

# Where have all the insolvencies gone?

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Like in many other industrialized countries, government support programs kept corporate insolvency rates below pre-crisis levels in Austria in 2020 and 2021, and continued to do so in 2022 in all months for which data were available at the time of writing (up to July 2022). From information available to the OeNB, we built a firm-level database to examine whether the lower rates of insolvencies were offset by higher rates of firms exiting the market without insolvency and/or lower rates of firms entering the market. We find the number of firm exits without insolvency to have gone down as well, whereas firm entries remained rather stable in 2020 and increased markedly in 2021.

On the assumption that the pandemic support payments were designed to keep vulnerable firms in business, our corporate balance sheet data suggest that the support was lavish and probably not targeted enough. To further substantiate our findings, we cross-check our database with the European Commission's state aid transparency database. The evidence at hand suggests that a rather large share of the public support payments ultimately appears to have increased firms' deposits, respectively their liquidity buffers, in a highly uncertain environment, and even equity, rather than having to be spent to keep businesses afloat. With the benefit of hindsight, government support provided in 2020 can, therefore, to a large extent be interpreted as compensation for losses due to state-imposed lockdowns or public transfers to equity holders for the build-up of risk buffers. Put differently, the full extent of government support does not seem to have been crucial for keeping firms in existence.

Looking ahead, more transparency with regard to firm-level pandemic support payments is a necessary precondition for gaining a deeper understanding of the impact of public support on the structure of the business sector and corporate balance sheets, competition, innovation and financial stability. These insights could help in improving measures for current and future crises.

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Given the severe impact the COVID-19 pandemic has had on the economy, economic theory would suggest a strong increase in insolvencies. After all, supply and demand contracted as infected workers were absent from work, consumers were shopping less frequently to avoid exposure to the virus and governments repeatedly imposed lockdowns to contain the spread of the virus. However, far-reaching government rescue programs have so far kept the number of insolvencies considerably below pre-pandemic levels (Elsinger et al., 2021).

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In this study we try to answer three questions.

1. How have insolvency numbers changed from the pre-pandemic period to the pandemic period, and do we see catch-up effects once government support broadly ceased?
2. Have the lower insolvency rates during the pandemic period been offset by higher rates of firms exiting the market without insolvency and/or changing numbers of firm entries?
3. What impact did pandemic-related support have on corporate balance sheets? Was this support needed to keep firms in business? And what did businesses do with funds provided in excess of what they needed to keep going?

To deliver answers to these questions we employ a range of data sources available to the OeNB. Specifically, we built an experimental dataset mapping data from Austria's published notices website to master data and balance sheet data collected by the OeNB and structural business statistics compiled by Statistics Austria. We further augment the data with the European Commission's state aid transparency database.

Note that in one important respect our data differ from comparable figures provided by Kreditschutzverband von 1870 (KSV 1870) or Österreichischer Verband Creditreform (Creditreform). We explicitly exclude sole proprietors and work with a well-defined set of firms, namely all entities included in the Austrian business register other than registered sole proprietors in Austria. Our database therefore consists mostly of limited liability companies, limited partnerships, general partnerships and stock corporations<sup>2</sup>. (See box 1.)

There are some major caveats to our analysis as our data allow us to answer the questions we pose with decreasing robustness. While we can answer the question regarding insolvencies (question 1) rather precisely and in detail up to the most recent months, the remaining two questions are more difficult to tackle based on the information we have access to. These data limitations unfortunately relate to both data quality and timeliness. While information on firm entries is rather straightforward to retrieve, we rely on year-end data for firm exits (question 2). That is why we cannot analyze the second question beyond the end of 2021. Regarding government measures and their impact on corporate balance sheets (question 3) we face several data limitations: First and foremost, we still have only very limited access to comprehensive firm-level data on government support measures. The European Commission's transparency database covers only grants and guarantees exceeding EUR 100,000 (EUR 10,000 for agricultural firms) and excludes compensation payments for short-time work. Second, balance sheet data come with a severe time lag and have some missing data items that we describe in our analysis. That is why we can use the balance sheet data only up to the end of 2020 and for a limited share of firms. Nevertheless, when combined, the available aggregates and the balance sheet microdata allow us to create some suggestive evidence and give a preliminary answer to our research questions. Our findings are, moreover, supported by regulatory bank data, as available until the end of 2021.

<sup>2</sup> Note however, that also data including sole proprietors show a similar pattern since the beginning of the pandemic, namely fewer insolvencies in 2020 and 2021, which did not see a return to pre-crisis levels until recently.

Our results, which exclude sole proprietorships as mentioned above, can be distilled down to three answers:

First, insolvencies among firms excluding sole proprietorships are still below pre-pandemic levels, even based on the most recent (July 2022) absolute figures. We do not observe any catch-up effect so far. However, this is a phenomenon witnessed in many industrialized countries.

Second, we also observe lower exits without insolvency. Thus, such exits are far from compensating for lower insolvencies. Firm entries on the other hand were somewhat below trend growth in 2020 but increased above the long-term trend levels in 2021.

