More closely related to our paper, Colak and Oztekin (2021) analyze loan growth at the bank level during the pandemic, comparing it to the pre-pandemic period. Although their primary interest is the effect of the pandemic itself, they also find a role for fiscal and monetary stimulus in supporting demand for bank lending. Focusing on European banks, Dursun-de Neef and Schandlbauer (2021) show that higher exposure to COVID-19 led to a relative increase in worse-capitalized banks' loans, whereas their better-capitalized peers decreased their lending more. Casanova et al. (2021) empirically examine how changes in banks' lending capacity—which they attribute to (but do not directly link with) policy measures—affected loan growth during the pandemic. They also examine the response of bank lending to the size of loan guarantee programs and find a positive association. Altavilla et al. (2020) employ proprietary data from ECB's monetary policy operations and banking supervision to achieve a strong identification of the effects on bank lending of targeted long-term refinancing operations and selected prudential supervisory policies, such as counter-cyclical capital buffers. They find strong effects on lending as well as complementarity among the measures, echoing our result that policy packages combining many levers are the most effective. At the same time, the geographic scope is limited to the euro area countries, and they look at a specific group of central bank policies; they do not consider fiscal policies, or interactions between broader policy categories.

Second, several papers examine the impact of the COVID-19 shock but focus on outcome variables other than bank lending such as corporate stock returns (Alfaro et al., 2020; Capelle-Blancard and Desroziers, 2020; Cox et al., 2020, ElFayoumi and Hengge, 2021), corporate insolvencies (Gourinchas et al., 2022; Demmou et al., 2021; Guerini et al., 2020), listed firms' performance (Igan et al., 2023), employment (Autor et al., 2023; Granja et al., 2022; Hubbard and Strain, 2020), and bank equity prices (Demirguc-Kunt et al., 2020; Valencia et al., 2021).

Finally, there is work on related policy issues in the context of the pandemic. For instance, several papers analyse patterns in the use of pre-existing credit lines at the start of the pandemic and find increasing importance of government interventions, such as the Fed corporate bond buying program (Acharya and Steffen, 2020; Chodorow-Reich et al., 2021; Greenwald et al., 2020; Li, Strahan and Zhang, 2020). Augustin et al. (2022) use the heterogeneity in the COVID-19 lock-down measures to identify fiscal space as the main driver of the sovereign risk premia in advanced economies and among U.S. states during COVID-19. Benmelech and Tzur-Ilan (2020) link policy responses to COVID-19 to pre-pandemic policies, such as the level of interest rates for monetary policy and sovereign credit ratings for fiscal policy. Similarly, Bergant and Forbes (2023) examine the determinants of the policy mix adopted in the wake of the pandemic and find that existing policy space is the main driver affecting the choice of policies, albeit less so for fiscal policies in advanced economies.

Our paper contributes to all three strands of literature by analyzing the effects of policy combinations or packages on bank lending using the most comprehensive dataset to date across a large sample of countries. Analyzing policy packages is crucial because policies were rarely adopted in isolation but were frequently introduced in tandem with other types of policies.

Another contribution comes from our firm-level analysis, which allows us to examine the impact of policy packages on firms' ability to meet pre-pandemic expenses with bank financing, as well as to ascertain whether packages were more likely to support unviable firms.

III - Data

We assemble and use three main datasets. We obtain bank balance sheet and income statement data at a quarterly frequency from S&P Capital IQ Pro. The bank-level dataset includes roughly 1,500 banks operating in 49 countries: 18 advanced economies (AEs) and 31 emerging and developing countries (EMDEs).[3] The main variable of interest from this dataset is net customer loans. Figure 1 shows the distribution of quarterly growth of net customer loans across countries for 2019Q4-2021Q1. There is a marked decline in quarterly loan growth across all countries at the start of the pandemic, followed by a steady recovery.

Figure 2 compares the level of lending during 2020 to pre-pandemic levels (indexed to the last quarter of 2019). The figure shows a significant decline in lending during 2020Q1 for countries in the bottom quartile of the sample, a very small drop for the median country, and practically no change for countries in the top

[3] The following countries are included in our sample. AEs: Austria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Israel, Italy, Japan, South Korea, Latvia, Norway, Portugal, Spain, Sweden, United Kingdom, United States; and EMDEs: Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Ghana, India, Indonesia, Kuwait, Kyrgyzstan, Malaysia, Mauritius, Mexico, Morocco, Nepal, Nigeria, Oman, Pakistan, Panama, Philippines, Poland, Qatar, Russia, Saudi Arabia, Sri Lanka, Thailand, Turkey, Ukraine, United Arab Emirates, Vietnam.

quartile of the sample. For countries above the median of the distribution, lending recovered quickly and exceeded pre-pandemic levels, while for countries below the 25th percentile, credit had barely recovered to pre-crisis levels even by the end of 2020. This suggests significant heterogeneity across countries and banks in terms of lending behavior and potentially their response to policies. The goal of this paper is to evaluate whether how policies were combined played a role in explaining the variation in credit across countries, banks, and over time.

To understand the role of policies in explaining developments in bank credit, we use a new comprehensive announcement-level panel dataset that tracks fiscal, monetary, and prudential policy responses to COVID-19 at a daily frequency and granular level. The database provides detailed information for 27 granular policies, (including information on their sizes where available), adopted by 74 countries during 2020 (Kirti et al. 2022). It is built starting from the IMF's Policy Tracker—which draws on the institution's regular global surveillance activities and provides an account and summary of the main policies that countries adopted in response to COVID-19—and combined with information from several additional sources including other existing trackers, government websites, news reports, and various reports from government agencies and the private sector. Overall, merging information and cross-checking facts from a series of alternative sources helps to provide a more comprehensive and accurate description of the policy announcements in response to COVID-19. In the analysis that follows, the focus is on the 49 countries for which we have quarterly bank-level data as well as information on the policies adopted in response to COVID-19.

The policies are categorized into three broad groups: fiscal, monetary, and prudential. Fiscal policies include direct support to households and firms (in the form of grants, tax relief, tax deferral and equity participation) as well as public guarantees and loans. We also include moratoria provided by the government in fiscal policies. Monetary policies encompass both conventional (changes in interest rates and reserve requirements) and unconventional measures (asset purchases) along with lending operations. Prudential policies refer to measures targeted at relaxing capital constraints of banks (e.g., macroprudential buffers), and non-capital measures such as those related to liquidity, lending standards and supervisory expectations. Overall, we consider 27 different policy measures: 7 fiscal, 9 monetary, and 11 prudential.[4]

Figure 3 shows the frequency of different combinations of these policies announced by the 49 countries in our data during 2020. A key stylized fact that emerges from the data is that announcements were highly correlated across the three groups of policies: fiscal, monetary, and prudential. About 90 percent and 70 percent of countries used all three policies simultaneously in the first and second quarters, respectively.[5] In later quarters, we find more variation, with only about 25 percent of countries using all three types of policies in the fourth quarter of 2020.

[4] Appendix Table A1 defines each policy used, drawing on Kirti et al. (2022). Relative to Kirti et al. (2022), we separate credit facilities and market liquidity measures, and do not include measures related to non-bank financial institutions or market-based measures.

[5] The strong correlation of announcements across policies is also present at higher frequencies: packages spanning more than one policy category represent the majority of announcements in the weeks of March and April 2020; see Appendix Figure A1.

To assess whether large policies are more effective we construct dummies for large policy announcements for policy types where we have consistent information on sizes.[6] Figure 4 illustrates the distributions of sizes for these policies and the threshold we use to delineate large policies. For both fiscal policy (above the line measures, and loans and contingent liabilities) and monetary policy (asset purchases and rate cuts) measures, we define large policies as those with sizes above the 90th percentile of announced measures observed in our data at the country-quarter level.[7] Sizes for fiscal policies and unconventional monetary policy are measured relative to 2019 GDP. For conventional monetary policy, we focus on the size of policy rate changes relative to the level of rates at the end of 2019.[8]

To analyze the impact of policy combinations on firm financing, we obtain quarterly firm-level data for about 6,200 firms operating in 39 countries (16 advanced and 23 emerging and developing countries) from S&P Capital IQ. Importantly, in addition to standard balance sheet variables like assets and debt and income statement variables like revenues, expenses, and net income, we also observe the quantity of debt from banks.

IV – Empirical Methodology

Bank-level analysis

As we observed in Figure 3, countries tended to introduce different policies simultaneously. Standalone policy announcements are rarely observed in the data. This makes it challenging to isolate the impact of specific policies on outcomes, and more appropriate to analyze the effect of combinations or packages. To examine the association between combinations of policy measures and credit at the bank level, we begin by estimating Equation (1):

$$\Delta \ln(L)_{b,c,q} = \alpha P_{c,q-1} + \delta Country\ controls_{\ c,q} + \gamma X_{b,q} + \beta_b + \varepsilon_{b,c,q} \quad (1)$$

Where $\Delta \ln(L)_{b,c,q}$ is the quarter-on-quarter log change in lending by bank b in country c during quarter q. $P_{c,q-1}$ is a vector of policy packages, lagged by a quarter. We term a combination of policies observed in the data as a "policy package". Policy packages might include only fiscal, only monetary, or only prudential policies or a combination of two or three policy types. Each policy package is defined by a matrix of dummies equal to one for countries and periods where that package is announced. Using information where sizes are available, we also estimate a variant of equation (1) to separately assess the effect of packages with large policies across all types relative to packages with only one large type of policy or small policies or packages in which not all types of policies are implemented.

$Country\ controls_{c,q}$ includes indicators of health-related developments (as measured by the prevalence of COVID-19 cases), financial stress (captured by sovereign bond spreads), the intensity of the economic

[6] For some types of policies—particularly prudential policies—it is challenging to assign sizes. Restrictions on dividend payments, for example, are difficult to quantify in terms of size. In these cases, we include robustness using the count of prudential policies as a proxy for sizes.

[7] In robustness tests, we vary the cutoff we use to define large policies.

[8] We treat one rate cut smaller than 50 basis points that would be classified as large relative to the level at the end of 2019 as small.

shock (measured by quarterly revisions in confidential IMF forecasts of GDP growth for the duration of the crisis), and measures of de facto mobility (based on data from Google).[9] β_b represent bank-level fixed effects and $X_{b,q}$ are lagged bank-level characteristics that can affect bank lending (e.g., bank size, capitalization, asset and liability composition).[10] As we work with short time series, we cluster standard errors by country.

Notably, our empirical methodology incorporates the following features: (i) specifications are estimated at the bank level while policies are adopted at the country-time level; (ii) policy combinations are lagged; and (iii) bank fixed effects and extensive country-time varying controls are included. The use of lagged policy packages helps mitigate potential concerns about reverse causality. Moreover, if countries introduced policy packages in anticipation of poor subsequent outcomes, this would bias against finding a positive effect of policy packages in the subsequent quarter. As COVID-19 was a global shock that presented countries with highly multidimensional policy choices, alternative approaches such as reliance on other countries' choices as proxies (including Bartik-like strategies) or attempts to construct 'synthetic control' countries are difficult to justify and implement. Similarly, using the differential exposure to (or intensity of) the pandemic would not help identify the impact of policy packages, because the choice of package was likely not only driven by the pandemic but also by the space countries had for policies and this varied significantly across countries. Moreover, space for policies to respond to the pandemic is unfortunately difficult to measure across the combinations of policies we consider. However, accounting for potential differences across countries in policy space would not change the sign of the bias: countries with space would still only choose to use it if they expected poor subsequent outcomes.

