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COVID-19 and SMEs: A 2021 "Time Bomb"?

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Abstract: This paper assesses the prospects of a 2021 time bomb in small and medium-sized enterprises (SME) failures triggered by the generous support policies enacted during the 2020 COVID-19 crisis. Policies implemented in 2020, on their own, do not create a 2021 time bomb for SMEs. Rather, business failures and policy costs remain modest. By contrast, credit contraction poses significant risk. Such a contraction would disproportionately affect firms that could have survived COVID-19 in 2020 without any fiscal support. Even in that scenario, most business failures would not arise from excessively generous 2020 policies but rather from the contraction of credit to the corporate sector.

JEL classification: L26, E32, M21

Key words: business formation, entrepreneurship, business dynamism, recessions

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The global COVID-19 shock was unexpected, severe, and complex. The initial policy response, hastily cobbled together in the first quarter of 2020, was designed to curb the spread of the virus, contain financial panic, and limit the economic fallout. Some advanced economies deployed unprecedented levels of fiscal support, nearing up to 40% of their GDPs, to protect businesses and jobs.[1] Growing evidence suggests that these outsized fiscal packages helped keep businesses, and markets afloat in 2020. In fact, some early estimates indicate that 2020 corporate failure rates are broadly comparable, and possibly *lower*, than pre-COVID failure rates.[2]

Support policies on such a massive scale are necessarily loosely targeted and temporary. As they come to an end, policymakers increasingly worry about a potential *"time bomb"* of business failures, especially among small and medium sized enterprises (SMEs), which may hamper a broader economic recovery.[3] This time bomb could occur for three separate reasons:

1. Support policies in 2020 were too generous or targeted the "wrong" firms, thus only temporarily delaying inevitable bankruptcies;

2. Support took many forms, with most governments offering cheap government guaranteed loans. The resulting increase in firms' indebtedness could push firms into insolvency in 2021;[4]

3. Withdrawal of fiscal support in 2021, or a tightening of credit conditions, could trigger liquidity problems among surviving and ultimately viable, but fragile, firms.

This paper assesses the prospects for such a 2021 SME time bomb.[5] We build on our earlier paper, which estimates the impact of COVID-19 on SME failures in 2020 (Pierre-Olivier Gourinchas, Sebnem Kalemli-Ozcan, Veronika Penciakova and Nick Sander, 2020). In that paper, we construct a model-based estimate of a firm's cash flow under COVID-19 by solving a short-run cost minimization problem subject to a rich combination of sectoral and aggregate, supply and demand shocks.[6] By combining this estimated cash flow with firm-level data from Moody-Bureau van Dijk's Orbis, we can infer the impact of COVID-19 on SME failures and

[1] The IMF Policy Tracker reports the cost of total COVID fiscal relief packages.

[2] Real time estimates of 2020 bankruptcies are still scarce due to reporting lags in firm filings and congested courts with regulatory freezes on proceedings (Federico Díez, Romain Duval, Jiayue Fan, Jose Garrido, Sebnem Kalemli-Özcan, Chiara Maggi, Soledad Martinez-Peria and Nicola Pierri (2021)). See U.S. Small Business Pulse Survey and Leland D. Crane, Ryan A. Decker, Aaron Flaaen, Adrian Hamins-Puertolas and Christopher Kruz (2020) for information on temporary closures and alternative measures of failure in the U.S. and FT, Dec. 18, 2020 for recent information for Germany.

[3] See FT, Dec. 13, 2020 and the G-30 Report on the corporate sector.

[4] On different types of support, see the Yale Tracker.

[5] In the EU, SMEs, consisting of firms with less than 250 employees, account for a striking 99.8% of all employer firms, 65% of private sector employment and 54% of private sector gross output.

[6] For papers that explore the supply and demand dimension of the COVID-19 shock, see David Rezza Baqaee and Emmanuel Farhi (2020) and Veronica Guerrieri, Guido Lorenzoni, Ludwig Straub and Iván Werning (2020).

evaluate the cost and effectiveness of various government interventions designed to support businesses throughout 2020. The current paper extends our analysis through the end of 2021.

1 Time Bomb Analysis

Specifically, we consider a baseline scenario in which the COVID-19 crisis requires two lockdown episodes in 2020. The first lockdown begins in week 9 of 2020 (end of February) and lasts 8 weeks, while the second lockdown begins in week 44 (end of October), lasts 6 weeks, and is two-thirds as intense as the first one. Throughout 2020 and 2021, aggregate demand evolves according to country-level quarterly GDP growth forecasts from the IMF's June 2020 WEO. During each lockdown episode, the economy also experiences sectoral labor supply, productivity, and demand shocks.[7] Once each lockdown episode ends, sectoral supply and productivity shocks immediately return to pre-COVID levels, while sector-specific demand follows an AR(1) with a quarterly autocorrelation of 0.5. We assume there are no additional lockdown episodes in 2021.

