The COVID-19 pandemic and discouraged borrowers among Hungarian companies

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Abstract

An increasing attention has been paid since the millennium to companies who have loan demand but are afraid of refusal. The self-rationing of loan demand is also affected by the coronavirus pandemic according to the economic literature, however, there are only a few empirical studies regarding this topic. Based on the corporate surveys of the Hungarian Development Bank (MFB-INDIKÁTOR) we analyse that to what extent and to which direction did the latent loan demand of the Hungarian companies change as a consequence of the pandemic, which corporate segments reacted more sensitively to the crisis, and whether there is a measurable effect of the negative perception towards the banks to the lending decisions of the companies. On the basis of the results of cross-tabulation analyses the pandemic moderated the fear of loan application only temporarily; the behaviour of older firms, larger companies and the agricultural sector can be considered relatively stable regarding this issue; finally the role of the experiences and in many cases the negative preconceptions about the banks having a long history together play important roles in self-restraint.[2]

KEYWORDS: discouraged borrowers, latent demand for credit, COVID pandemic, corporate behaviour

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The economics literature refers to discouraged borrowers as companies and individuals who have a demand for credit but fear that their application will be refused by the banks, and thus this demand remain latent. These firms have only received attention in the last two to three decades, as they are out of the spotlight: they are not among the banks' lending customers, and there is little data and therefore little research on them. However, the financing problems of start-ups and micro-enterprises were both demanding and the deepening literature on market distortions and expanding questionnaire databases made it possible to research discouraged credit applicants, all of which was given a new impetus by the global economic crisis in 2008.[3]

The coronavirus pandemic, which will go global in 2020, has triggered an unprecedented shock to the global economy. In this new environment, the relation to finance has changed: firms have seen an increase in the value of quickly available funds to deal with liquidity problems, and banks have seen new lending risks. In terms of latent demand, this has had two opposite effects: on the one hand, for some firms in need of credit but fearing rejection by financial institutions, it has become necessity instead of option to raise external funds, and on the other, the increase in risks around the return on loans has increased the fear of other firms that their loan applications will be rejected by more cautious financial institutions. The former has reduced, the latter has increased, business uncertainty.

Following a review of the relevant literature, this paper investigates whether the overall share of discouraged credit applicants among domestic firms (including those in need of credit) has increased by 2020 compared to 2019. We will analyse whether this trend has also held in narrower segments of firms and whether the differences that existed before the pandemic have changed since the onset of the pandemic. Finally, we also review the role of firms' (sometimes deep-rooted negative) views of financial institutions in self-imposed decrease in loan demand following the outbreak.

Theoretical overview

Economic crises and discouraged credit applicants

In order to examine the impact of the coronavirus pandemic, we first break down the causes of self-imposed credit constraints into two groups: one group focuses on firm characteristics (e.g. firm size, scope of activity, age of the firm, etc.), while the

3 An overview of the main issues and results of the literature can be found in Hungarian in Szabó (2019).

other group – of particular importance for our analysis – focuses on external factors.[4] The latter was based on the assumption that the economic environment and the business cycle have a significant influence on the level of voluntary credit constraints. The literature on the impact of economic crises on corporate demand for credit can be broadly divided into two categories (*Cowling et al.,* 2021). According to one view, the number of loan applications rejected by financial institutions increases in a crisis period, which reduces confidence in the banking system and increases caution about starting the loan application process. However, another group of empirical work suggests that crises reduce the ability of firms to generate income, thus increasing the need for external financing to improve the financial situation and thus reducing discouragement.[5]

Among the shocks, the 2008 global economic crisis has received particular attention for its impact on voluntary restrictions on credit demand[6]. Some of these approaches focus on the deterioration of corporate sales opportunities (i.e. the credit demand side) as one of the factors contributing to uncertainty, while other analyses also focus on the role of credit supply-side constraints. *Kinghan et al.* (2018) in Vietnam linked uncertainty to the evolution of the profitability of business investment and its correlation with the fluctuations in business cycles by examining the period 2005-2015. *Ferrando and Mulier* (2022), focusing on the euro area and based on data from 2010-2017, and *Anastasiou et al.* (2022), which also concentrates on the euro area and covers the period 2009-2018, show that self-imposed credit constraints on firms have increased as the economic outlook has deteriorated. At the same time, the role of banks is highlighted as one of the reasons for this uncertainty by *Siedschlag et al.* (2014), who point out that in a recessionary period, lending constraints imposed by financial institutions tighten: more cautious financial institutions require relatively more collateral and are sensitive to the evolution of the loan-to-deposit ratio, further increasing the uncertainty of firms on the demand side, which is already heightened by the reduction in investment opportunities and increased market uncertainty. *Cowling et al.* (2012) reaches a similar conclusion: the 2008 crisis has led to a decline in bank activity and a reduction in corporate borrowing plans. The findings of *Ferrando and Mulier* (2015) are also consistent with the previous ones: a more conservative banking system in the euro area during the crisis, which tightened lending rates, and deteriorating returns on investment both reduce firms' willingness to borrow. *Rostamkalaei* (2017) shows that the credit squeeze of the 2008 crisis left such a deep mark on UK SMEs that some of them subsequently held back their demand for credit for fear of being turned down.