We also examine differences in effectiveness of policy packages across banks with different characteristics (ω_b) by estimating Equation (2). Equation (2) allows us to include country x quarter fixed effects ($\theta_{c,q}$) to capture the impact of policies and macro variables as in (1), as well as to account for any potentially omitted country-time level variables that could influence both the policy response and the lending behavior of banks.

$$\Delta \ln(L)_{b,c,q} = \lambda P_{c,q-1} \times \omega_b + \phi Country\ controls_{c,q} \times \omega_b + \theta_{c,q} + \pi_b + \mu X_{b,q} + \nu_{b,c,q} \quad (2)$$

[9] Our measure of financial stress relies on spreads of sovereign bond yields to US treasuries, using the level of yields for the US, and yields on regional JP Morgan Bond Indices where country specific yields are not available. Data on individual bond yields is from Bloomberg. Within each quarter, we calculate an average of the absolute and percent change in the yield spread from the start of the quarter to the peak. To measure the (expected) intensity of economic shock, we calculate the quarterly change in the forecasted sum of GDP in 2020 and 2021 relative to 2019 relying on confidential IMF forecasts. The measure of mobility is an average of the percent change in transit and workplace mobility indices from Google.

[10] Equation (1) does not include time fixed effects because as shown in Figures 1-2, credit recovered for most countries in Q2, following the widespread adoption of packages combining all three types of policies (Figure 3), suggesting that a quarter fixed effect would completely absorb this effect. In other words, the synchronized nature of the pandemic and the policy response makes it difficult to identify quarter effects separately from the effect of policies.

In particular, in estimating equation (2), we examine the differential response to policies for banks with high and low equity (sorting banks based on whether their equity to asset ratios were above or below within-country median levels prior to the pandemic). Less well capitalized banks are relatively more constrained in their ability to lend, so a priori we would expect policies that support banks' ability to lend to have a larger impact on banks with lower levels of equity. By including $Country\ controls_{c,q} \times \omega_b$, we allow for the possibility that the effect of country controls on bank lending can also vary depending on banks' equity levels. π_b denote bank fixed effects.

Firm-level analysis

Next, we conduct firm-level estimations to examine the extent to which policy packages helped firms stay afloat (and pay for their expenses) via a higher level of bank borrowing during the pandemic, reflecting the broad objective of economic and financial policies early on in the crisis. In particular, we employ firm-level data to examine the association between combinations of policy measures and $\Delta\left(\frac{D}{Costs_{2019}}\right)_{f,c,q}$, the quarter-on-quarter change in bank debt for firm f in country c during quarter q, as a fraction of the firm's pre-pandemic expenses, measured in 2019, in months. Expenses are calculated as total revenue minus net income of the firm. $\Delta\left(\frac{D}{Costs_{2019}}\right)_{f,c,q}$ essentially captures the extent to which firms possessed sufficient liquidity in the form of bank loans to cover their expenses during the pandemic, even if its expenses remained unchanged at pre-pandemic levels.

We examine differences in effectiveness of policy packages across bank-dependent firms (ω_f) by estimating equation (3):

$$\Delta\left(\frac{D}{Costs_{2019}}\right)_{f,c,q} = \rho P_{c,q-1} \times \omega_f + \tau_{c,q} + \vartheta Z_{f,q} + \psi_f + \epsilon_{f,c,q} \quad (3)$$

Bank dependent firm (ω_f) is defined by an indicator which takes the value of 1 if the firm is in the top quartile of the fraction of bank debt to total debt within country prior to the pandemic. $P_{c,q-1}$ is the vector of policy packages, lagged by a quarter, defined as before. ρ captures the relative effectiveness for bank-dependent firms of policy package P in terms of the number of months the firm could survive with the additional liquidity provided by the policy package, if its expenses remained unchanged at pre-pandemic levels. The regressions include country-quarter ($\tau_{c,q}$) and firm fixed effects (ϑ_f), as well as time varying firm-level controls ($Z_{f,q}$).

Finally, the firm-level analysis also allows us to trace differential effects of policy packages depending on firm quality. In particular, we ask whether policy packages *misallocated* resources to ex-ante low quality firms. We estimate Equation (4) to answer this question:

$$\Delta\left(\frac{D}{Costs_{2019}}\right)_{f,c,q} = \iota P_{c,q-1} \times \omega_f + \kappa P_{c,q-1} \times \omega_f \times q_f + \xi_{c,q} + \varsigma X_{f,q} + \varpi_f + \sigma_{f,c,q} \quad (4)$$

Where q_f is defined by an indicator which takes the value of 1 if the firm is of low quality pre-COVID. Low quality is defined by the bottom quartile within country, based on four different proxies measured by averages over 2017-19. The four proxies include: interest coverage ratio, return on assets, book equity scaled by assets, and a distance to insolvency measure (Checo and Chen, 2022). κ captures the relative

effectiveness of policy package P for low quality bank dependent firms compared with that for high quality firms. $\xi_{c,q}$ are country-quarter fixed effects and ϖ_f are firm fixed effects.

V – Results

Bank-level results

Table 1 shows the results from estimating Equation (1). We begin by assessing the impact of packages defined by broad policy categories: fiscal, monetary, and prudential policies, without accounting for the size of policies. The dependent variable is the quarterly growth in bank credit. The explanatory variables include dummies for all packages (or combination of types of policies) observed in the data—fiscal only; fiscal, monetary, and no prudential; fiscal, prudential, and no monetary; and fiscal, monetary, and prudential (which we also refer to as the "all-three" package). The omitted category consists of packages with no fiscal policies (those where monetary and/or prudential policies were adopted), covering only about 5 percent of country-quarters, and country-quarters with no policies, covering an additional 4 percent of the sample.[11] All specifications include bank fixed effects. Column 1 controls for bank characteristics that could affect loan growth: bank size (measured by the log of assets), deposit to liability ratios, equity to asset ratios, and net customer loan to asset ratios. Column 2 adds health (standard deviations of log change in COVID cases per thousand) and mobility (de facto measures from Google) as controls. Column 3 also includes measures of economic and financial stress constructed based on revisions in IMF forecasts and sovereign spreads, respectively. Summary statistics for the controls are included in Table A2.

We find that announcements of packages that included fiscal, monetary, and prudential policies had a positive impact on bank lending (Table 1). The degree of statistical significance for the estimated coefficient on the all-three package, however, is reduced when we include economic and financial controls. Based on Column 3, in the quarter following announcements of these policies, loan growth was approximately 300 basis points higher per quarter, but the effect is statistically indistinguishable from zero.

In Table 2, we examine non-linearities in the effectiveness of packages in enhancing bank credit, based on whether the packages were large in size (a large package is defined as one where *at least* one granular policy within each sub-group of fiscal and monetary policies is large). As discussed in Section III, in the baseline a granular policy is defined as large if its size lies in the top decile in the sample.[12]

We find that large-size packages with combinations of all three—fiscal, monetary, and prudential—measures were effective in enhancing bank credit. Based on Column 3, the estimated magnitude on all-three-large, or the "All-out" package is statistically significant at the 1 percent level. Loan growth was about

[11] We do not explicitly study packages that we observe in few instances (specifically packages without fiscal policy, for example in Japan, Mexico, and Costa Rica in 2020 Q3) and include these in the omitted category. In robustness checks we present specifications where the omitted category is restricted to country-quarters with no policies announced (Table A5).

[12] Size is defined as a percent of GDP wherever applicable. Large interest rate changes are calculated by taking the top quartile of changes relative to the initial level for the country. Note that information on the size of prudential policies is not available. We, however, present robustness to accounting for the inclusion of large prudential elements of packages based on the number of policies (Table A8).

700 basis points higher in the quarter following announcements of a large package which included fiscal, monetary, and prudential policies. To put the result in context, note that in 2019, average quarterly loan growth in our sample was 200 basis points per quarter, with a standard deviation of 400 basis points. The "All-out" policy package, therefore, lifted loan growth by more than their pre-pandemic average and standard deviation.

Was the "all-three-large" package *more* effective than other packages? In order to answer this question, Figure 5 reports results from statistical tests of differences between the "All-out" and other packages.[13] It turns out that the "All-out" package is indeed statistically different from all the other packages; the differences are economically significant too. For example, the "All-out" package is associated with 600 basis points higher loan growth than small packages – when neither monetary or fiscal is large, or when only one of them is of large size.

Table 3 further unpacks the "Fiscal & monetary & prudential – Other" category in Table 2 into two more granular buckets: first where either fiscal or monetary was large in size ("Fiscal & monetary & prudential – Fiscal or Monetary large"), and second whether neither was large (Fiscal & monetary & prudential – Other" in Table 3). Here, we can isolate the impact of small packages, where neither policy is of large size. We find small size packages to have a statistically insignificant effect in raising credit, while packages where either monetary or fiscal is large to be relatively more effective, though the effect is only one-third that of the "All-out" package. Importantly, the "All-out" package continues to be most effective—both statistically and economically—in raising bank credit.

While Tables 2 and 3 establish the importance of the "All-out" packages in enhancing credit, they are not able to isolate the effects of several other large packages, e.g., a package with only large size fiscal policies, which are rarely observed in the data. To allow splitting the "All-out" package into more granular bins, Table 4 relaxes the definition of a "large" size package, where a granular policy is defined as large if its size lies in the top quartile, tercile, and median in the sample (Columns 2, 3, and 4 respectively), rather than using the decile as the cutoff as in Tables 2 and 3. This allows us to distinguish the effects of the "All-out" package from other combinations of large size policies.[14] Indeed, the findings suggest that the combination of large monetary policies and large fiscal relaxations with prudential measures was the most successful package in boosting credit by banks. Loan growth was at least 450 basis points higher in the quarter following announcements of a large package which included large changes in monetary policies, combined with large fiscal, and prudential policies. The estimated effectiveness of the "All-out" package in enhancing credit is statistically and economically higher than the effect of other large packages, for example, four times the effect of a large fiscal-only package.[15] Overall, the results further support our main finding that countries which introduced "All-out" packages—both in terms of breadth and intensity of policies—saw the biggest increases in credit growth following the COVID-19 shock.

[13] We obtain similar results from estimations that do not include any controls. See Figure A2. In unreported results, we also explore and find no statistically distinguishable differences in the effects for advanced economies and developing countries.

[14] Appendix Table A3 reports the number of country-quarters in each of the granular buckets for different thresholds used in defining a large size package.

[15] Appendix Table A4 reports results from tests of statistical differences between "All-out" and other packages.

The next natural question to ask is which granular policy measures were more prevalent in “All-out” packages. At the most granular level we find that the large-all-three combinations were mostly unique; for example, among all 39 country-quarters with above median size of large fiscal, monetary policies, each granular combination of 27 policies occurred only once. That said, we do find that some granular policies were used more frequently than others (Figure 6). For example, grants were the most common fiscal measure, used in *all* successful packages, compared with only 60 percent of the time in other packages. In contrast, equity injections were the least prevalent. Within monetary policies, credit facilities, asset purchases, and policy rates were frequently used, whereas FXI and reserve requirements were less common. Finally, among prudential policies, relaxation of capital requirements, supervisory expectations, and reporting requirements were pervasive, whereas changes to guidance on underwriting were used less. Importantly, each of the 27 granular policy tools were more prevalent in successful packages, compared to their frequency in other packages (Figure 6), confirming our main finding of the effectiveness of ”All-out” combinations at the most granular level.

Robustness

The baseline results presented in Tables 1-4 are robust to (i) dropping those country-bank-quarters with packages that do not contain any fiscal policies (Table A5), (ii) including lagged credit growth as an additional explanatory variable to control for base effects (Table A6), (iii) using an alternative definition of large monetary policies, (Table A7), (iv) including large prudential policies using counts to define “large” (Table A8), (v) using fewer controls than those included in the baseline Table 2 (Table A9), and (vi) controlling for forecast dispersion as a measure of uncertainty (unreported results).

Specifically, Table A5 shows that when the same policy packages as those in Table 2 are compared to a counterfactual of no policies (instead of including the infrequently employed policy combinations not shown in Table 2 in the counterfactual), the main finding that large packages, combining fiscal, monetary, and prudential policies are the most significant in driving bank loan growth remains robust. Similarly, Table A6 allows us to confirm that our results survive once we control for base effects related to past credit growth. In Table A7, instead of defining large monetary policy actions relative to their 2019 level, we present results considering the absolute change in interest rates and confirm that our main finding prevails. Because it is difficult to measure the size of prudential policies, in Table A8 we consider as a proxy the number of prudential policy actions. Our main results do not change in this case either. Neither do they change if we include fewer controls as in Table A9.