To evaluate firm failure, we impose a liquidity criterion that is evaluated at a weekly frequency. Focusing on a liquidity criterion, rather than a solvency one, is appropriate for SMEs whose assets are difficult to value and whose means to raise fresh capital are very limited, especially during a pandemic. According to this criterion, firms fail when they cannot cover financial expenses out of current cash balances and (model-based) cash flow. Throughout 2020 we assume that firms can roll-over existing loans, but cannot obtain "fresh" financing to cover cash short falls.

We obtain data on 2018 firm revenue, labor and material costs, along with cash balances and financial expenses from Orbis.[8] Our analysis focuses on a subset of 13 countries for which Orbis, on average, covers nearly 60% of aggregate SME revenue – Belgium, Czech Republic, Finland, France, Greece, Hungary, Italy, Poland, Portugal, Romania, Slovakia, Slovenia, and Spain.[9]

In the absence of government support, our baseline scenario generates a sharp increase in the SME failure rate of 9.84 percentage points (pp) relative to a counterfactual non-COVID year. In reality, policy support in 2020 has been quite generous in the countries we consider,

[7] Sectoral shocks are defined at the 4-digit NACE level. Sectoral labor supply shocks reflect each sector's ability to shift to remote work (Jonathan Dingle and Brent Neiman, 2020). Sectoral productivity shocks are calibrated using data from the American Community Survey on the pre-COVID prevalence of remote work by industry and the assumption that remote work is 20% less productive than on-site work. Sector-specific demand shocks reflect sectoral reliance on face-to-face customer interaction (O*NET).

[8] 2018 is the latest year for which firm-level data are available from Orbis, due to lags in financial accounts reporting. Our exercise assumes that the distribution of firm balance sheet and income statements remains unchanged between 2018 and 2019.

[9] The coverage statistics are based the latest (2017) available official OECD data. The Orbis data are cleaned for reporting errors and inconsistencies.

dampening the impact of COVID-19 on SME failures.

To capture this reality, we simulate a program of public loan guarantees for SMEs broadly similar to that implemented in many countries. Under this program, all SMEs receive a zero-interest, five-year *pandemic loan* with a government guarantee, along the lines described by the ECB.[10] The terms of this loan are such that firms receive the maximum of 25% of their average weekly 2018 revenues or twice their average weekly 2018 wage bill during each week of lockdown. Should a firm find itself unable to repay its pandemic loan, the government bears 90% of losses, with the remaining 10% accruing to the banking sector. Under this more realistic scenario, the model predicts that the 2020 SME failure rate under COVID would be very similar to – 0.03pp below – the non-COVID rate.

With that central scenario in place we ask: what happens in 2021 once government support expires? Since we assume no additional COVID lockdowns in 2021, there is a tension between improving economic fundamentals and the legacy of 2020 COVID shocks that weakened the business sector.[11] We present our estimates of SME failures and resulting policy costs under two different financial environments for 2021:

1. **Pandemic Loan Repayment**: Firms maintain access to credit markets to roll over pre-pandemic loans, but must repay 1/5 of the principal on their pandemic loan.

2. **No Rollover of Pre-Pandemic Debt**: Credit markets tighten and, in addition to the principal due on their pandemic loan, SMEs cannot roll over maturing pre-pandemic financial obligations.

The first scenario reflects a situation where credit markets are unwilling to extend fresh credit to roll over pandemic loans, but are otherwise comfortable with pre-pandemic debt levels. The second scenario reflects a situation of financial stress where credit markets force SMEs to delever.[12]

Tables 1 and 2 report our estimates under each scenario. In each table, we start with the same set of firms that are alive at the end of 2020. Our estimation allows us to sort these firms into two buckets: firms that would have survived 2020 even without fiscal support (labeled "Strong 2020") vs. more vulnerable firms that needed fiscal support to survive in 2020 ("Saved 2020"). Similarly, we can decompose the same set of firms based on our predicted 2021 outcomes: firms that would have survived without any fiscal support ("Strong 2021"), firms that

[10] See ECB Economic Bulletin 6/2020 Focus.