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4 For an overview, see Szabó (2019).

5 However, we note that the literature on credit supply is consistent: the lending policy of a banking system that is considered to be conservative in operation traditionally becomes more cautious in times of crises and market uncertainty, thus reducing credit supply (Cowling et al., 2021).

6 The globalisation of the crisis, the long-term effects of the crisis on credit markets and the growing international databases supporting the analyses have all played a role.

A further relevant theme for our analysis is the limitation of credit demand beyond what is justified by external processes. *Christensen and Hain* (2014) point out that self-imposed credit demand restraint to adjust to the tightening credit supply in the wake of the 2008 crisis can easily become disproportionate in the absence of a brake on its excesses. *Rostamkalaei* (2017), looking at the recovery period following the 2008 crisis, argues that while the willingness of financial institutions to lend recovered relatively quickly, the proportion of firms avoiding the credit market for fear of rejection remained relatively high. *Cowling et al.* (2012), UK research along other dimensions (e.g. by gender, culture and firm size) found that different segments of firms enter the credit market with different intensity in the upturn and reduce demand in the downturn. Women-owned firms are also less likely than other firms to raise debt during the economic cycle and recession.

Pandemic and voluntary credit demand restriction

The COVID-19 pandemic is a special shock – a so-called black swan phenomenon (*Taleb* 2007) – with the unexpected emergence of the virus, its unpredictable effects and its high virulence. While other shocks can be prepared for by risk management due to their predictable or more or less regular occurrence, very rare crises with severe consequences leave a deeper imprint on the mind, as they reinforce the awareness that they can occur at any time, their impact is less predictable and thus more difficult to protect against (see e.g. *Kozlowksi et al.* 2020).

The analysis of COVID also points in two opposite directions. One view is the faltering demand for credit induced by the deteriorating economic outlook, which is confirmed by several studies. According to the Central Bank of Ireland, the proportion of firms in the island that opt for voluntary credit constraints will gradually and steadily increase from the beginning of 2020, driven by deteriorating expectations of Irish firms about their own and the overall economic environment (*Durante and McGeever,* 2022). The study by *Menéndez and Mulino* (2022), which focuses on Spain, also illustrates that from the second half of 2020 until the study is completed (mid-2022), Spanish firms do not apply for credit mainly because of the expected rejection, which is clearly linked to COVID.

In the context of the COVID pandemic, *Aristei and Angori* (2022), in their paper on the euro area, point out that a credit failure experience may reduce firms' borrowing in the longer run, with particularly severe macroeconomic consequences in times of pandemics. However, this fear can be addressed by closer contact with banks. In particular, they found that smaller firms (micro and small enterprises) are more prone to turn away from the credit market after a negative experience.

The literature on the effect of the pandemic in increasing demand for credit and reducing discouragement is scarce. *Cowling et al.* (2021) analysis of UK companies for the period 2018-2020[7] shows that some of the firms that had previously been rejected for credit during COVID and thus became hesitant, due to the sudden and unexpected increase in demand for finance, reconsidered their previous reluctance to apply for credit and became more confident in the credit market in order to survive. At the same time, their analysis also shows that because of previous rejections in their credit history, these firms were treated as problematic companies and were at a disadvantage in competing for funds during the pandemic.