Bank heterogeneity

In principle, the impact of policies adopted in response to COVID-19 on bank lending could vary depending on bank characteristics. In particular, low capitalization could constrain banks’ ability to lend and hence could affect their response to policies. We explore bank heterogeneity by estimating Equation (2). The inclusion of bank and country-quarter fixed effects also allows us to better isolate the impact of policies on bank lending. Table 5 reports the results. Large size packages that combined all three types of policies drove stronger credit growth at less well capitalized banks. In Column (3), we find that “All-out” packages were relatively more effective for low capital banks, with estimated loan growth approximately 100 basis points larger for less well capitalized banks. Overall, these findings support the interpretation that packages which included fiscal, monetary, and prudential policies—and in particular all-three-large packages—were most effective in raising lending by banks which were more constrained in their ability to lend due to lower levels of equity.

Policy-making in the context of uncertainty

As argued in the introduction, deep uncertainty was a defining feature of the shock. Given that the shock was so unprecedented and uncertainty so large—both surrounding the effects of policies and the channels through which lending could be stimulated—a combination of policies with the potential to work through different channels could be expected to be the most effective. We provide some suggestive evidence on this by exploring the interaction between All-out packages with uncertainty, while controlling for the interaction between uncertainty and all other policy packages.

We measure uncertainty by disagreement among Consensus forecasters regarding the impact of the pandemic and the path of future economic output. The sample is smaller based on availability of consensus forecasts, yet it is useful to employ these to provide some evidence on the role of uncertainty in shaping the effectiveness of packages. The results are reported in Table 6. Indeed, we find suggestive evidence for the effects of the All-out package on bank lending to be higher when forecast uncertainty is high. The interaction between forecast uncertainty and the All-out package is positive and statistically distinguishable at the 10 percent level. The estimated magnitudes imply that bank lending is 750 bp higher for percentage point increase in the standard deviation of output forecasts compared to the average.

Firm-level results

Next, we move to our firm-level analysis. The objectives of this analysis are to examine (a) which policy packages allowed firms to maintain sufficient liquidity (by raising bank debt) to meet their expenses and (b) the extent to which the impact of policies on liquidity was larger for low quality firms, and hence suggestive of misallocation. Table 7 reports firm-level results from estimating Equation (3). Column 3 reports the results for relative effectiveness of large size packages for bank dependent firms with controls corresponding to our most granular specifications at the bank level—but all interacted with a dummy identifying bank dependent firms. The results suggest that announcements of “All-out” packages were relatively more effective for bank-dependent firms. The magnitude of the estimated coefficient on “Fiscal & monetary & prudential - Large x Bank dependent” in Column 3 suggests that the “All-out” package provided enough extra liquidity for firms to survive two additional months relative to non-bank dependent firms, assuming its expenses did not change from pre-pandemic levels.

Finally, we explore whether “All-out” policy packages misallocated resources to ex-ante low quality firms. Table 8 reports the results for estimating Equation (4). The dependent variable is the same as in Table 6—the quarter-on-quarter change in bank debt, as a fraction of the firm’s pre-pandemic expenses. Columns 1-4 report the results with the four different proxies of firm quality—interest coverage ratio, return on assets, book equity scaled by assets, and distance to insolvency—respectively. Strikingly, in all four specifications, with distinct proxies for quality, the estimated coefficients on the triple interaction between “Fiscal & monetary & prudential - Large x Bank dependent x Low quality” are statistically indistinguishable from zero. In other words, there is little evidence that, on average, the additional liquidity from the ”All-out” policy packages differentially affected low- and high-quality firms.[16]

[16] A caveat here is that the sample of firms included in our analysis likely excludes small firms which may be disproportionately affected. The results, moreover, cannot rule out any misallocation stemming from the extensive margin, or access to new programs (Huneeus et al., 2022 Granja et al., 2022).

VI – Conclusions

This paper analyzes the impact of different combinations of policies enacted during the pandemic on bank lending. Whether and how the composition and size of policy packages matters for the impact on bank lending in the context of deep uncertainty is not conceptually clear and is an empirical question. To examine this empirically, we assemble a granular dataset of fiscal, monetary, and prudential policy announcements for a wide sample of advanced and emerging and developing economies. We examine both the impact of the announcement of different policy packages as well as their sizes. In addition, we explore heterogeneity across banks in the impact of policy combinations as well as the impact on liquidity for non-financial firms.

Our analysis shows that loan growth was faster for banks in countries that announced large size packages which combined fiscal, monetary, and prudential measures ("All-out" packages) relative to those that relied on some, but not all, of these three types of policies or where packages were not large. Across banks, the impact of policies was larger among banks that were a priori more constrained due to low capital levels.

Consistent with our evidence at the bank-level, large packages combining fiscal, monetary, and prudential measures helped channel additional liquidity to bank-dependent firms. Within bank-dependent firms, we do not find that policy packages disproportionately benefited firms with poor pre-COVID performance.

The results underscore the importance of decisive action in terms of breadth and intensity of policies following the COVID-19 shock, particularly given that the shock was so unprecedented and uncertainty so large. Indeed, we find suggestive evidence for the effects of the All-out package on bank lending to be relatively larger when forecast uncertainty is higher.

In future crises that combine, as the pandemic did, negative supply and demand shocks with significant uncertainty, a similarly concerted, coordinated, "All-out" approach may have an important role to play in supporting the economy. Although COVID-19 was an unusual shock in many ways, further global shocks—including wars and other geopolitical shifts—are not hard to conceive.

While this paper highlights the benefits of an "All-out" approach in response to a global shock like COVID-19, not all countries could or will be able to respond in such an aggressive fashion. As shown by Bergant and Forbes (2023), the size of countries' response to COVID-19 was largely driven by the degree of policy space prior to the pandemic. In this sense, emerging and developing countries have been and will likely be more constrained. Moreover, it is important to recognize that there are costs and unintended consequences from an "All-out" approach. Large fiscal and monetary packages that support bank credit and economic recovery may also lead to inflationary pressures. In countries with already high debt levels, an increase in discretionary spending could give rise to concerns about debt sustainability. How to calibrate the appropriate "All-Out" response to minimize the costs and unintended consequences is beyond the scope of this paper and merits further research.

References

Acharya, V., Steffen S. (2020). The Risk of Being a Fallen Angel and the Corporate Dash for Cash in the Midst of Covid. *The Review of Corporate Finance Studies*, Vol. 9(3): 430-71.

Acosta-Henao, M., Fernández, A., Gomez-Gonzales, P., & Kalemli-Özcan S. (2023). The Covid-19 shock and firm financing: government or market? Or both? Mimeo.

Alfaro, L., Chari, A., Greenland, A.N., Schott, P.K. (2020). Aggregate and Firm-Level Stock Returns during Pandemics, in Real Time, NBER Working Paper No. 26950.

Altavilla, C., Barbiero, F., Boucinha, M., & Burlon L. (2020). The Great Lockdown: Pandemic Response Policies and Bank Lending Conditions. ECB Working Paper 2465.

Altavilla, C., Ellul, A., Pagano, M., Polo, A., & Vlassopoulos, T. (2021). Loan Guarantees, Bank Lending and Credit Risk Reallocation. CEPR Working Paper 16727.

Augustin, P., Sokolovski, V., Subrahmanyam, M.G., & Tomio, D. (2022). In sickness and in debt: The COVID-19 impact on sovereign credit risk. *Journal of Financial Economics*, Vol. 143(3):1251-1274.

Autor, D., Cho, D., Crane, L., Goldar, M., Lutz, B., Montes, J., Peterman, W., Ratner, D., Villar Vallenas, D., & Yildirmaz, A. (2023). An Evaluation of the Paycheck Protection Program Using Administrative Payroll Microdata. NBER Working Paper No. 29972.

Bartik, A. W., Cullen, Z. B., Glaeser, E. L., Luca, M., Stanton, C. T., & Sunderam, A. (2023). When Should Programs be Privately Administered? Theory and Evidence from the Paycheck Protection Program. NBER Working Paper No. 27623.

BCBS (2021). Early lessons from the Covid-19 pandemic on the Basel reforms.

Beck, T., Keil, J. (2021). Are Banks Catching Corona? Effects of Covid on Lending in the U.S. Mimeo.

Benmelech, E., Tzur-Ilan, N. (2020). The Determinants of Fiscal and Monetary Policies During the Covid-19 Crisis. NBER Working Paper No. 27461.

Bergant, K., Forbes, K. (2023). Policy packages and policy space: Lessons from COVID-19. *European Economic Review*, Vol. 158.

Berger, A. N., Freed, P. G., Scott, J. A., & Zhang, S. (2021) The Paycheck Protection Program (PPP) from the Small Business Perspective: Did the PPP Help Alleviate Financial and Economic Constraints? Mimeo.

Capelle-Blancard, G., Desroziers, A. (2020). The Stock Market is not the Economy? Insights from the COVID-19 crisis, Covid Economics: Vetted and Real-Time Papers, CEPR.

Casanova, C., Hardy, B., Onen, M. (2021). Covid-19 Policy Measures to Support Bank Lending. BIS Quarterly Review, September 2021.

Cascarino, G., Gallo, R., Palazzo, F., & Sette, E. (2022). Public Guarantees and Credit Additionality during the Covid-19 Pandemic. Mimeo.

Checo, S., Chen, S. (2022). Distance to Insolvency: A New Cross-Country Dataset of Corporate Vulnerability. Mimeo.

Chodorow-Reich, G., Darmouni, O., Luck, S., & Plosser, M. (2021). Bank Liquidity Provision across the Firm Size Distribution. *Journal of Financial Economics*, Vol. 155(3): 908-932.

Colak, G., Öztekin, Ö. (2021). The impact of COVID-19 pandemic on bank lending around the world. *Journal of Banking & Finance*, Vol. *133*.

Couaillier, C., Reghezza, A., Rodriguez d'Acri, C., & Scopelliti, A. (2022). How to release capital requirements during a pandemic? Evidence from euro area banks. ECB Working Paper Series No. 2720.

Cox, J., Greenwald, D., Ludvigson, S. (2020). What Explains the COVID-19 Stock Market? NBER Working Paper No. 27784.

Demirgüç-Kunt, A, Pedraza, A., & Ruiz-Ortega, C. (2020). Banking Sector Performance during the COVID-19 Crisis. World Bank Policy Research Working Paper No. 9363.

Dursun-de Neef, H. Ö., Schandlbauer, A. (2021). COVID-19 and lending responses of European banks, Journal of Banking & Finance, Vol.133,

Dursun-de Neef, H. Ö., Schandlbauer, A. (2022). COVID-19, bank deposits, and lending, *Journal of Empirical Finance*, Vol. 68(C): 20-33.

ElFayoumi, K., Hengge, M. (2021). Capital Markets, Covid-19 and Policy Measures, IMF Working Paper No. 2021/033.

Gourinchas, P. O., Kalemli-Ozcan, S., Penciakova, V., & Sander, N. (2022). Estimating SME Failures in Real Time: An Application to the COVID-19 Crisis. Mimeo.

Granja, J., Makridis, C., Yannelis, C., & Zwick, E. (2022). Did the Paycheck Protection Program Hit the Target? *Journal of Financial Economics*, Vol. 145(3): *725-761.*

Greenwald, D., Krainer, J., & Paul, P. (2020). The Credit Line Channel. Federal Reserve Bank of San Francisco Working Paper 2020-2026.

Guerini, M., Nesta, L., Ragot, X., & Schiavo, S. (2020). Firm Liquidity and Solvency under the Covid-19 lockdown in France. OFCE Policy Brief (76).

Hubbard, R. G., Strain, M. R. (2020). Has the Paycheck Protection Program Succeeded? Brookings Papers on Economic Activity, Fall 2020.