Third, the aggregates suggest that firms' deposit balances (i.e. cash and cash equivalents including bank deposits), respectively their liquidity buffers, increased during 2020 roughly by the amount of government support businesses received during that time. An analysis of individual balance sheets shows that this was not due to a few particularly large firms. *If the pandemic-related support measures were solely aimed at keeping vulnerable firms in business, which we presume, our findings suggest – with the benefits of hindsight – that the measures were lavish and probably not targeted enough.*<sup>3</sup>

A notable case in point is the fact that – to a large degree – the financial support increased liquidity and equity beyond pre-pandemic levels and in comparison to firms not receiving support, rather than being needed to cover costs. We call for further in-depth analyses to evaluate the impact of these measures on the structure of the business sector and on corporate balance sheets, competition, innovation and financial stability. It takes comprehensive firm-level data on all government measures to conduct this analysis. Such data are needed.

Box 1

## Data and precursor studies

### Insolvencies

*To track insolvencies during the pandemic, OeNB staff experts put together an experimental dataset from data sources available internally. Most importantly, we linked up data from Austria's public notices website with master data, granular credit data and balance sheet data that the OeNB collects on an ongoing basis.*

*The database thus built was tailored to monitor developments relevant to financial stability. That is why our data differ in one important respect from other data sources on insolvencies, such as figures provided by Kreditschutzverband von 1870 (KSV 1870), Österreichischer Verband Creditreform (Creditreform), or recently Statistics Austria. We take a sectoral approach to be able to work with a well-defined set of firms, namely all entities registered in the Austrian business register other than registered sole proprietorships. This also excludes nonregistered entities, such as NGOs and public companies. Our reasoning is that the bulk of the loan volume is held by registered firms in the nonfinancial corporate sector rather than sole proprietorships. Only for these registered entities can we identify a meaningful population of firms, which in turn allows us to define meaningful insolvency ratios, considering that with sole proprietorships and self-employed persons, it is practically and legally difficult to distinguish between business and private. While sole proprietorships and the self-employed might*

<sup>3</sup> Note that support is claimed back if considered inappropriate or unjustified by the Ministry of Finance: *Coronahilfen: „Gehen konsequent gegen schwarze Schafe vor“* (bmf.gv.at); *Korrekturmeldung | COFAG | COVID-19-Finanzierungsagentur des Bundes GmbH*.

be hit hardest by the crisis, thus likely showing the largest increase in insolvencies once the impact of policy support recedes, they are typically those with the lowest loan volumes, which are additionally secured by private assets.

An insolvency case in our data is defined by the occurrence of at least one of three events, namely

1. bankruptcy proceedings have been initiated and/or
2. reorganization proceedings have been initiated and/or
3. insolvency proceedings were not initiated due to a lack of sufficient assets to cover the costs.

For a detailed description of our approach see *Elsinger et al. (2021)*.

### **Exits and entries**

To track entries and exits, we document founding dates and make year-end comparisons of the firm population within our database. Preliminary results were already published in *Fessler and Wuggenig (2021)*. Note that the definitions in the current study differ slightly as we are now also able to filter out firms which merely changed their corporate form (e.g., from a limited partnership to a limited liability company) or firms whose identifiers have changed (e.g., following a takeover or a merger). Such instances are no longer counted as exits or entries. However, these differences – as expected – turn out to have a rather marginal impact on the results. More important is the question of how to deal with entities for which the information of legal form is missing. While this question does not influence insolvency or entry numbers, it matters for exits and the overall number of firms (entities). We argue below why we do not count such instances and show results based on counting them in the appendix.

### **Balance sheets**

While our aggregate data come directly from the financial accounts, the micro-based statistics are dependent on the availability and quality of corporate balance sheet data. The latest available balance sheet data are for 2020, but for reasons of comparison we also use the 2019 and 2018 data. While data coverage is rather good for limited liability companies and stock companies (we have balance sheet data for all three years for about 80% of limited liability companies and 70% of stock corporations<sup>4</sup>), data coverage is often much worse for other legal forms. However, as limited liability companies and stock corporations are most relevant, especially in terms of balance sheet size, we are still confident that our micro analyses on balance sheets represent macro developments rather well.

The remainder of this study provides the empirical evidence and elaborates the context as well as potential caveats in greater detail. Section 1 deals with insolvencies during the pandemic. Section 2 covers firm exits other than through insolvency and firm entries. Section 3 deals with firm balance sheets. Section 4 presents the data from the European Commission's transparency database and section 5 concludes.

## **1 Insolvencies remain well below pre-pandemic levels**

Historically, insolvencies rise during crises (*Claeys et al., 2021*). However, this is not the pattern we have seen during the coronavirus pandemic in Europe.<sup>5</sup>

One example is Germany. As noted by the Deutsche Bundesbank in its December 2021 report, the number of corporate insolvencies dropped substantially in

<sup>4</sup> Within our dataset. However, with regard to limited liability companies as well as stock corporations the data should include almost all such entities existing in Austria.