Empirical analysis

Methodological background

The empirical analysis is based on the Hungarian Development Bank's (MFB-INDIKÁTOR) questionnaire-based enterprise surveys conducted between 2019-2021. The surveys took place in the autumn (9 October – 25 November 2019, 9 November – 8 December 2020 and 3 November – 1 December 2021). The first survey covers the situation before the pandemic, the second data collection was carried out during the second wave (18 July 2020 – 16 February 2021). At the time of the data collection (Q4 2020), domestic GDP was declining by 3.3% year-on-year and vaccines were not available in Hungary. Despite the fourth wave of the pandemic, the third survey coincides with the bounce-back period: on the one hand, the Hungarian economy expanded (by 7.4% and 2.5% respectively) on an annual and quarterly basis, on the other hand, more vaccines were available, vaccination coverage reached a high level, and the number of people receiving the third vaccination in Hungary accelerated.

In each survey, 4032, 4619 and 5198 companies participated respectively. Responses by firm size, regional location and sectoral classification (three dimensions) were weighted by the OPTEN firm database in a 100-step iteration, so that the responses of each survey are well representative of domestic partnerships by region, firm size and sector, making the results comparable without bias.

The main question asked in our survey is about companies' decision to borrow ("Have you applied for investment loans in the last 12 months?"), which respondents were asked to rate in four ways:

- applied;
- did not apply because it was not needed;
- did not apply because it was thought that it will be rejected;
- did not apply for any other reason.

7 According to their research, three quarters (72.4%) of UK firms that were turned down before the COVID period were still reluctant to take out a loan during the pandemic, and only a quarter (27.4%) had changed their previous rejection stance by 2020.

Among the analytical methods, we relied on tools capable of handling nominal responses.

Research hypotheses

Our first question focuses on how the pandemic and the radical deterioration in economic conditions changed the self-limitation of domestic firms' borrowing between 2019 and 2020, and whether there was a reversal by the end of 2021 as the pandemic eased. The international empirical evidence is mixed, as presented earlier, so we expect a relatively larger number of analyses to support the finding that the pandemic has caused an increase in uncertainty.

Hypothesis 1: Following the pandemic, the share of firms hesitant to apply for credit rose by the end of 2020, and then fell a year later, so that by 2021 the corporate sector had not moved into excessive credit constraints.

We then focus on a narrower group in the corporate sector, namely the credit-constrained firms (companies that do not seek credit because it is irrelevant are excluded) and examine how the COVID and the subsequent normalisation of the situation have affected the hesitancy to borrow in this segment. The aim is to extract the effect of changes in credit demand from the results of the first hypothesis test.

Hypothesis 2: As a result of the pandemic, the proportion of firms potentially seeking credit that were pessimistic about applying for it increased by the end of 2020, and the voluntary credit restriction rate decreased a year later.

The third set of questions asks whether the results of the first question can be nuanced in terms of firm size, sectoral position, regional location, etc.

Hypothesis 3: The pandemic has hit the domestic corporate sector so hard that it has left a general impression of discouragement in the domestic corporate sector.

The fourth area of focus is whether differences in size, sector, age and innovation activity persisted between firms at the peak of the pandemic and during the recovery.

Hypothesis 4: The pandemic has not changed the differences between the various company segments.

Our fifth hypothesis is that for firms that need credit but prefer to distance themselves from financial institutions, the fear of failure is a difficult barrier to overcome.

Hypothesis 5: Regardless of the pandemic, a deep-rooted aversion to financial institutions has played a decisive role in self-rationing of the companies' loan demand.

Empirical results

To test the first hypothesis, we examined whether firms had applied for investment loan in the 12 months prior to the data collection in surveys for three consecutive years (2019-2021). In the comparison, each year is the independent variable (the three years correspond to the pre-crisis period, the trough of the crisis and the recovery period) and the responses to the credit application are the dependent variables. We first examined whether the variables were independent of each other by arranging the responses in a 3x4 cross-tabulation. The Pearson's χ-square (chi-square) test is valid, as there are at least 5 elements in each cell. The statistical test shows that the variables are not independent of each other, and the relationship between them is significant at the 1% significance level. We then examined the adjusted standardised value (ASR) of the observed and estimated cell deviations (residuals) in the rows containing the unsure credit request to identify which cells have outliers and which direction of deviation they reflect (here, values greater than 2 and less than -2 indicate significant deviation). The share of firms opting for voluntary credit limitation was 16.4% at the end of 2019, falling to 12.9% in one year and rising to 16.2% at the end of 2021 (Table 1). Based on the adjusted standardised residuals, significantly fewer domestic firms opted for credit demand restraint autonomously at the end of 2020 than a year earlier or 12 months later, which could be interpreted as a sign that COVID has eased – but only temporarily – the self-imposed credit constraints. Thus, overall, the first hypothesis can be rejected.