Huneeus, F., Kaboski, J. P., Larrain, M., Schmukler, S. L., & Vera, M. (2022). The Distribution of Crisis Credit: Effects on Firm Indebtedness and Aggregate Risk. NBER Working Paper No. 29774.

Igan, D., Mirzaei, A., & Moore T. (2021). A Shot in the Arm: Stimulus Packages and Firm Performance during COVID-19. Mimeo.

Jiménez, G., Laeven, L., Martínez-Miera, D., & Peydró J.-L. (2022). Public guarantees, relationship lending and bank credit: evidence from the Covid-19 crisis. ECB Working Paper Series No. 2913.

Kirti, D., Liu, Y., Martinez Peria, S., Mishra, P., & Strasky, J. (2022). Tracking Economic Policies during COVID-19: An Announcement-Level Database. IMF Working Paper No. 2022/114.

Li, L., Strahan, P. E., & Zhang, S. (2020). Banks as Lenders of First Resort: Evidence from the Covid-19 Crisis. *The Review of Corporate Finance Studies, Vol. 9*(3): 472–500.

Valencia, F., Varghese, R., Yao, W., & Yepez, J. (2021). Handle with Care: Regulatory Easing in Times of Covid-19. The B.E. Journal of Macroeconomics, Vol 22.

Figure 1: Credit growth

Notes: This figure shows the distribution of quarterly growth in net customer loans at the country level for our sample of 49 countries. For countries included in the sample, data are available for at least 5 banks covering either 60 percent of assets reported in annual data or $100bn in assets. Loan growth for each country-quarter is an average of growth at the bank level winsorized at the 5th and 95th percentiles within quarter. Percentiles may represent different countries in different quarters.

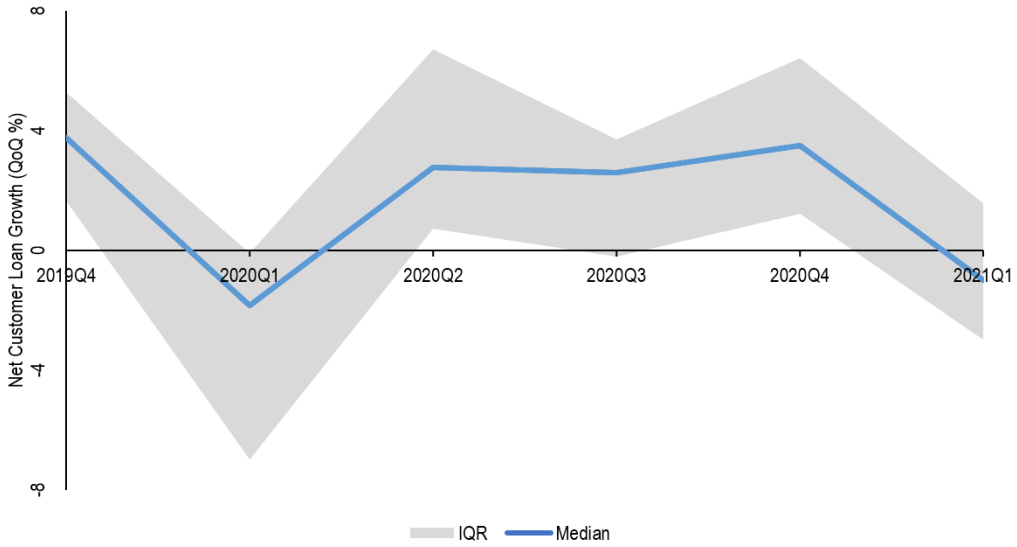


Figure 2: Credit index to pre-COVID levels

Notes: This figure shows the distribution of net customer loans indexed to 2019Q4 (pre-COVID-19) at the country level using the same sample as in Figure 1. Indexed loan levels for each country-quarter are averages of bank-level data winsorized at the 5th and 95th percentiles within quarter. Percentiles may represent different countries in different quarters.

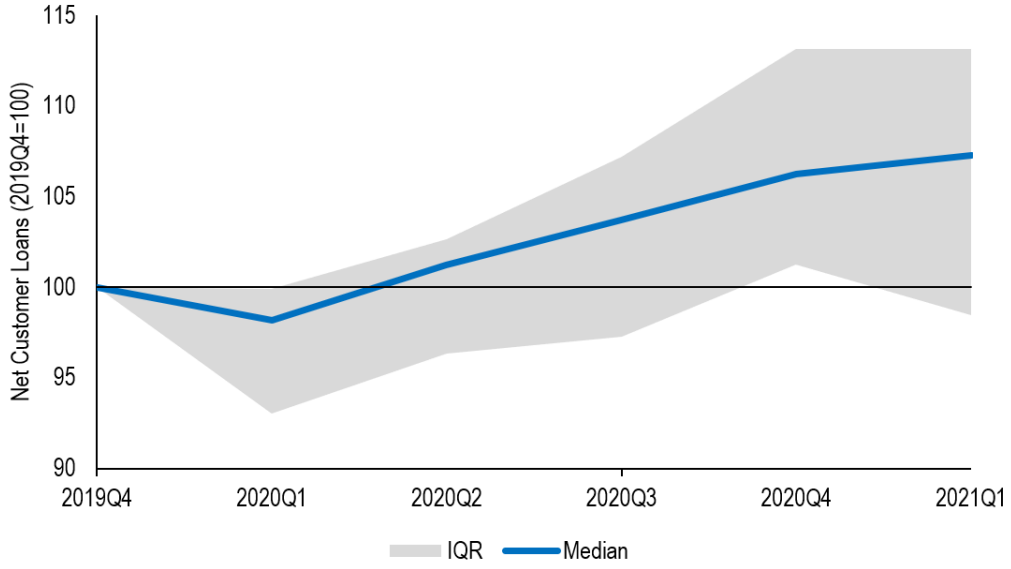


Figure 3: Policy package distribution

Notes: This figure shows how country policy announcements were distributed into packages comprising fiscal, monetary, and prudential policies at a quarterly frequency throughout 2020.

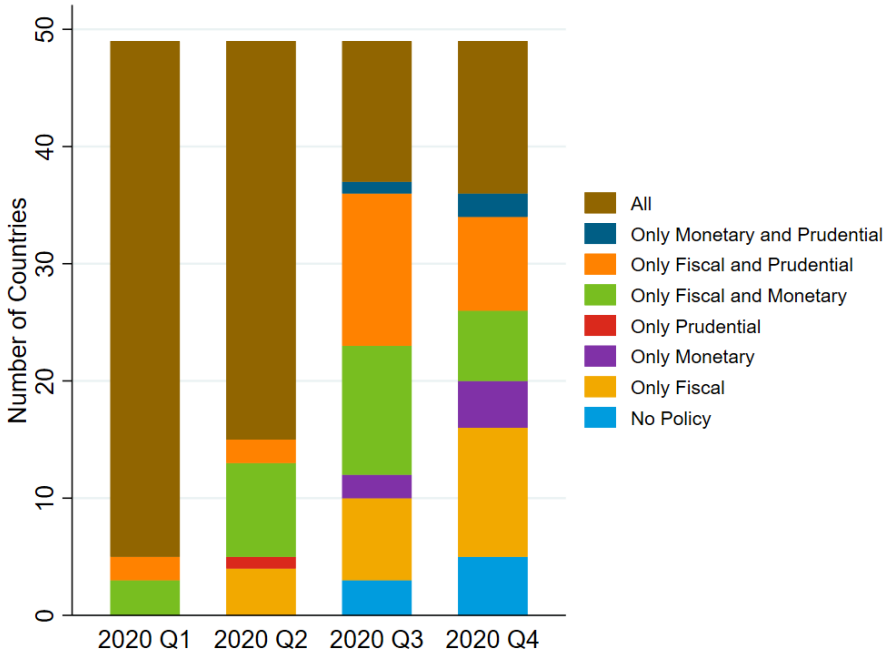


Figure 4: Size distribution of policies and thresholds for large policies

Notes: This figure shows the distribution of policies for which sizes are available and indicates the top 10th percentile threshold that we use as a cut off to define large policies. While sizes for fiscal policy measures, credit guarantees, and asset purchase programs are measured relative to 2019 GDP, cuts in monetary policy interest rate are measured as a fraction of their level at the end of 2019. We cumulate sizes within policy to the country-quarter level before identifying large policies.

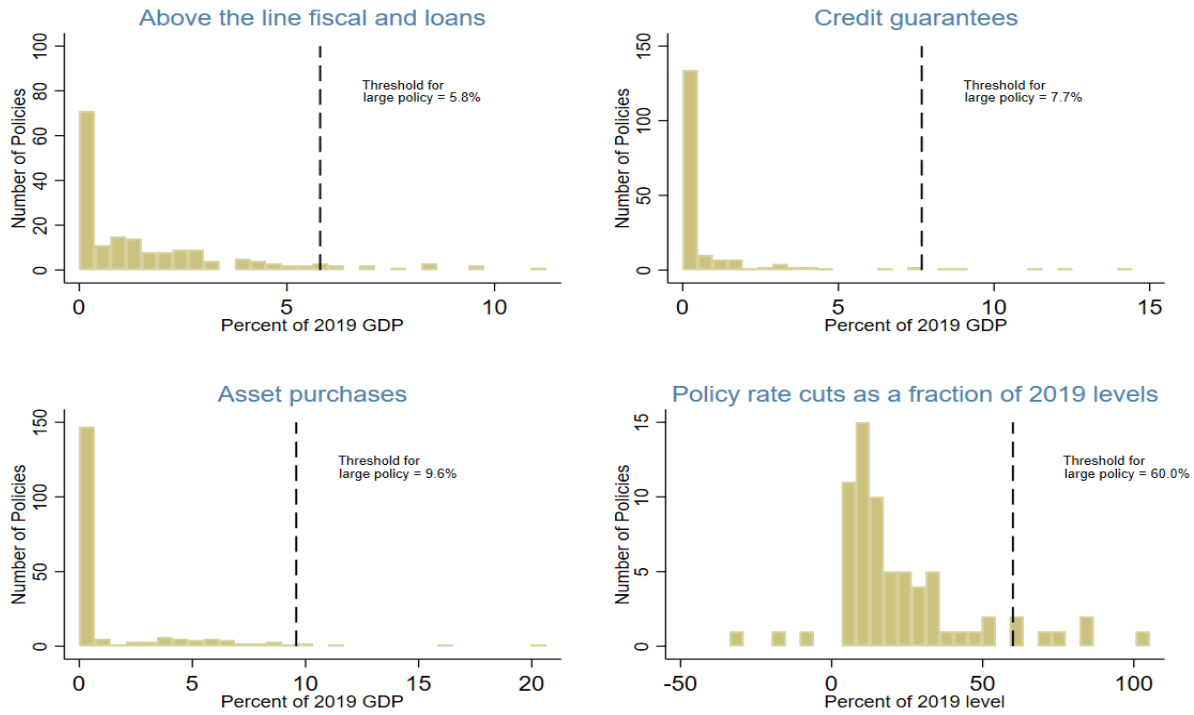


Figure 5: Difference in effects between "All-out" packages and other packages

Notes: This figure shows the estimated difference between the effect of credit growth from the final package in the third column of Table 2 (the "All-out" package) relative to all other packages included in the specification.