<sup>5</sup> Note on monitoring the financial stability implications of COVID-19 support measures. Report of the ESRB. September 8, 2021. *Monitoring the financial stability implications of COVID-19 support measures (europa.eu)*.

2020 despite the pandemic. Bundesbank staff experts conclude that the insolvency figures reflect the impact of government support. Under pandemic regulations, Germany temporarily suspended obligations for businesses to file for insolvency if they became insolvent or overindebted in 2020. As a result, the number of insolvencies dropped sharply, above all in the services sector, despite a sizable decrease in sales (Deutsche Bundesbank, 2021). At the same time, government support measures drove enterprises' liquidity levels significantly upward. On balance, enterprises absorbed the shock from the coronavirus pandemic better than anticipated by many economic experts. The Deutsche Institut für Wirtschaft<sup>6</sup> arrived at the very same reasons for the low insolvency rates in Germany: fiscal policymakers rolled out extensive financial assistance packages and public authorities temporarily removed insolvency filing requirements.

The magnitude of the effect is evident from figures compiled by the ifo Institute for the German finance ministry:

*“Taking the historical relationship between business activity and insolvency developments into account, our estimates indicated that the likely claims arising from applications for insolvency proceedings should have risen to somewhere between EUR 60 and 100 billion. Instead, they rose to just EUR 48 billion in 2020, up from EUR 34 billion in 2019.”*

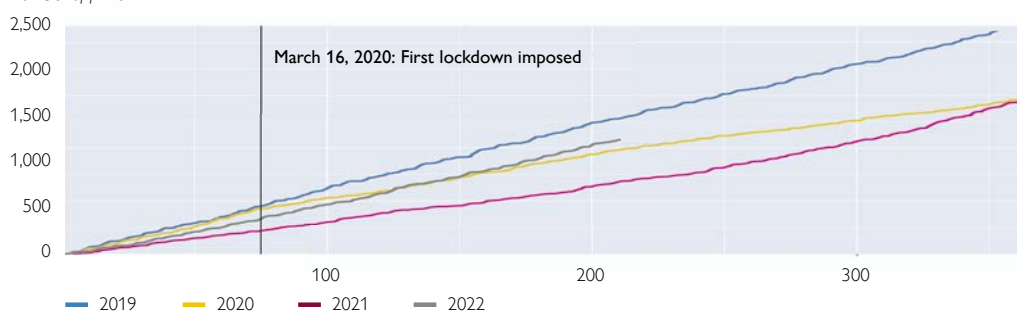
For Austria, chart 1 shows the yearly cumulative incidence of firm-level insolvencies as recorded on a day-by-day basis from the beginning of 2019 to the end of July 2022. As is well known, insolvencies decreased right from the start of the first lockdown despite the large economic shock due to the pandemic. Since then, many experts and institutions (including the OeNB) have forecast and warned of a wave of upcoming insolvencies exceeding pre-crisis levels for several reasons: the economic shock itself, rising uncertainty and a catch-up process compensating for the lower number of insolvencies in the early days of the pandemic. As the pandemic went on, lockdowns were legislated and suspended, and a plethora of government measures were taken to help firms to survive. However, so far the data suggest neither a wave of insolvencies nor any form of catch-up process with regard to insolvencies. Thus, the answer to our question (1) is rather straightforward: the absolute numbers of insolvencies remain below the pre-crisis levels.

Chart 1

### Cumulative insolvencies in Austria

#### Clear downward trend since first lockdown

Number of firms



Source: Austria's published notices website (Ediktsdatei). Days since 1<sup>st</sup> January.

<sup>6</sup> DIW Berlin: *Insolvenzgeschehen in Deutschland: Corona-Pandemie hinterlässt erste Spuren.*

On the one hand, it could be argued that this shows the success of state intervention to support Austrian firms in a difficult time of government-imposed lockdowns. On the other hand, there are several reasons why one should be cautious about calling for maximal firm survival – especially in times of crisis. We would like to mention three reasons here.

First, saving firms is costly. Reallocating taxpayers' money to the business sector may be justifiable if it is indeed needed to keep firms in existence that are relevant to society because they serve essential consumer needs (directly or within a production chain), if they would most likely not survive without the subsidy and if they were to leave a gap that cannot be filled by competitors or newcomers.

Second, there are unseen consequences to (potential) competitors. After all, subsidies provided to some firms put unsubsidized (potential) competitors at a disadvantage and prevent new competitors from entering markets. In particular, such subsidies rob firms that were well prepared for a crisis and not eligible for public support of their deserved advantage in the market, thus prohibiting the development toward a more resilient economy.

Third, a classical prediction of public choice theory is that large subsidy programs, especially when designed and implemented quickly and in a rather nontransparent way, tend to create a poor incentive structure in terms of efficiency. This happens through a distortion in competition usually for the benefit of firms with direct or indirect ties to relevant political decision makers or access to special interest networks or insider information.