Table 1. Investment loan applications in the 12 months preceding the MFB-INDIKÁTOR surveys (2019-2021)*

	2019	2020	2021
Applied for credit	575	594	670
Did not apply because it was not needed	2 687	2 804	3 054
Did not apply because it was thought that it will be refused	663	575	819
Did not apply, for other reasons	108	487	498
Total	4 033	4 460	5 041
	2019	**2020**	**2021**
Did not apply because it was thought that it will be refused / all respondents	16.4%	12.9%	16.2%
Adjusted standardised residual	2.6	-5.2	2.6

* weighted responses

Source: own calculation based on MFB-INDIKÁTOR surveys

We also examined the strength of the relationship by first comparing the responses in 2019 and 2020, and then in 2020 and 2021. The cross-tabulation is asymmetric (we want to avoid interchanging the dependent and independent variables), so the Lambda, Goodman and Kruskal tau and the uncertainty coefficient are suitable indicators to show the strength of the relationship. With the new variable (import of the survey year), each indicator shows an improvement of 0-0.3% in both the 2019-2020 and 2020-2021 categorisations. Overall, therefore, although the inclusion of the time factor has a significant effect on uncertainty, its role is minimal.

The change in the share of discouraged firms is also compared with the results of the Survey on the Access to Finance of Enterprises (SAFE), a joint European Commission and European Central Bank (ECB) survey of enterprises in Hungary, which collects six-monthly data on borrowing experiences. Hungary, as an EU Member State outside the euro area, is only ever included in the autumn rounds of the bi-annual surveys, with around 500 selected firms responding to the questionnaires in September and October. In the 2019-2021 surveys, the number and proportion of firms that were undecided evolved as shown in Table 2. The EU survey also shows, based on both unweighted and weighted data, that the share of firms opting for voluntary credit limitation in Hungary decreased slightly between 2019 and 2020, and then increased again in 2020.

Table 2. Discouraged firms in Hungary according to SAFE surveys (2019-2021)*

Time of data recording	Autumn 2019	Autumn 2020	Autumn 2021
Sample item number	500	501	500
Number of companies that consider loan relevant	139	125	129
Number of firms (among all firms) not applying for loan as it is thought that the application would be rejected	13	8	11
Number of firms not applying for loan as it is thought that the application would be rejected (among firms considering credit relevant)	7	4	9
Proportion of firms that do not apply for credit for fear of rejection compared to total firms	2.6%	1.6%	2.2%
Proportion of firms that do not apply for credit for fear of rejection compared to firms that consider credit relevant	5.0%	3.2%	7.0%
Proportion of firms that do not apply for credit for fear of rejection compared to firms that consider credit relevant **	6.4%	2.3%	6.2%

* unweighted data, ** weighted data

Source: ECB (2022a, 2022b)

Based on the database, the international positioning of the domestic experience is also possible (Table 3): at EU level, the overall change in the SAFE surveys is smaller than in Hungary, but similar to the Hungarian one. At the member state level, however, the picture is mixed: among the benchmark countries, the share of discouraged firms increased steadily between 2019 and 2021 at a minimal pace in Poland, and slightly higher rates in the Czech Republic and Romania – raising the question of excessive credit demand suppression in these member states. The Slovak data series follows the domestic trend, while the German data series, for example, is the exact opposite of the Hungarian trend. As regards the structure of the SAFE database, it should be pointed out that the sample size is lower in smaller member countries and and higher in larger, but the number of items[8] and the relatively low proportion of voluntary credit restrictions mentioned by at most a few dozen firms among the respondents allow at most cautious conclusions to be drawn.

Table 3. Percentage of firms that do not need credit for fear of rejection compared to firms that consider credit relevant in some EU countries (2019-2021)*

	2019	2020	2021
EU (2019: EU-28, 2020-2021: EU-27)	4.3%	3.9%	4.7%
Germany	2.9%	4.1%	2.7%
Czech Republic	2.7%	5.1%	5.6%
Poland	5.4%	5.7%	6.4%
Romania	6.2%	7.8%	10.3%
Slovakia	4.5%	3.4%	6.6%
Hungary	6.4%	2.3%	6.2%

* weighted data

Source: ECB (2022b).