[11] While our analysis does not feature permanent sectoral reallocation (Jose Maria Barrero, Nicholas Bloom and Steven J Davis, 2020), our sectoral demand shocks do persist into 2021 and act as a drag on firms recovery.

[12] Empirical evidence suggests that when credit dries up, SMEs are first affected. Even if the immediate risk of mass failure (the focus of this paper) were mitigated, firms may still face insolvency risk from debt overhang. For analysis and discussion of insolvency risks, see Díez et al. (2021); Gabriel Chodorow-Reich, Olivier Darmouni, Stephan Luck and Matthew C Plosser (2020) on COVID-19 and Sebnem Kalemli-Ozcan, Luc Laeven and David Moreno (2018) on the Great Recession.

needed support ("Saved 2021"), and firms that fail during 2021 ("Failed 2021"). By comparing failure rates and pandemic loan disbursements across the different groups and scenarios, we can assess whether 2020 policies created a "time bomb" of failures for 2021, and whether 2020 policies targeted the right firms.

Table 1 reports the distribution of firms across 2021 outcomes (Strong, Saved and Failed), relative to non-COVID in columns (1)-(3).[13] Columns (4) and (5) further decompose the change in failure rate in 2021 from column (3) according to the firm's 2020 status (i.e. Strong or Saved).[14]

The first key result from Table 1 is that 2020 policy support does not, on its own, lead to a "time bomb" of 2021 SME failures. Column (3) indicates that the failure rate increases only modestly, by 1.88pp relative to a non-COVID 2021. Meanwhile, the share of strong firms is 8.66pp smaller (col. (1)) and that of saved firms is 10.61pp larger (col. (2)).[15] Of the 1.88pp increase in the 2021 failure rate, 2.65pp comes from relatively weak firms that survived 2020 only thanks to fiscal support (col. (5)) while that of Strong 2020 firms contributed -0.77pp (col. (4)). Overall, although fewer firms would have survived on their own (col. (1)), many firms make it to the end of 2021 thanks to the support received in 2020 (col. (2)), and failure rates increase only modestly relative to a normal year (col. (3)).

Table 1, however, illustrates a potential vulnerability. Should the banking sector – the primary source of external funding for SMEs – tighten access to credit and prevent rollover of pre-pandemic SME maturing debts, failure rates would spike up, with an increase of 8.44pp relative to normal times. Moreover, nearly half of the SME failures would now arise from firms that did not need any support to survive to the end of 2020 (col. (4)). The analysis clearly illustrates that the main danger for 2021 resides in impaired access to credit markets.

The first panel of Table 2 reports the distribution of pandemic loans outstanding at the end of 2020, as a percent of 2018 GDP, across firms' 2020 (rows) and 2021 (columns) outcomes. Columns (5) and (6) report the cost of of realized losses on pandemic loans.[16] Column (7) shows the share of pre-existing SME loans that are non-performing (NPLs) due to 2021 firm failures. Column (8) shows the share of jobs lost due to firm failures, as a percent of total 2018 employment.

Table 2 illustrates the policy trade-offs policymakers confront in 2021. Total outstanding pandemic loans at the end of 2020 represent 9.32% of GDP. Of this, we estimate that between

[13] To construct non-COVID outcomes, we focus on the group of firms that survive COVID in 2020 and consider their outcome under a Non-COVID scenario for both years. Since there would have been no fiscal support under Non-COVID, these firms end up either "Strong" or "Failure" at the end of 2021.

[14] The sum of columns (4) and (5) equals column (3).

[15] Cols. (1)-(3) sum to 3.83pp, which is the percentage of firms that survived COVID in 2020 but would have failed in 2020 under the non-COVID scenario. This group consists of firms that may have received overly generous fiscal support in 2020, and firms that experienced a strong COVID year, for instance because they operate in essential sectors or faced an increase in relative demand.

[16] 90% of the losses accrue to the government and 10% to the banks. These costs equal the amounts disbursed in 2020 to firms that fail in 2021, less any principal repaid in 2021 prior to failure.

6.80% and 7.98% of GDP was disbursed to firms strong enough to survive both 2020 and 2021 on their own. This highlights the very imperfect targeting of 2020 support policies under COVID.[17]

Since only 1.88% additional firms fail under our first scenario, the policy cost remains low, at 0.28% of GDP. NPLs and job losses also increase modestly, by 3.71% of SME loans and 1.16% of total employment respectively. This leaves little scope or need for additional policy support in order to save SMEs in 2021.