All three issues tend to foster a less dynamic, less innovative business sector and come with a price tag, not only because of the direct monetary cost of the subsidies but mostly because of the long-term effects on innovation and competition. Market economies cannot function if markets are welcomed as long as profits are high but are canceled when crisis hits, and profits are low. Rational firms anticipate government intervention and will crowd out firms with more resilient forward-looking business models. Generally speaking, privatizing profits but socializing losses is not supporting the market economy but makes it less successful in satisfying people's needs and more vulnerable to crisis in the future.<sup>7</sup>

## 2 Lower insolvencies were not offset by exits and entries

In this section we answer the question if the lower insolvency rates were offset by higher rates of firms exiting the market without insolvency and/or changing numbers of firm entries during the pandemic period.

Table 1 shows a short summary of exits, entries and insolvencies for 2019, 2020 and 2021 as well as the insolvency-to-exit ratio and the overall number of firms. Note that for table 1 we excluded all entities for which data on the legal form were missing. For alternative numbers including those entities see table A1 in the annex. The absolute numbers of exits and the overall numbers of firms are different, but this is not relevant for our main results, namely that the development of exits shows no compensation for fewer insolvencies.

<sup>7</sup> See also “*The wealth effect of Bailouts*” for a broader discussion right at the beginning of the pandemic: *The Wealth Effects of Bailouts: A Quantitative Assessment* | Institute for New Economic Thinking ([ineteconomics.org](http://ineteconomics.org)).



In total, firm entries exceeded exits and insolvencies combined in both 2020 and 2021. Insolvencies accounted for about 24% to 32% of exits, implying that the number of non-insolvency-related exits was about 2–3 times larger than the number of insolvencies. However, while the number of firm entries was only marginally larger in 2020 than in 2019 but increased markedly in 2021, the number of both insolvencies and exits was substantially lower in 2020 than in 2019 and increased only slightly in 2021. While the 2020-to-2019 decrease in insolvencies was about 32%, the decrease in exits was about 12%.

These results already point to a clear answer to question (2) whether more exits compensated for fewer insolvencies. They did not. On the contrary, the number of firm exits even decreased. Due to the combination of lower numbers of exits and insolvencies with the almost stable (2020) and then strongly positive development (2021) of entry numbers, the number of firms (according to our definition) ultimately increased by about 8% (6% if one uses definitions from table A1) from before the pandemic (end of 2019) until the end of 2021.

As a next step we look closer at the annual development of firm entries (chart 2). While there were fewer entries in 2020 than one would have assumed extrapolating from the pre-crisis trend, rising firm entry numbers in 2021 more than compensated for this effect. Overall, the positive long-term trend with regard to firm entries continued – if not accelerated – during the pandemic.

If exits without insolvencies cannot explain the drop in insolvencies, what can? In the following we look into balance sheet data (section 3) and then add data on pandemic-related support measures (section 4) to find that these measures were lavish and are likely the main reason for the few insolvencies observed in Austria in 2020 and 2021.

### 3 Markedly higher increases in deposit and equity levels observed for firms that received pandemic support in 2020

From aggregate statistics we know that, on the aggregate, corporate deposits (i.e. cash and cash equivalents including bank deposits) increased in tandem with the substantial increase of state subsidies during the pandemic. On first sight it might

Table 1

#### Firm entries, exits and insolvencies

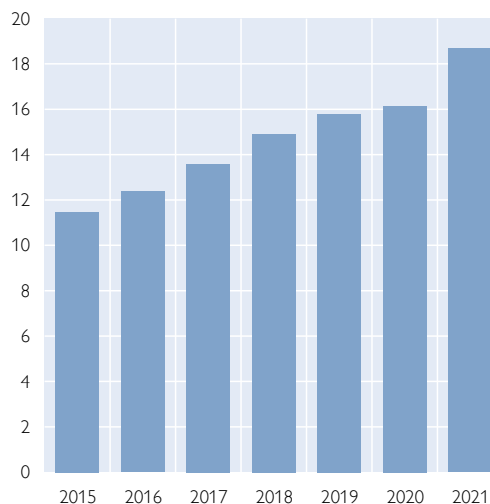
Year	Entries	Exits	Insolvencies	Begin-of-year levels	End-of-year levels	Insolvency-to-exit ratio
	Thousands					%
2019	15.8	6.8	2.2	227.2	233.8	31.9
2020	16.1	6.0	1.5	233.8	240.7	24.7
2021	18.7	6.1	1.5	240.7	251.7	24.0

Source: OeNB (database of master data).