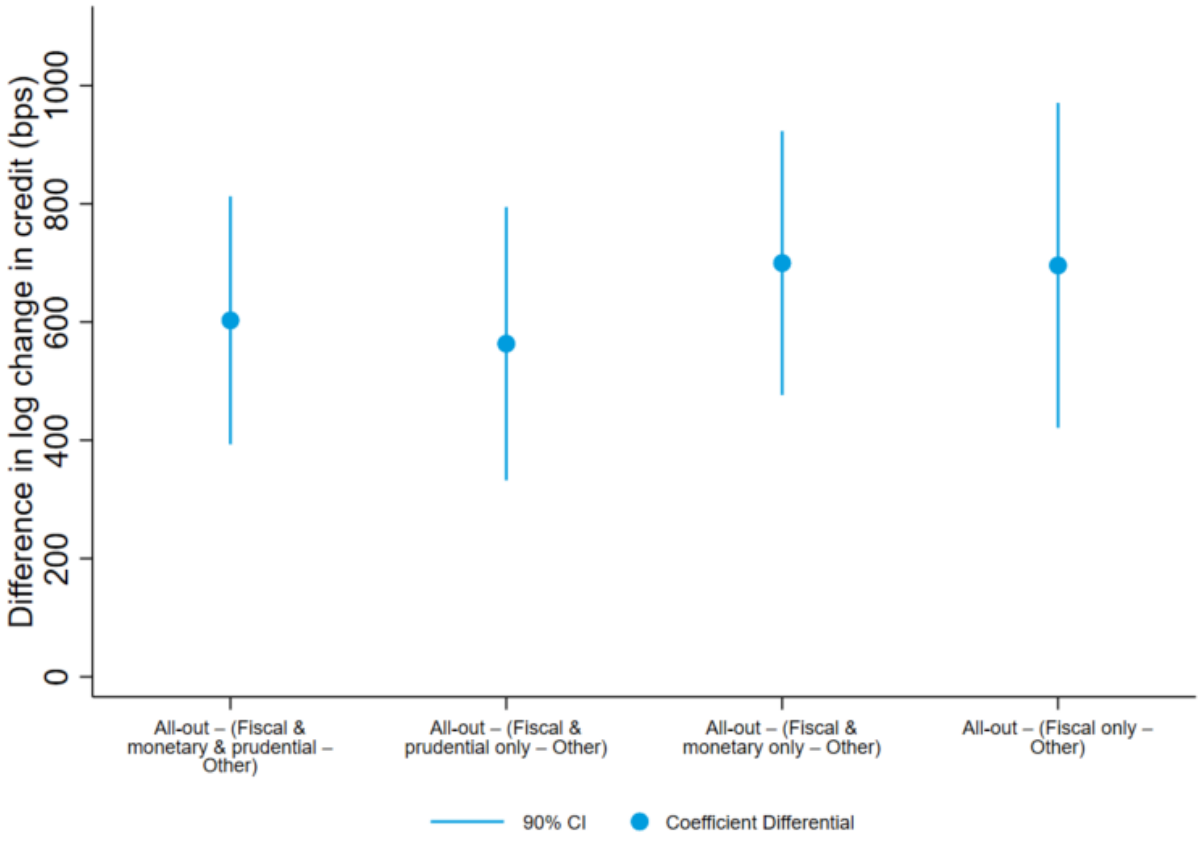
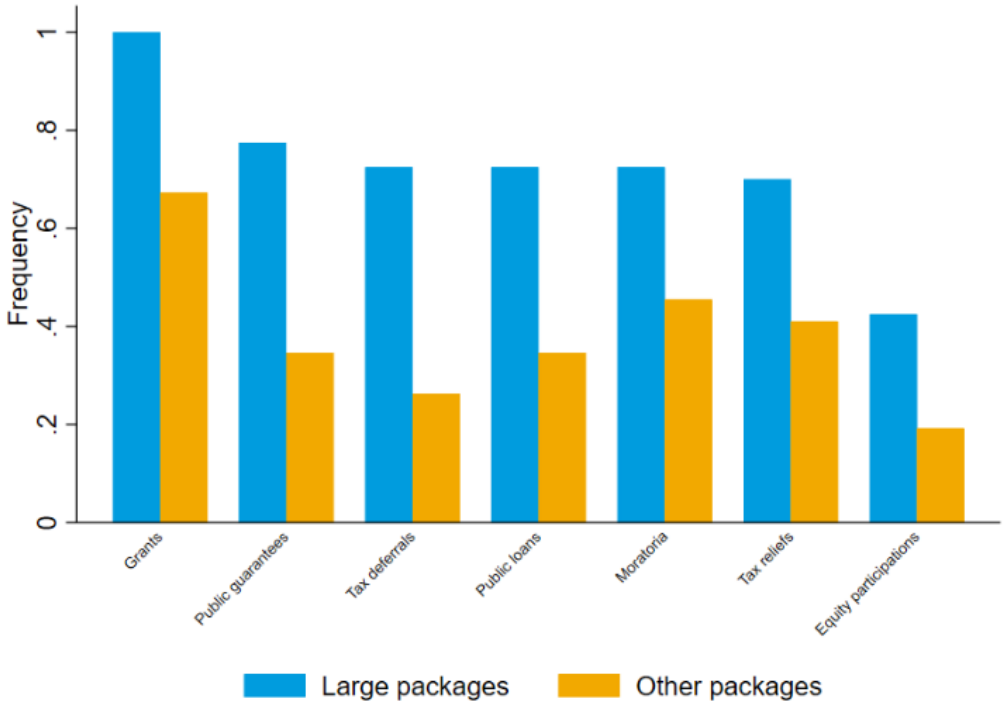


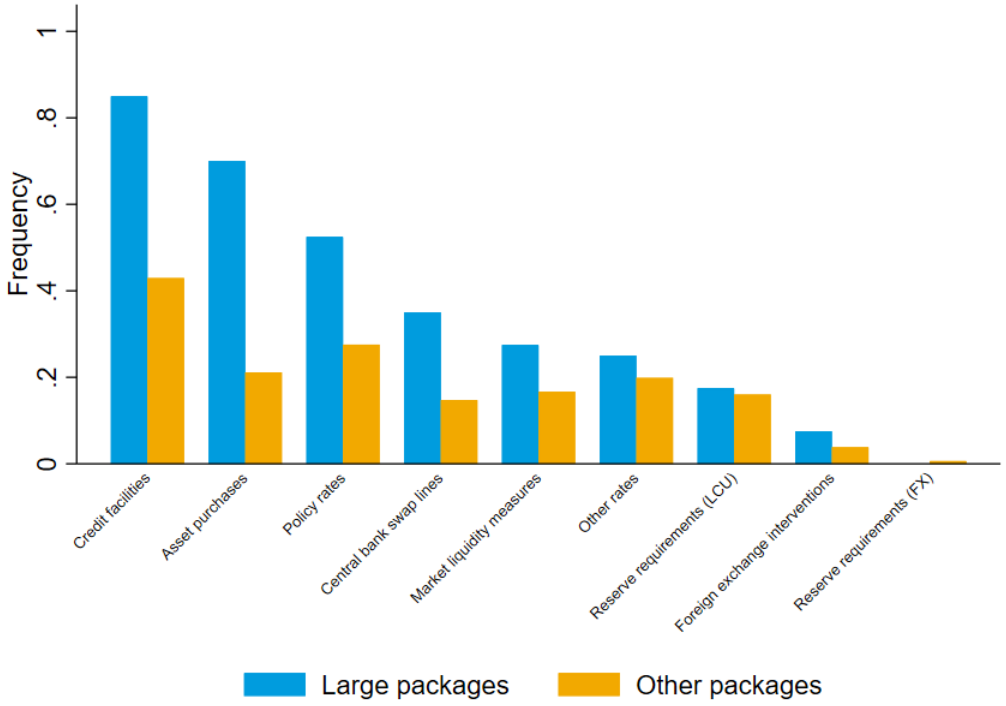
Figure 6: Granular composition of large and other packages

Notes: This figure shows the prevalence of the individual granular policies in our data across policy packages separated into two groups. The first is large packages with components with above median sizes as in Column 4 of Table 4 that contain at least one large element on all dimensions where sizes can be measured well (i.e., fiscal and monetary policies) including all three types of policies. The other group contains all other packages.

Panel A: Fiscal policies



Panel B: Monetary policies



Panel C: Prudential policies

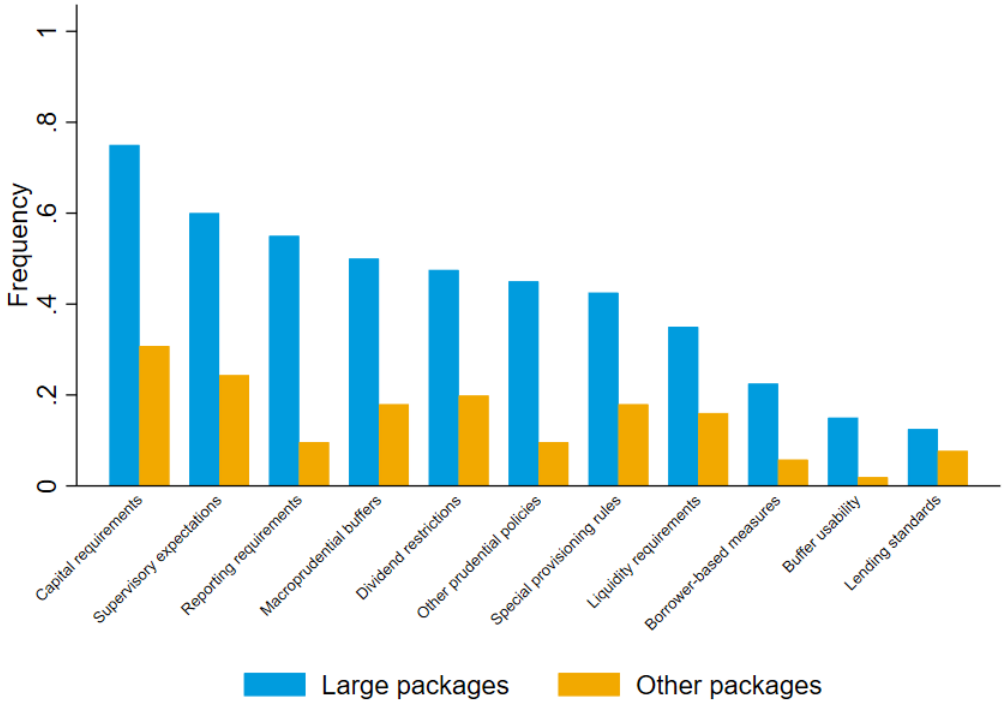


Table 1: Policy packages and bank credit

Notes: This table shows regressions at the bank-quarter level where the dependent variable is the log change in net customer loans in basis points (QoQ ln change x 10000), winsorized at the 5th and 95th percentiles by quarter. Regressions use data for 2020Q1-2021Q1 for a sample of 49 countries for which data are available for at least 5 banks covering either 60 percent of assets reported in annual data or $100bn in assets and control variables are available. The main independent variables are lagged dummies identifying combinations of policies into mutually exclusive packages (fiscal policy announcements without announcements of monetary or prudential policies, fiscal and monetary policy announcements without announcements of prudential policies, fiscal and prudential policy announcements without announcements of monetary policies, and announcements of all three types of policies together). The omitted category of policy packages includes cases of no policy interventions along with cases where either monetary or prudential policies are adopted independently or jointly. The omitted category captures 9 percent of the policy packages in the sample. All specifications include the following lagged bank characteristic as controls: log of assets, deposit to liability ratio, equity to asset ratio, and net customer loan to asset ratio, winsorized at the 5th and 95th percentiles by quarter. The second column also controls for cumulative COVID cases per million and mobility (using an average of workplace and public transit indices from Google). The third column also controls for quarterly revisions in IMF GDP forecasts and a sovereign spread-based proxy of financial stress (see the text for details). All specifications include bank fixed effects. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only	423.7***	403.3**	212.1
	(125.5)	(172.8)	(224.0)
Fiscal & monetary only	317.8	271.1	137.2
	(212.6)	(257.0)	(289.7)
Fiscal & prudential only	555.0***	496.8***	335.7
	(114.8)	(152.3)	(239.1)
Fiscal & monetary & prudential	487.8***	417.5***	299.3
	(84.7)	(140.9)	(185.5)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.45	0.45	0.46
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table 2: Size of policy packages and bank credit