The second scenario considers what happens when worried credit markets do not roll over maturing pre-pandemic debt. In that case, while policy costs increase only modestly (1% of GDP), NPLs (29% of SME loans) and job losses (4.32% of employment) balloon. These estimates confirm that financial risks in 2021 constitute a major concern for SMEs strength, more so than the repayment of government supported loans. A serious worry is that public loan guarantees have overburdened SMEs with debt. This might adversely affect their solvency and future access to private credit. Increased indebtedness could also worsen debt overhang problems, distorting capital expenditures.

This could justify additional forms of debt relief in 2021. This should be targeted to firms that need it, primarily in the "Saved 2021" category. According to Table 2, this would represent 1.06% of GDP under scenario (1). In addition, we estimate that this debt relief could help save an additional 0.91% firms in 2021. To the extent that targeting is difficult to implement, debt relief could be provided against -for instance- a temporary higher tax on future profits. This would help claw-back some of the relief disbursed to firms that don't need it.[18]

2 Conclusion

Our exercise reaches an important conclusion: we do not find that policies implemented in 2020, on their own, create a 2021 "time bomb" for SMEs. Even if pandemic loans come due, business failures remain modest, and so do policy costs. By contrast, we find significant exposure to the risk of a credit contraction. Such a contraction would disproportionately impact "strong" firms (i.e. firms that otherwise would not need fiscal support to survive COVID-19 in 2020). Even in that scenario, the large business failures would not arise from excessively generous 2020 policies that just delayed the inevitable. Instead, they would be a new blow, coming from the contraction of credit to the corporate sector.

[17] This point is discussed at greater length in Gourinchas et al. (2020).

[18] See Olivier Blanchard, Thomas Philippon, Jean Pisani-Ferry et al. (2020) and the recent G-30 Report for similar recommendations.

Table 1: 2021 Outcomes Relative to Non-COVID

	2021 Outcome (Δ%)			2021 Δ% Failed Decomposition	
	(1)	(2)	(3)	(4)	(5)
	Strong	Saved	Failed	Strong 2020	Saved 2020
1) Pandemic Loan Repayment	-8.66	10.61	1.88	-0.77	2.65
2) No Rollover of Pre-Pandemic Debt	-17.23	12.62	8.44	4.14	4.30

Notes: All columns reported as a share of firms alive at the end of 2020 under COVID, and as the difference between the COVID and non-COVID scenarios. Columns (1) through (3) report the firms 2021 outcome (Strong, Saved, and Failed). Columns (4) and (5) report the distribution of the Failed 2021 firms (i.e. column (3)) across their firm type at the end of 2020 (Strong 2020 or Saved 2020). All values are first calculated at the 1-digit NACE level for each country, and then aggregated across countries using (country $\times$ sector) gross value added from the OECD as weights.

Table 2: Distribution of Policy Support, Policy Costs and Macro Outcomes

	Funds Disbursed in 2020				**Policy Related Costs**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2020 Firm Group	Total	Strong 2021	Saved 2021	Failed 2021	Govt's Share	Banks' Share	NPL	Jobs Lost
	(% 2018 GDP)				(% 2018 GDP)		(% SME Loans)	(% 2018 Empl)
1) Pandemic Loan Repayment								
Strong 2020	8.27	7.98	0.26	0.04	0.03	0.00	1.07	0.09
Saved 2020	1.05	0.00	0.81	0.24	0.20	0.02	2.64	1.07
Total 2020	9.32	7.98	1.07	0.28	0.23	0.03	3.71	1.16
2) No Rollover of Pre-Pandemic Debt								
Strong 2020	8.27	6.80	0.79	0.68	0.54	0.06	24.59	2.30
Saved 2020	1.05	0.00	0.62	0.43	0.36	0.04	5.38	2.01
Total 2020	9.32	6.80	1.41	1.11	0.90	0.10	29.97	4.32

Notes: Columns (1)-(4) report the distribution of pandemic loans based on 2020 (row) and 2021 (column) classifications. Column (1) shows total funds disbursed in each scenario. Columns (2) to (4) show the distribution based on firms' 2021 outcomes. Columns (5) and (6) show the costs to the government and banks of writing off pandemic loans (net of any principal paid prior to failing) on firms that fail in 2021. Column (7) shows the share of all pre-pandemic SME loans that become non-performing and column (8) shows jobs lost as a share of total 2018 employment. Col. (1)-(6) numbers are scaled by the ratio of country value-added to total ORBIS value added. Similar scaling was done for col. (8) based on the ratio of country employment to total ORBIS employment. Aggregated using GDP-weights.

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