Chart 2

#### Firm entries per year

Number of entries in thousands



Source: OeNB (database of master data).

seem odd that deposit balances should have increased in times of crisis. However, the reasons for such an increase at the aggregate level are manifold. If you think of it simply in accounting terms: The supply of money and funds increased by central banks and governments in response to the pandemic will end up somewhere in the economy. Even if measures are targeted perfectly toward companies in serious trouble, companies will use the subsidies to pay their bills to stay in business, sending the funds mostly to the accounts of other companies. Other explanations include temporary bans on dividend payments, businesses investing less due to uncertainty, sale and leaseback activities and many more. At the micro level, however, troubled firms are unlikely to see their deposits increase. Definitely not beyond the levels of their sound firm-peer counterparts. That is why our investigation needs to look at the micro level underlying the aggregate statistics.

In this section we will analyze balance sheet dynamics in 2018, 2019 and 2020. All in all, our sample consists of 159,590 firms for which total assets are available for at least one year. For 122,715 of those firms, we know total assets across all three years. Compared to the number of firms given in table 1 this number seems small. Yet, these figures include more than 70% of all stock corporations and more than 80% of all limited liability companies. These two most important legal forms of companies represent 70% of all companies in the full sample and are thus well accounted for. The results below are with respect to the subsample of firms for which we know total assets for all three years, i.e., firms that neither entered nor exited the market during this period.

Table 2 summarizes aggregates of key balance sheet items for 2019 and 2020. Our dataset does not include each and every item for each firm. The “coverage” column exhibits the scope of assets or liabilities covered compared with the corresponding totals for all 122,715 firms. The “number of firms” column shows the number of firms for which we have information on the respective item in each of the three years.

Aggregate total assets increased by 3.7% from 2018 to 2019 and by 4.4% from 2019 to 2020. The median growth rate was 2.6% in 2020 and 1.9% in 2019. The strong growth in current assets was not driven by inventories, which declined by 2% in 2020 after a 1.8% increase in 2019. Cash and cash equivalents including bank deposits – deposits for short in the following – increased by as much as 17.5%

Table 2

### Balance sheet developments

	Aggregate change 2020	Aggregate change 2019	Firm-level median change 2020	Firm-level median change 2019	Coverage	Number of firms
	%					Thousands
Total assets	4.4	3.7	2.6	1.9	100.0	122.7
Fixed assets	2.2	4.1	-1.7	-1.3	96.8	101.0
Current assets	7.8	0.3	6.4	4.2	99.1	121.3
Inventories	-2.0	1.9	0.0	0.0	44.4	53.1
Deposits	17.5	2.4	8.7	0.0	85.5	96.9
Accounts receivable	7.1	-1.0	4.5	2.3	92.9	111.8
Liabilities	1.1	1.1	0.0	0.0	95.9	113.9
Equity	7.5	3.3	5.1	4.9	92.5	121.6

Source: OeNB (database of master data), European Commission (state aid transparency database).



in 2020, and accounts receivable by 7.1%. On the liability side of the balance sheet, equity increased by 7.5% in 2020 compared to 3.3% in 2019 whereas liabilities<sup>8</sup> remained broadly unchanged. Was the increase in deposits driven by a few outliers or was it a broader phenomenon? When we group the data by provinces, by NACE codes, and by firm size, we find that

1. The growth of deposits was extraordinary in all provinces except for Salzburg and Tyrol, which both have an important tourism industry (table 3).
2. The growth of deposits was below average with regard to accommodation and food service activities. The same applies for the arts, entertainment and recreation sector, whose average growth rate in 2020 (+9.2%) still marks a strong increase from 2019 (-11.8%). At the other end of the spectrum, manufacturing and transportation and storage show a substantial increase in deposits (table 4).
3. Larger firms (deciles 7 to 10) increased their deposits more than smaller firms (table 5). The lowest two deciles sharply reduced their deposits or kept them stable.

Table 3

### Change in corporate deposits by province

	Aggregate change 2020	Aggregate change 2019	Firm-level median change 2020	Firm-level median change 2019	Number of firms
	%				Thousands
Burgenland	30.1	16.1	14.6	0.0	2.3
Carinthia	22.1	4.4	12.4	0.0	5.5
Lower Austria	34.4	3.7	12.7	0.0	14.5
Upper Austria	19.9	10.9	11.7	0.0	13.7
Salzburg	4.6	7.8	6.2	0.2	7.9
Styria	34.2	5.1	12.5	0.0	11.5
Tyrol	5.9	5.1	8.4	3.0	8.1
Vorarlberg	24.4	-0.6	7.1	2.3	4.7
Vienna	12.0	-3.2	3.6	0.0	28.8

Source: OeNB (database of master data).

<sup>8</sup> Note that liabilities include all bank loans. However, for many firms only the aggregated category liabilities is available, which is the reason why we do not show more disaggregated subcategories such as bank loans.