The second hypothesis focuses on firms in need of credit. Three groups were selected on the basis of the MFB-INDIKÁTOR questionnaire:

- firms applying for credit in the 12 months preceding the survey;
- fearing rejection for borrowing in the 12 months prior to the survey;
- firms in need of credit, but not having applied for credit for any other reason in the 12 months preceding the date of the survey. Such reasons may include the refusal of collateral requested by banks; objections in principle to credit; lack of information about credit; lack of a suitable credit product; or a high degree of uncertainty.

From the above categorisation, the second group is the most relevant for us. In this hypothesis test, too, the independent variable is the year and the dependent variable is the response to the loan application. We first examined the independence of the variables from each other by arranging the responses in a 3x3 cross-tabulation. The Pearson's χ-square test for the number of elements per cell is also fulfilled. The test also shows that the variables are not independent of each other, with a significant

8 1,220 German, 945 Polish, 501-501 Czech and Romanian and 341 Slovak companies are included in the autumn 2021 sample.

relationship of 1%. The share of firms opting for self-imposed loan demand suppress among corporations requesting credit was 49.3% at the end of 2019, falling to 34.7% at the end of 2020 and rising to 41.2% at the end of 2021 (Table 4). Based on the adjusted standardised residuals, significantly fewer domestic firms decided to reduce loan demand autonomously at the end of 2020 than a year earlier or a year later, which could be interpreted as a temporary reduction in the proportion of firms opting for self-limitation due to the coronavirus pandemic, followed by a return to the higher levels of pessimism seen before the pandemic as the economic and epidemiological outlook improved. Based on the results, we therefore reject the second hypothesis.

Table 4. Investment loan applications among firms in need of credit in the 12 months preceding the MFB-INDIKÁTOR surveys (2019-2021)*

	2019	2020	2021
Applied for credit	575	594	670
Did not apply because it was thought that it will be refused	663	575	819
Did not apply, for other reasons	108	487	498
Total firms in need of credit	1 346	1 656	1 987
	2019	**2020**	**2021**
Did not apply because it was thought that it will be refused / all respondents	49.3%	34.7%	41.2%
Adjusted standardised residual	7.0	-6.6	0.0

* weighted data

Source: own calculation based on MFB-INDIKÁTOR surveys

Here too, the strength of the relationship was examined by first comparing the results for 2019 and 2020, and then for 2020 and 2021. Again, the responses are interpreted on a nominal scale and the cross-tabulation is asymmetric, with test statistics used to show the strength of the relationship showing that the new variable (the introduction of the survey year) leads to an improvement in categorisation of between 1.1% and 3.7% for each indicator between 2019 and 2020, and a more accurate categorisation of between 0.2% and 0.8% between 2020 and 2021. Overall, while the effect of time on uncertainty is significant, the strength of the effect is very small. The low explanatory power of the first two hypotheses will be discussed again after the fourth hypothesis.

Before reviewing the third hypothesis, we present the evolution of responses in each MFB-INDIKÁTOR survey (Table 5). In testing the hypothesis, we follow the same methodology as we did earlier. Preceding the presentation of the results in more depth, it should be noted that the trend for the whole corporate sector, broken down into smaller segments, is mostly the same as indicated above: by 2020, the share of discouraged firms temporarily declined, before correcting by 2021. However, in several groups of firms this trend is not significant, and in some cases the situation is very different.

Table 5. Proportion of discouraged credit applicants in different segments of the MFB-INDIKÁTOR surveys (2019-2021)*