Notes: This table shows regressions at the bank-quarter level where the main independent variables are lagged dummies for mutually exclusive packages of policies where each package is separated into packages that do contain at least one large element on all dimensions where sizes can be measured well (i.e., fiscal and monetary policies) and those that do not. Large elements of packages are defined as those in the top decile (see Figure 4 and the main text). Packages that are not included in the estimations as regressors (e.g., packages with large fiscal policies only; those with large fiscal and monetary only, and those with large fiscal and prudential only) are not observed among the combinations adopted by countries in our sample. The omitted category includes packages with no policy interventions along with cases with no fiscal policies (where either monetary or prudential policies are adopted independently or jointly). The omitted category captures 9 percent of the policy packages in the sample. All specifications include the following lagged bank characteristic as controls: log of assets, deposit to liability ratio, equity to asset ratio, and net customer loan to asset ratio, winsorized at the 5th and 95th percentiles by quarter. The second column also controls for cumulative COVID cases per million and mobility (using an average of workplace and public transit indices from Google). The third column adds controls for quarterly revisions in IMF GDP forecasts and a sovereign spread-based proxy of financial stress (see the text for details). All specifications include bank fixed effects. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only - Other	339.8***	339.6*	28.3
	(122.1)	(180.0)	(173.7)
Fiscal & monetary only - Other	280.5	270.2	24.3
	(205.3)	(266.6)	(247.5)
Fiscal & prudential only - Other	487.1***	474.2***	160.7
	(110.2)	(169.2)	(181.2)
Fiscal & monetary & prudential - Other	371.0***	355.1**	121.2
	(105.5)	(169.6)	(161.4)
Fiscal & monetary & prudential - Large	888.0***	865.2***	724.2***
	(125.8)	(225.5)	(226.5)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.49	0.49	0.51
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table 3: Size and scope of policy packages and bank credit

Notes: This table shows regressions at the bank-quarter level where the main independent variables are lagged dummies for mutually exclusive packages of policies where each package is separated into packages that contain at least one large element on all dimensions where sizes can be measured well (i.e., fiscal and monetary policies), packages that contain one large element on only one dimension and packages with no large elements. Packages that are not included in the estimations as regressors (e.g., packages with large fiscal policies only; those with large fiscal and monetary only, and those with large fiscal and prudential only) are not observed among the combinations adopted by countries in our sample. The omitted category includes packages with no policy interventions along with cases with no fiscal policy (where either monetary or prudential policies are adopted independently or jointly). All specifications include the following lagged bank characteristic as controls: log of assets, deposit to liability ratio, equity to asset ratio, and net customer loan to asset ratio, winsorized at the 5th and 95th percentiles by quarter. The second column also controls for cumulative COVID cases per million and mobility (using an average of workplace and public transit indices from Google). The third column adds controls for quarterly revisions in IMF GDP forecasts and a sovereign spread-based proxy of financial stress (see the text for details). All specifications include bank fixed effects. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	(1)	(2)	(3)
Fiscal only - Other	340.7***	342.9*	30.6
	(121.4)	(179.3)	(172.1)
Fiscal & monetary only - Other	280.1	272.0	24.0
	(206.1)	(267.3)	(247.2)
Fiscal & prudential only - Other	497.4***	487.2***	171.1
	(108.4)	(169.7)	(181.2)
Fiscal & monetary & prudential - Other	361.6***	348.4**	111.8
	(108.0)	(170.3)	(160.2)
Fiscal & monetary & prudential - Fiscal or Monetary Large	517.8***	505.2***	277.0
	(83.1)	(170.3)	(176.0)
Fiscal & monetary & prudential - Fiscal & Monetary Large	884.8***	864.9***	723.0***
	(125.7)	(224.9)	(225.6)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.49	0.49	0.52
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table 4: Size of policy packages (varying definitions across columns) and bank credit

Notes: This table shows regressions at the bank-quarter level where the main independent variables are dummies for mutually exclusive packages of policies separated into packages that do contain at least one large element on all dimensions where sizes can be measured well (i.e., fiscal and monetary policies) and those that do not. Large elements of packages are defined as those respectively in the top decile, quartile, tercile, or half of the distribution in the first to fourth columns. Packages that are not included in the estimations as regressors (e.g., packages with large fiscal policies only; those with large fiscal and monetary only, and those with large fiscal and prudential only) are not observed among the combinations adopted by countries in our sample. The omitted category includes packages with no policy interventions along with cases with no fiscal policy (where either monetary or prudential policies are adopted independently or jointly). All specifications include the following lagged bank characteristic as controls: log of assets, deposit to liability ratio, equity to asset ratio, and net customer loan to asset ratio, winsorized at the 5th and 95th percentiles by quarter. Moreover, controls for cumulative COVID cases per million, mobility (using an average of workplace and public transit indices from Google), quarterly revisions in IMF GDP forecasts and a sovereign spread-based proxy of financial stress, along with bank fixed effects are also included. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	Decile	Quartile	Tercile	Median
	(1)	(2)	(3)	(4)
Fiscal only - Other	28.3	70.7	86.1	186.2
	(173.7)	(174.0)	(178.3)	(211.4)
Fiscal only - Large		-139.1	48.6	211.1
		(179.3)	(202.7)	(226.8)
Fiscal & monetary only - Other	24.3	43.1	67.7	123.0
	(247.5)	(252.6)	(269.9)	(316.3)
Fiscal & monetary only - Large			39.8	257.7
			(157.3)	(249.2)
Fiscal & prudential only - Other	160.7	214.6	266.0	338.1
	(181.2)	(191.1)	(194.0)	(250.0)
Fiscal & prudential only - Large		61.9	140.7	375.3
		(383.3)	(304.9)	(267.2)
Fiscal & monetary & prudential - Other	121.2	121.6	130.2	210.3
	(161.4)	(160.5)	(162.4)	(173.4)
Fiscal & monetary & prudential - Fiscal & Monetary Large	724.2***	696.4***	667.0***	444.6**
	(226.5)	(229.3)	(233.8)	(219.7)
Bank FE	Y	Y	Y	Y
Bank Controls	Y	Y	Y	Y
Health Controls	Y	Y	Y	Y
De facto mobility Controls	Y	Y	Y	Y
Macro Controls	Y	Y	Y	Y
Financial Stress Controls	Y	Y	Y	Y
R^2	0.51	0.51	0.51	0.48
Bank-Quarters	7,480	7,480	7,480	7,480
Banks	1,496	1,496	1,496	1,496
Countries	49	49	49	49

Table 5: Differential effects of policy packages across banks with varying capital levels

Notes: This table shows regressions at the bank-quarter level where the main independent variables are package dummies accounting for sizes (as in Table 2) interacted with dummies identifying capital constrained banks (banks with 2019 equity to asset ratios below within country median). All specifications control for interactions of the low capital dummy with cumulative COVID cases per million, mobility (using an average of workplace and public transit indices from Google), quarterly revisions in IMF GDP forecasts, and a sovereign spread-based proxy of financial stress. All specifications include lagged controls for log of assets, deposit to liability ratio, equity to asset ratio, and net customer loan to asset ratio, winsorized at the 5th and 95th percentiles by quarter and bank and country x quarter fixed effects. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	(1)	(2)	(3)
Fiscal only – Other x Low E/A	0.1	26.9	9.4
	(49.6)	(55.8)	(71.4)
Fiscal & monetary only – Other x Low E/A	55.4	77.6	72.9
	(47.5)	(64.3)	(47.9)
Fiscal & prudential only – Other x Low E/A	17.2	44.6	42.7
	(63.1)	(78.0)	(76.2)
Fiscal & monetary & prudential – Other x Low E/A	56.4*	84.3	82.2*
	(33.5)	(55.2)	(45.2)
Fiscal & monetary & prudential – Large x Low E/A	81.4***	105.3*	98.1**
	(22.2)	(54.3)	(46.9)
Country x Quarter FE	Y	Y	Y
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.71	0.71	0.71
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table 6: Differential effects of policy packages across economies with varying forecast dispersion

Notes: This table shows regressions at the bank-quarter level where the main independent are package dummies for mutually exclusive packages of policies separated into packages that do contain at least one large element on all dimensions where sizes can be measured well (i.e., fiscal and monetary policies) and those that do not, interacted with forecast dispersion (quarterly change in the sum of the standard deviations of GDP forecasts for 1- and 2-year horizons). Large elements of packages are defined as those respectively in the top decile, quartile, tercile, or half of the distribution in column 2-5. Packages that are not include in the estimations as regressors (e.g., packages with large fiscal policies only; those with large fiscal and monetary only, and those with large fiscal and prudential only) are not observed among the combinations adopted by countries in our sample. The omitted category includes packages with no policy interventions along with cases with no fiscal policy (where either monetary or prudential policies are adopted independently or jointly). All specifications include the following lagged bank characteristic as controls: log of assets, deposit to liability ratio, equity to asset ratio, and net customer loan to asset ratio, winsorized at the 5th and 95th percentiles by quarter. Moreover, controls for cumulative COVID cases per million, mobility (using an average of workplace and public transit indices from Google), quarterly revisions in IMF GDP forecasts, a sovereign spread-based proxy of financial stress, and forecast dispersion, along with bank fixed effects are also included. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	No Interaction (Decile)	Decile	Quartile	Tercile	Median
	(1)	(2)	(3)	(4)	(5)
Fiscal only - Other	308.7	50.1	166.6	167.9	99.7
	(264.2)	(223.9)	(226.6)	(223.4)	(221.6)
Fiscal only - Large	336.5		949.1	966.2	243.5
	(303.3)		(1116.8)	(1127.3)	(239.3)
Fiscal & monetary only - Other	167.7	123.5	155.0	173.3	160.4
	(385.2)	(292.3)	(306.8)	(318.7)	(314.8)
Fiscal & monetary only - Large	406.2			-151.1	272.4
	(293.2)			(199.5)	(225.8)
Fiscal & prudential only - Other	404.8	228.6	247.5	261.7	184.2
	(298.1)	(209.6)	(211.7)	(212.9)	(223.5)
Fiscal & prudential only - Large	398.6		218.3	128.9	175.5
	(308.3)		(218.7)	(238.8)	(247.5)
Fiscal & monetary & prudential only - Other	252.1	225.5	240.7	241.8	275.8
	(223.3)	(184.7)	(194.4)	(195.4)	(190.1)
Fiscal & monetary & prudential only - Large	473.9*	266.1	314.3	343.1	249.3
	(259.8)	(165.6)	(197.8)	(219.9)	(197.1)
Fiscal only - Other x Interaction		345.0	540.7	541.8	532.0
		(392.9)	(526.3)	(528.7)	(513.4)
Fiscal only - Large x Interaction					263.0
					(321.2)
Fiscal & monetary only - Other x Interaction		467.2	543.0	543.1	663.7
		(351.8)	(385.2)	(387.2)	(396.2)

Fiscal & monetary only - Large x Interaction					333.9 (395.7)
Fiscal & prudential only - Other x Interaction		346.7 (333.9)	355.2 (325.8)	355.5 (331.4)	425.5 (321.4)
Fiscal & prudential only - Large x Interaction			-662.1 (431.1)	-351.3 (433.9)	-103.4 (450.2)
Fiscal & monetary & prudential only - Other x Interaction		516.0 (379.1)	589.2 (419.3)	599.1 (422.7)	620.8 (417.4)
Fiscal & monetary & prudential only - Large x Interaction		676.7* (377.2)	719.0* (412.8)	697.9* (411.1)	744.6* (398.3)
Forecast Dispersion		-392.0 (378.6)	-468.1 (415.4)	-470.6 (418.8)	-492.1 (409.2)
Bank FE	Y	Y	Y	Y	Y
Bank Controls	Y	Y	Y	Y	Y
Health Controls	Y	Y	Y	Y	Y
De facto mobility Controls	Y	Y	Y	Y	Y
Macro Controls	Y	Y	Y	Y	Y
Financial Stress Controls	Y	Y	Y	Y	Y
Forecast Dispersion Controls	N	Y	Y	Y	Y
R^2	0.49	0.56	0.56	0.55	0.55
Bank-Quarters	6,960	6,960	6,960	6,960	6,960
Banks	1,392	1,392	1,392	1,392	1,392
Countries	40	40	40	40	40