Table 4

**Change in corporate deposits by NACE code**

	Aggregate change 2020	Aggregate change 2019	Firm-level median change 2020	Firm-level median change 2019	Number of firms
	%				Thousands
C Manufacturing	41.8	9.0	14.9	0.3	8.1
D Electricity, gas, etc.	1.1	-18.5	2.1	1.8	1.0
E Water supply; sewerage, waste management	14.1	0.5	9.6	2.1	0.4
F Construction	13.3	11.7	10.4	0.5	10.1
G Wholesale and retail trade; repair of vehicles	19.5	10.0	16.5	0.0	18.6
H Transportation and storage	33.5	-2.9	12.5	0.0	3.2
I Accommodation and food service activities	6.7	9.2	3.8	0.5	6.2
J Information and communication	28.4	8.0	14.9	3.5	5.5
K Financial and insurance activities	4.2	1.5	7.7	0.0	1.7
L Real estate activities	10.8	-1.6	1.3	0.0	14.0
M Professional, scientific and technical activities	10.7	-2.2	2.9	0.0	19.9
N Administrative and support service activities	12.7	3.0	5.8	0.7	3.9
P Education	15.3	3.6	15.6	3.7	0.7
Q Human health and social work activities	8.4	12.6	14.5	7.2	1.2
R Arts, entertainment and recreation	9.2	-11.8	7.9	0.0	1.6
S Other service activities	20.0	16.8	19.6	0.0	0.7

Source: OeNB (database of master data).

Table 5

**Change in corporate deposits by balance sheet decile**

	Aggregate change 2020	Aggregate change 2019	Firm-level median change 2020	Firm-level median change 2019	Number of firms
	%				Thousands
1	-39.1	-25.9	-9.4	-12.1	12.1
2	-13.4	-24.1	0.0	0.0	12.4
3	2.2	-0.1	8.2	0.0	12.2
4	6.4	8.3	12.2	3.8	12.3
5	11.6	5.9	15.3	2.4	12.2
6	7.4	16.2	16.3	4.2	12.3
7	15.6	7.1	15.8	4.7	12.3
8	15.1	8.4	15.3	4.5	12.3
9	14.9	7.9	13.9	3.6	12.3
10	19.3	0.8	10.4	2.6	12.3

Source: OeNB (database of master data).

The data suggest that the increase of deposits was a broad phenomenon across provinces, sectors, and firm size. Even in the accommodation and food service activities sector, which was heavily affected by the pandemic, deposits grew by more than 6%.

To additionally validate our findings that large firms saw a more pronounced increase in deposits (even relative to their size), we also draw on regulatory data reported by banks. Cash positions of households and firms are found on the liability side of banks and the data allow for a breakdown into “micro and SME,” “corporates” (i.e., firms that do not fall under the former) and house-

holds. In 2020, banks recorded a large inflow of deposits from all three groups. The outstanding deposits of corporates rose by as much as 22.9%, followed by household deposits (+9.4%) and SME deposits (+7.9%). The robust increase in corporate deposits continued in 2021 (+13.5%). Household deposits increased at an even stronger rate (+14.6%) while SME deposits stagnated (-0.4% growth).

Our finding is even more surprising as sales revenues for the firms in our sample decreased by 6.6% in 2020 compared to an increase of 2.5% in 2019. Hence, the increase in highly liquid assets might well have been driven by government subsidies, a hypothesis we further investigate with micro data on pandemic-related support below.

#### 4 Transparency data on pandemic support measures confirm balance sheet dynamics

In this section we merge the balance sheet data described in section 3 with firm-specific data on pandemic-related support,<sup>9</sup> as downloaded on July 14, 2022. All in all, we retrieved 21,531 data points relating to 21 different pandemic-related support measures, which can be grouped into grants and guarantees. Note that the data do not include short-term work compensations and VAT reductions and that the database covers only amounts exceeding EUR 100,000. Furthermore, we use only 2020 data. The data include government-issued guarantees for 5,845 different firms totaling EUR 2.9 billion and grants of EUR 1.4 billion to 4,720 different firms (table 6). We find firm-level matches in our balance sheet data for more than 80% of the grants and guarantees in terms of value and more than 70% in terms of the number of firms.

How do firms that received help and those who did not compare in terms of various balance sheet items? We classify all firms for which we do not have observations in the pandemic support database as firms that did not receive any government help. This is certainly not correct. Given the threshold of EUR 100,000 underlying the transparency database, there are many (smaller) firms that received lower amounts of support, yet we do not have access to such information up to now. A second issue that must be kept in mind is that the subsample of firms that received support is tilted toward larger firms because of the threshold. Table 7 summarizes the results for those firms that received grants. Total assets, current assets, deposits and accounts receivable increased more than in the full sample. On the liability side, both liabilities and equity increased. The median increase in liabilities was moderate. Table 8 shows the corresponding results for firms that were granted guarantees. Here, the picture is similar, with the difference that the median increase in liabilities was quite pronounced.

Aggregate deposits increased by about 62% for firms that received grants and 121% for those who received guarantees (tables 7 and 8) compared to 18% (table 2) in the full sample. This seems not to be due to larger firm size only. Even in the highest balance sheet decile, deposits only increased by 19% (table 5). The same pattern holds for firm-level median changes.

And the pattern is not different for equity. Firms receiving grants increased their equity levels on average by 18.1% in 2020 (table 7), which is well above the rate for 2019 and more than twice as much as the full sample rate (7.5%, table 2). Again, the same pattern holds for firm-level median changes.

Table 6

#### Descriptive statistics of firm-level data merged with state aid transparency data

	Euro amounts	Number of firms	Euro amounts (merged)	Number of firms (merged)	Coverage in euro	Coverage in counts
	Thousands				%	
Guarantees	2,919,616	5.8	2,428,171	4.1	83.2	70.9
Grants	1,436,302	4.7	1,171,324	3.5	81.6	74.0

Source: European Commission (state aid transparency database) and OeNB calculations.

<sup>9</sup> The data are publicly available from the EU COM website: *Öffentliche Suche in der Beihilfentransparenzdatenbank (europa.eu)*. For a further description of the data, see Barmer and Haller (2022).

Table 7

**Balance sheet dynamics measured for firms receiving grants**

	Aggregate change 2020	Aggregate change 2019	Firm-level median change 2020	Firm-level median change 2019	Number of firms
	%				Thousands
Total assets	12.1	4.4	7.2	2.3	3.1
Fixed assets	0.7	8.3	-4.7	-2.7	3.1
Current assets	28.3	-1.0	22.7	6.8	3.1
Inventories	-6.3	4.5	-6.9	2.1	2.7
Deposits	61.6	-3.7	19.1	6.7	3.0
Accounts receivable	40.0	-5.1	41.6	4.7	3.1
Liabilities	12.4	3.4	1.4	-1.4	3.1
Equity	18.1	5.6	12.8	9.3	2.4

Source: OeNB (database of master data), European Commission (state aid transparency database).

Table 8

**Balance sheet dynamics measured for firms receiving guarantees**

	Aggregate change 2020	Aggregate change 2019	Firm-level median change 2020	Firm-level median change 2019	Number of firms
	%				Thousands
Total assets	8.2	4.6	10.2	3.2	3.7
Fixed assets	1.0	4.8	-3.3	-0.8	3.6
Current assets	14.8	4.1	20.4	5.1	3.7
Inventories	1.4	6.1	-1.2	3.5	3.0
Deposits	120.7	-5.8	71.1	0.0	3.2
Accounts receivable	4.3	4.2	18.0	5.8	3.6
Liabilities	15.9	3.5	15.1	1.1	3.7
Equity	5.9	7.6	7.6	9.5	2.9

Source: OeNB (database of master data), European Commission (state aid transparency database).

For firms in urgent need of funding support, one would expect low levels of deposits and stable or decreasing equity levels following the receipt and use of subsidies to “help them pay outstanding bills.” These firms, however, show even larger increases in deposits than their counterparts who did not receive such support, which is suggestive evidence that the support received exceeded actual needs as considerable sums went unspent.

This ties in with results from a survey<sup>10</sup> among about 1,100 companies which was administered by KSV 1870 in August 2021 and published in October 2021. Of the 54% of companies which stated that they received state support, only 61% answered that they actually relied on this support. 34% stated that they did not need the support and 5% refused to answer the question.

<sup>10</sup> Zahlungsmoral trotz Corona-Krise weiter verbessert | KSV1870.

## 5 Conclusion

In this study we posed three questions and used firm-level and aggregate data to answer them.

1. Question (Q): How have insolvency numbers changed from the pre-pandemic period to the pandemic period, and do we see catch-up effects once government support broadly ceased?

Answer (A): Insolvency rates among Austrian firms excluding sole proprietorships have been lower since the onset of the pandemic, as is the case in many other industrialized countries. So far, we see neither a rise above pre-pandemic levels nor a catch-up effect compensating for the much lower initial rates.

2. Q: Have the lower insolvency rates during the pandemic period been offset by higher rates of firms exiting the market without insolvency and/or changing numbers of firm entries?

A: No, lower insolvency rates have not been offset by more exits. On the contrary, we observe lower firm exits since the beginning of the pandemic. Entries on the other hand were rather stable – below trend – in 2020 but increased strongly – above trend – in 2021. Overall, the number of firms increased by about 8% from end-2019 to end-2021.

3. Q: What impact did pandemic-related support have on corporate balance sheets? Was this support – with the benefit of hindsight – strictly needed to keep firms in business? And what did businesses do with funds provided in excess of what they needed to keep going?

A: Firms substantially increased their cash/deposit holdings as well as their equity levels in 2020. This effect is stronger for larger firms and does not hold for the lowest two deciles of firms by size, whose deposits decreased or stagnated. On average (and for the median), the increases were stronger for firms which received pandemic-related support. For the smaller firms, data on such support are yet too thin to draw this conclusion for this subsample as only government subsidies above EUR 100,000 are available in the European Commission's state aid transparency database.