Table 7: Differential effects of policy packages on liquidity for bank dependent firms

Notes: This table shows regressions at the firm-quarter level where the dependent variable is additional liquidity (the qoq change in bank debt scaled by 2019 expenses in months, where expenses are calculated as the difference between total revenue and net income). The main independent variables are package dummies accounting for sizes (as in Table 2), interacted with dummies identifying bank dependent firms (firms with the fraction of bank debt as of end 2019 in the top quartile within country). All specifications control for interactions of the bank dependent dummy with cumulative COVID cases per million, mobility (using an average of workplace and public transit indices from Google), quarterly revisions in IMF GDP forecasts, and a sovereign spread-based proxy of financial stress. All specifications control for lagged log firm-level revenue growth and include firm and country x quarter fixed effects. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	(1) (1)	(2) (2)	(3) (3)
Fiscal only – Other x Bank dependent	2.2*	2.0	1.4
	(1.3)	(1.3)	(1.4)
Fiscal & monetary only – Other x Bank dependent	1.2**	0.8	0.3
	(0.5)	(0.9)	(0.6)
Fiscal & prudential only – Other x Bank dependent	2.1***	1.7	1.1
	(0.6)	(1.1)	(1.0)
Fiscal & monetary & prudential – Other x Bank dependent	1.9***	1.4	1.0
	(0.5)	(0.9)	(0.7)
Fiscal & monetary & prudential – Large x Bank dependent	2.8***	2.4*	2.1*
	(0.9)	(1.2)	(1.1)
Firm FE	Y	Y	Y
Country x Quarter FE	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	N	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
Firm Controls	Y	Y	Y
R^2	0.21	0.21	0.21
Firm-Quarters	31,035	31,035	31,035
Firm	6,207	6,207	6,207
Countries	39	39	39

Table 8: Differential effects of policy packages on liquidity for poor quality bank dependent firms

Notes: This table shows regressions at the firm-quarter level where specifications broadly replicate the third column of Table 7 with the introduction of an additional dimension of firm-level heterogeneity: a proxy for pre-COVID firm quality. For each proxy of firm quality, we include all interactions between packages and bank dependence shown in the third column of Table 7, interactions between packages and the proxy of firm quality, and triple interactions between packages, bank dependence, and firm quality. The proxies of quality across the columns are (i) interest coverage ratio; (ii) return on assets; (iii) book equity scaled by assets; and (iv) a distance to insolvency measure. For each proxy we use a dummy for firms in the bottom quartile within country based on the average indicator for 2017-19. Standard errors clustered by country are shown in parentheses. *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	ICR	ROA	E/A	DI
	(1)	(2)	(3)	(4)
Fiscal & monetary & prudential – Large x Bank dependent	2.1*	2.2*	2.3*	1.3
	(1.2)	(1.1)	(1.2)	(0.9)
Fiscal & monetary & prudential – Large x Low firm quality (pre-COVID)	-0.3	0.3	0.6	-0.4
	(1.0)	(1.0)	(0.7)	(0.4)
Fiscal & monetary & prudential – Large x Bank dependent x Low firm quality (pre-COVID)	-0.2	-0.5	-1.0	0.2
	(0.7)	(0.7)	(0.9)	(0.5)
Firm FE	Y	Y	Y	Y
Country x Quarter FE	Y	Y	Y	Y
Health Controls	Y	Y	Y	Y
De facto mobility Controls	Y	Y	Y	Y
Macro Controls	Y	Y	Y	Y
Financial Stress Controls	Y	Y	Y	Y
Firm Controls	Y	Y	Y	Y
Other packages and interactions	Y	Y	Y	Y
R^2	0.22	0.21	0.21	0.21
Firm-Quarters	30,675	31,035	31,030	29,715
Firm	6,135	6,207	6,206	5,943
Countries	39	39	39	39

Appendix: Additional figures and tables

Figure A1: Distribution of multiple policy packages at a weekly frequency

Notes: This figure shows the number of countries announcing packages consisting of more than one policy group (monetary, fiscal and prudential) in each week of 2020 compared to the number of countries announcing packages with policies in just one group.

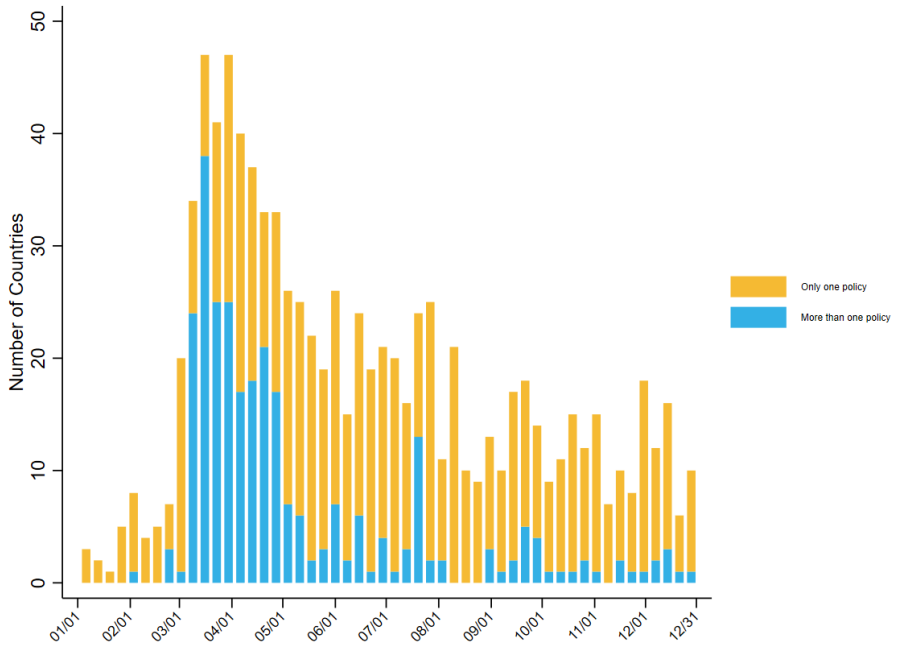


Figure A2: Difference in effects between "All-Out" packages and other packages without controls

Notes: This figure is a version of Figure 5 without control variables. The coefficient plot shows the estimated difference between the effect of credit growth from the final package in the third column of Table 2 (the "All-out" package) relative to all other packages included in the specification without any control variables or fixed effects.

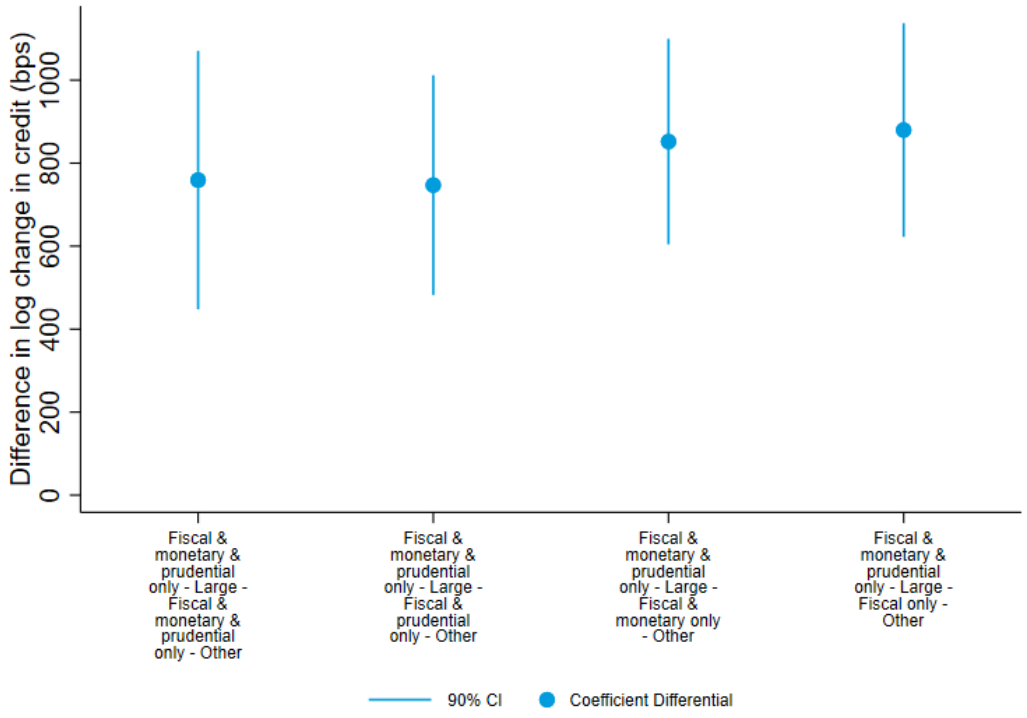


Table A1: Policy definitions

Notes: This table defines the individual policy categories we include, drawing on Kirti et al. (2022). Size (Y/N) denotes whether size information is available, where Y* indicates that both the announced and actual size are recorded.

Policy	Definition	Size
Fiscal		
1. Grants	Spending by the central government with near-term budgetary impact. Typical examples include transfers to firms or households, health spending, transfers to local governments, subsidies to social safety nets, and other spending (such as infrastructure spending) that directly or indirectly responds to Covid-19. If a measure has a long-term nature, we record the estimated impact during 2020 and 2021. While we do not include non-discretionary spending, we do include discretionary policy actions related to automatic stabilizers such as coverage expansions and extra funding.	Y
2. Tax reliefs	Reductions in any type of taxes where the amounts covered do not need to be repaid in the future. Contributions to social security and fees paid to the government are also considered taxes in our tracker.	Y
3. Tax deferrals	Direct or indirect deferrals of any type of taxes. Typical examples of indirect deferrals include (i) accelerated depreciation, which essentially moves future tax credits to the current period, and (ii) suspension of penalties on late tax payments.	Y
4. Equity participations	Direct equity participations in private or state-owned firms, or equity investments in investment funds that provide capital to firms. Typical examples include (i) setting up a fund that purchases shares in the secondary market, (ii) direct capital contributions to private or state-owned firms, (iii) co-investment with private investors, in which we only include the public portion.	Y
5. Public loans	Loans granted by the public sector, either directly from the government or from state-owned financial institutions. However, two types of loans are not included: (i) loans from foreign governments or international organizations; (ii) explicit on-lending from the central bank channeled through banks (this would be a lending operation).	Y
6. Public guarantees	Guarantees granted by the public sector. Guarantees must target financial activities. We further distinguish two types of guarantees: (i) credit guarantees, which cover loans to the real sector; (ii) other guarantees, which mainly cover the funding side of financial intermediaries.	Y
7. Moratoria	Moratoria, granted either by the government or by the private sector, include (i) debt moratoria; (ii) suspension of non-debt payments, including rents, insurance premia, utility fees, etc.; (iii) suspension of bankruptcy.	N
Monetary		
8. Asset purchases	Purchases of securities, such as bonds, stocks, and commercial paper in the secondary market by the central bank. The intention should not be only to improve short-term market liquidity.	Y*