Even in branches hit most by the crisis (tourism, restaurants), firms' cash/deposit holdings increased on average. Austria had the largest pandemic-related help measures in percent of GDP among EU countries (Köppl-Turyna et al., 2021) and also one of the strongest reductions in insolvency levels.<sup>11</sup> Our findings suggest that these support programs are the main cause for Austria's persistently low insolvency rates. Our insights from micro-level data point to the conclusion that the public support was not sufficiently targeted and, to a large extent, probably beyond the levels required to keep firms in existence – given that the aim of these measures was to help firms to survive the external shock from the pandemic.

<sup>11</sup> We also conducted an international comparison relating the volume of support measures to the reduction in insolvencies. Due to cross-country data consistency issues with regard to both insolvencies and support measures, we consider the related findings tentative: There seems to be a strong (negative) relation across EU countries, with Austria ranked first in spending, second in insolvency reduction, but “below the line,” i.e. a relatively low reduction in insolvencies in comparison to the volume of pandemic-related grants.

In July 2022, the Austrian government announced an initiative<sup>12</sup> for more transparency about firm-level pandemic support measures.<sup>13</sup> Such data are a necessary precondition for gaining a better understanding of the impact of policy measures on the structure of the business sector and corporate balance sheets, competition, innovation, and financial stability. And finally, such analyses are crucial to refine policy measures for future crisis to avoid a potential misallocation of public resources.

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<sup>12</sup> *Transparenzoffensive bei Corona-Hilfen (bmf.gv.at).*

<sup>13</sup> *Since the end of October 2022 the Federal Ministry of Finance publishes the beneficiaries of grants exceeding 10,000 EUR per year excluding short-term work compensations (<https://transparenzportal.gv.at>). These data suffer from two weak spots. They can not be easily downloaded. The data covers only name, year, legal form, zip and OENACE code. Merging these data with our database seems complicated and error-prone.*



## Annex

Table A1

## Entries, exits and insolvencies including entities with missing legal form

Year	Entries	Exits	Insolvencies	Beginning-of-year levels	End-of-year levels	Insolvency-to-exit ratio
	Thousands					%
2019	15.8	11.8	2.2	373.3	380.9	18.3
2020	16.1	9.4	1.5	380.9	390.2	15.7
2021	18.7	10.2	1.5	390.2	403.8	14.3

Source: OeNB (database of master data).

Table A2

## Pandemic-related support measures included in the analysis

Specifications	Number of entries	Amount in EUR millions
COVID-19: Austrian liquidity assistance scheme	12,123	39,24.3
COVID-19: Third amendment to aid scheme SA.56981 (2020/N): Austrian guarantee scheme for bridge loans under the Temporary Framework for pandemic-related state aid for businesses	5,046	1,578.4
COVID-19: Austrian guarantee scheme for bridge loans	1,580	492.3
COVID-19: Compensation scheme: directive on fixed cost subsidies	906	232.6
COVID-19: Austrian liquidity assistance scheme (SA.56840): fixed cost compensation under chapter 3.12 of the Temporary Framework for pandemic-related state aid for businesses (SA.58661)	899	18.4
COVID-19: Fourth amendment to aid scheme SA.56981 under the Temporary Framework for pandemic-related state aid for businesses	306	448.2
COVID-19: Fifth Amendment to aid scheme SA.56981	234	70.0
COVID-19: Regional support measures (Carinthia, Styria, Tyrol, Upper Austria and Vienna)	142	8.9
COVID-19: Regional support measures (Carinthia, Upper Austria, Styria, Tyrol and Vienna)	79	2.7
COVID-19: SA.60321(2020/N) compensation scheme: directive on fixed cost subsidies for economic activities of nonprofit organizations (SA.57928 (2020/N))	58	13.6
COVID-19: Sixth amendment to aid scheme SA.56981	40	12.3
COVID-19: Compensation scheme: directive on fixed cost subsidies for economic activities of nonprofit organizations	37	12.9
COVID-19: Startup aid fund	26	17.4
COVID-19: Prolongation of SA.58360 aid scheme: grants and guarantees from the Lower Austrian Economic and Tourism Fund	14	8.5
COVID-19: Fixed cost compensation under chapter 3.12 of the Temporary Framework for pandemic-related state aid for businesses	13	3.3
COVID-19: Modification of SA.57148 (2020/N): regional support measures (Carinthia, Upper Austria, Styria, Tyrol and Vienna) under the Temporary Framework for pandemic-related state aid	9	0.4
COVID-19: Compensation scheme: directive on fixed cost subsidies for economic activities of nonprofit organizations	8	1.8
COVID-19: Funding from the Lower Austrian Economic and Tourism Fund (SA.58360)	6	5.5
COVID-19: Prolongation of SA.57928 (2020/N): compensation scheme: directive on fixed cost subsidies for economic activities of nonprofit organizations	3	0.4
COVID-19: Aid for Austrian Airlines	1	150.0
COVID-19: Grants from the Lower Austrian Economic and Tourism Fund (SA.100853)	1	0.3
Total	21,531	7,002.1

Source: OeNB (database of master data).