9. Policy rates	Changes in the policy interest rate. An announcement of no change or a speech on the expected rate path is not considered an actual policy. If a central bank uses multiple interest rates, we select the one that is most related to lending as the policy rate and include changes to other interest rates under the "other rates". Once we select the policy rate, we do not change it for consistency.	Y
10. Other rates	Changes in important interest rates that are not the policy rate. To be considered important, interest rates need to have broad effects, i.e., they should not be the interest rate of a narrow lending facility.	N
11. Reserve requirements (local currency)	Changes related to the reserve requirement of local currency loans. Examples include (i) changes to the ratio; (ii) changes to the penalty for breaking the reserve requirement; (iii) changes to the calculation of the ratio. Only the first one, changes to the ratio, has a size measure, while all others have a missing size value. If a country has multiple reserve ratios, we choose the one with the broadest effects as the main ratio based on the context. Once we select the main ratio, we do not change it for consistency. Only the main ratio has sizes, while others only have a missing size value.	Y
12. Reserve requirements (foreign currency)	Changes related to the reserve requirement of foreign currency loans. Same as local currency reserve requirements.	Y
13. Credit facilities	Credit facilities target the creation of medium- and long-term credit in response to Covid. Typical examples include (i) special lending programs in the form of direct lending, repos, rediscounting, on-lending, etc.; and (ii) changes in terms for existing lending facilities with the intention of increasing access to credit. Recipients may include entities that are not financial institutions. The intention should not be only to improve short-term market liquidity.	Y*
14. Market liquidity measures	Short-term lending or interventions in asset markets, with the explicit and sole intention of improving short-term market liquidity. We determine the intention of a measure based on its stated aim as well as any relevant context.	N
15. Foreign exchange interventions	Interventions with the intention to influence foreign exchange markets. Tools include outright purchases or sales, non-deliverable forwards, regulatory actions, etc. We assign "+1" to measures intended to strengthen or stabilize exchange rates, and "-1" to measures explicitly intended to weaken exchange rates.	N
16. Central bank swap lines	Swap lines between central banks. We only record it for the counterparty with a relatively greater need for foreign exchanges. If relative need cannot be determined, we record the measure for both sides.	Y
Prudential		
17. Macroprudential buffers	Three specific buffers are included: the countercyclical capital buffer (CCyB), the capital conservation buffer (CCoB), and the systemic risk buffer (SyRB). Sizes are actual buffer changes. Therefore, as is often the case, if a measure is to postpone scheduled future buffer changes, we recognize the measure but code its size as missing.	Y

	If different banks are subject to different buffer changes, we choose one that affects most banks for CCyB and CCoB and take a simple average for SyRB.	
18. Buffer usability	Allowing or encouraging banks to use their excessive capital-related buffers (if any), including but not limited to CCyB, CCoB, and SyRB. This is typically used to address the stigma effect. But there is no change to the minimum levels of these ratios or any postponement of planned increase.	N
19. Capital requirements	Capital-related rules that do not belong to the three capital buffers and buffer usability. Examples include rules related to the CET1 ratio or the leverage ratio, total loss-absorbing capacity, risk weighting, and other special accounting treatments.	N
20. Dividend restrictions	Banks are asked to either partially or fully cut dividends for capital preservation.	N
21. Special provisioning rules	Changes to provisioning-related rules, such as provisioning ratios or loan classification, in response to Covid-19	N
22. Borrower-based measures	Prudential regulations based on characteristics of borrowers, such as debt-to-income ratios, loan-to-value ratios, or other similar ratios.	N
23. Supervisory expectations	Regulators' expectations on supervisory issues such as stress testing, compliance with certain rules, certain accounting practices, etc.	N
24. Lending standards	Changes to rules or recommended practices related to bank lending standards. Lending standards can relate to firm quality (e.g., credit quality assessments), loan concentration requirements, and terms of credit (e.g., interest rate caps).	N
25. Reporting requirements	Changes to reporting requirements with the intention of easing banks' regulatory burden. Note that some regulators may request additional information from banks to better monitor Covid, but we do not code this as a tightening measure if there is no intention of regulatory tightening.	N
26. Liquidity requirements	Rules related to the liquidity level that banks need to maintain, such as changes to liquidity ratios and permission of temporarily breaking liquidity ratios.	N
27. Other prudential measures	Non-capital prudential measures on banks that are not included in other policy types.	N

Table A2: Summary Statistics

Notes: Shows summary statistics for key variables in the empirical analysis. See the main text for details on definitions of variables.

Variable	Units	Obs	Mean	Std. Dev.	Min	Max
Net Customer Loans (QoQ Log change)	Basis Points	7480	145.4	668.0	-1943.1	2451.0
Bank Controls (i) (Lagged Equity to asset ratio)	Percentage Points	7480	10.9	4.0	4.8	21.2
Bank Controls (ii) (Lagged Natural Log of Assets)		7480	15.1	1.9	12.1	19.0
Bank Controls (iii) (Lagged Deposit to liability ratio)	Percentage Points	7480	84.0	13.8	47.8	98.7
Bank Controls (iv) (Lagged Net Customer loan to Asset Ratio)	Percentage Points	7480	63.1	14.0	29.3	83.0
Health Control (Standard deviations of log change in COVID cases per thousand)		7480	1.6	1.6	-1.4	6.3
De Facto Mobility Control (Average of workplace and public transit indices, from Google)	Percentage change	7480	-26.7	12.1	-67.2	8.8
Macro Control (Quarterly Revisions in IMF GDP growth forecasts)	Percentage Points	7480	-2.2	6.5	-21.4	13.8
Financial Stress Control (Change in Sovereign Spreads from start of quarter to within quarter peak)		7480	42.3	94.2	0.0	904.2
Forecast Dispersion Control (Change in sum of standard deviation of GDP forecasts 1- and 2-years ahead)		6960	0.1	1.2	-3.7	4.2

Table A3: Number of country-quarters for each package in Table 4

Notes: This table shows the number of country-quarters with each type of package across each column of Table 4.

	Decile	Quartile	Tercile	Median
Fiscal only – Other	22	21	19	15
Fiscal only – Large	0	1	3	7
Fiscal & monetary only – Other	28	28	26	20
Fiscal & monetary only – Large	0	0	2	8
Fiscal & prudential only – Other	25	23	22	15
Fiscal & prudential only – Large	0	2	3	10
Fiscal & monetary & prudential – Other	97	86	79	64
Fiscal & monetary & prudential – Large	6	17	24	39
No policies or other packages	18	18	18	18
Total	196	196	196	196

Table A4: Difference in coefficients between ”All-out” packages and other packages in Table 4

Notes: This table shows the estimated difference between ‘Fiscal & monetary & prudential – Large’ packages and all other packages for each column in Table 4. The table shows estimated coefficients and standard errors.

	Decile	Quartile	Tercile	Median
‘All-out” – (Fiscal only – Other)	602.9***	574.8***	536.7***	234.3
	(125.1)	(140.0)	(149.0)	(102.1)
‘All-out” – (Fiscal only – Large)	724.2***	634.5*	526.3**	69.4
	(226.5)	(341.3)	(252.0)	(161.2)
“All-out” – (Fiscal & monetary only – Other)	563.4***	481.8***	401.0***	106.5
	(137.8)	(138.6)	(139.2)	(97.8)
“All-out” – (Fiscal & monetary only – Large)	724.2***	696.4***	627.2***	186.9
	(226.5)	(229.3)	(136.2)	(149.5)
“All-out” – (Fiscal & prudential only – Other)	699.8***	653.3***	599.3***	321.6
	(133.1)	(149.4)	(166.8)	(197.6)
“All-out” – (Fiscal & prudential only – Large)	724.2***	835.5***	618.4***	233.6
	(226.5)	(130.4)	(203.8)	(130.0)
“All-out” – (Fiscal & monetary & prudential – Other)	695.9***	625.7***	580.9***	258.4
	(163.9)	(163.3)	(169.0)	(155.2)

Table A5: Table 2 repeated with narrower omitted category

Notes: This table repeats Table 2 but drops country-quarters in which some policies are observed but policies are not in any of the packages explicitly shown. The counterfactual is therefore restricted explicitly to country-quarters with no policies.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only - Other	340.9***	358.8*	48.5
	(125.2)	(188.4)	(181.2)
Fiscal & monetary only - Other	253.6	259.4	18.5
	(210.5)	(280.5)	(259.1)
Fiscal & prudential only - Other	496.1***	501.7***	199.5
	(112.8)	(175.0)	(185.0)
Fiscal & monetary & prudential only - Other	385.4***	389.2**	160.3
	(110.4)	(176.5)	(167.8)
Fiscal & monetary & prudential only - Large	895.2***	892.1***	748.7***
	(126.8)	(234.4)	(235.8)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.50	0.50	0.53
Bank-Quarters	7,338	7,338	7,338
Banks	1,496	1,496	1,496
Countries	49	49	49

Table A6: Table 2 repeated controlling for lagged credit growth

Notes: This table repeats Table 2 but controls for one lag of credit growth at the bank level (i.e., one lag of the dependent variable) to control for base effects.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only - Other	360.8***	463.2***	101.0
	(128.8)	(149.8)	(167.0)
Fiscal & monetary only - Other	269.3	341.9	38.4
	(202.6)	(242.7)	(244.5)
Fiscal & prudential only - Other	476.7***	591.1***	198.6
	(103.6)	(138.6)	(185.3)
Fiscal & monetary & prudential only - Other	327.6***	419.1***	108.9
	(84.0)	(115.9)	(155.3)
Fiscal & monetary & prudential only - Large	863.7***	868.0***	679.7***
	(126.2)	(157.9)	(211.9)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.51	0.52	0.54
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table A7: Table 2 repeated with large rate cuts defined in absolute terms

Notes: This table repeats Table 2 but defines large policy rate cuts in absolute terms rather than relative to the pre-COVID level.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only - Other	338.5***	340.7*	26.9
	(122.7)	(180.7)	(174.0)
Fiscal & monetary only - Other	280.5	273.8	26.1
	(205.3)	(267.2)	(247.3)
Fiscal & prudential only - Other	476.3***	468.1***	149.9
	(113.7)	(170.2)	(181.6)
Fiscal & monetary & prudential only - Other	372.0***	361.3**	125.8
	(105.7)	(170.5)	(162.1)
Fiscal & monetary & prudential only - Large	891.9***	874.9***	736.4***
	(126.8)	(231.1)	(231.3)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.49	0.49	0.51
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table A8: Table 2 repeated using counts of prudential policies as proxy for size

Notes: This table repeats Table 2 but also requires the count of prudential policies to be in the top decile for packages including prudential policies to be treated as large.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only – Other	353.3***	382.2**	50.4
	(124.2)	(167.7)	(154.1)
Fiscal only – Large	-164.9	-141.8	-520.3***
	(133.5)	(181.1)	(174.8)
Fiscal & monetary only – Other	251.5	277.4	2.3
	(224.8)	(257.9)	(235.6)
Fiscal & monetary only – Large	-198.5*	-167.6	-534.8***
	(105.4)	(150.0)	(169.5)
Fiscal & prudential only – Other	463.5***	494.6***	141.5
	(113.3)	(145.8)	(157.5)
Fiscal & monetary & prudential – Other	382.4***	415.8***	163.0
	(103.1)	(134.0)	(121.9)
Fiscal & monetary & prudential – Large	999.0***	1036.5***	913.3***
	(54.6)	(115.9)	(93.2)
Bank FE	Y	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	Y	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	Y
R^2	0.50	0.50	0.53
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49

Table A9: Table 2 repeated with fewer controls

Notes: This table repeats Table 2 but shows additional specifications with fewer controls than each specification in Table 2.

	Log change in credit (BPS)		
	(1)	(2)	(3)
Fiscal only - Other	363.4***	354.5**	233.9
	(120.5)	(172.7)	(182.2)
Fiscal & monetary only - Other	312.3*	290.6	152.4
	(184.4)	(241.7)	(262.9)
Fiscal & prudential only - Other	460.3***	498.9***	310.9
	(123.4)	(146.8)	(202.8)
Fiscal & monetary & prudential only - Other	410.1***	382.8**	235.9
	(102.3)	(146.8)	(183.4)
Fiscal & monetary & prudential only - Large	902.4***	898.3***	808.4***
	(132.7)	(170.4)	(244.9)
Bank FE	N	Y	Y
Bank Controls	Y	Y	Y
Health Controls	N	Y	Y
De facto mobility Controls	N	N	Y
Macro Controls	N	N	Y
Financial Stress Controls	N	N	N
R^2	0.29	0.49	0.50
Bank-Quarters	7,480	7,480	7,480
Banks	1,496	1,496	1,496
Countries	49	49	49