	Proportion of discouraged credit applicants			Adjusted standardised residual		
	2019	2020	2021	2019	2020	2021
Sector						
Agriculture	9.8%	10.9%	11.6%	-0.5	0.0	0.5
Industry	18.2%	14.8%	16.0%	2.0	-1.6	-0.3
Service sector	16.2%	12.3%	16.6%	1.9	-5.2	3.3
Company size						
Micro firm (0-9 persons)	17.7%	14.1%	18.1%	1.8	-4.9	3.0
Small business (10-49 people)	12.7%	9.4%	9.1%	2.5	-1.1	-1.3
Medium-sized company (50-249 people)	7.5%	4.2%	4.7%	1.3	-0.7	-0.5
Large enterprise (above 250 staff members)	4.3%	3.8%	9.1%	-0.4	-0.6	0.9
Region						
North Hungary	13.2%	11.5%	15.5%	-0.2	-1.2	1.4
Northern Great Plain	17.0%	9.3%	13.6%	2.6	-2.9	0.3
Southern Great Plain	15.4%	13.1%	14.0%	0.9	-0.8	-0.1
Central Hungary	17.8%	14.8%	17.5%	1.6	-2.9	1.4
Central Transdanubia	16.2%	12.1%	17.6%	0.5	-2.2	1.7
Western Transdanubia	12.5%	8.1%	14.9%	0.4	-2.8	2.3
Southern Transdanubia	15.4%	12.2%	15.3%	0.6	-1.3	0.7
Municipality						
Budapest	17.1%	14.2%	16.4%	1.4	-2.2	0.7
County seat	13.7%	9.1%	14.0%	1.5	-3.6	2.1
City	16.5%	13.2%	16.8%	1.1	-2.8	1.6
Village	18.2%	14.5%	17.8%	1.2	-2.2	1.0
Foundation						
–1990	10.1%	8.9%	7.1%	0.9	0.2	-1.1
1991–2000	11.9%	9.0%	13.9%	0.2	-3.8	3.5
2001–2008	14.4%	12.0%	16.9%	-0.4	-3.0	3.1
2009–2015	21.0%	15.8%	18.3%	3.0	-2.9	0.0
2016–2017	26.8%	20.7%	23.8%	1.7	-1.8	0.1

	Proportion of discouraged credit applicants			Adjusted standardised residual		
	2019	2020	2021	2019	2020	2021
Past 5 years of borrowing experience						
Applied for credit and the full amount was received	6.9%	4.1%	5.4%	2.5	-2.5	0.0
Applied for credit but only a part amount was received	19.5%	17.8%	19.8%	0.2	-0.6	0.4
Applied for credit but was refused	42.2%	38.9%	43.1%	0.2	-0.8	0.6
Did apply, but was offered terms he did not accept	40.4%	15.8%	26.7%	4.3	-4.0	-0.4
Did not apply for credit since it was not needed	5.1%	4.7%	5.6%	-0.2	-1.1	1.2
Did not apply because it was thought that it will be refused	67.8%	65.0%	70.0%	0.0	-1.5	1.4
Corporate perception of planned investment for the next year from an innovation perspective						
The planned investment is innovative	19.5%	13.7%	17.8%	2.2	-3.0	0.6
The planned investment is not innovative	16.8%	10.8%	14.2%	2.5	-2.7	0.1

* weighted data

Source: own calculation based on MFB-INDIKÁTOR surveys

- At sectoral level, only the services sector, where the majority of firms are located, will experience a temporary and significant decline in 2020. In the agricultural sector, on the other hand, the share of self-limiting firms gradually increased (but remained below the national average) between 2019 and 2021. This is due to the fact that agricultural firms are relatively demanded bank clients, due to their relatively favourable collateralisation capacity and relatively stable demand for agricultural products, independent of the economic cycle, so that the challenges of recent years have caused less shocks in the sector, and thus the share of firms opting for voluntary restrictions on borrowing is relatively low and stable.
- When looking at the database by size, only micro firms (the largest group in terms of number) show a significant decrease and then an increase in the share of firms that are discouraged, while the change is not significant in the larger size categories. The smallest firms tend to be more sensitive to economic cycles due to their scarce reserves, and banks traditionally prefer larger firms partly as a result of their greater ability to provide collateral and partly as a result of cost/profit calculations per loan transaction, so the proportion of micro firms choosing to discourage borrowing is much higher in the three years under review, and the pandemic has made some self-constrained firms more open to borrowing than before.

- While the picture is mixed regionally, the impact of COVID and the recovery period on firms' caution in borrowing was general by type of municipality. The same can be said of the innovative nature of the investments planned by firms.
- In terms of age, the group of firms established before 1991 departs from the national trend: the share of hesitant actors is consistently low and even declined marginally across the three surveys until 2021. This is because these firms are also relatively experienced in banking.
- Looking back over a longer horizon (5 years), two groups of credit market experiences stand out, where credit market uncertainty has significantly decreased by 2020. One of the companies that applied for investment loan in the 5 years prior to the surveys but found the terms offered unacceptable. In their case, the share of those opting for self-imposed loan demand restraint decreased significantly (2019: 40.4%, 2020: 15.8%), which may be explained by the fact that while in 2019 the previous negative experiences were a brake on loan applications, the need for liquidity caused by the pandemic overrode this inhibition. Firms in the other segment also approached financial institutions with their loan requests in the 5 years prior to the survey, but they accepted the offer and received the full amount requested. Among them, the share of those opting for voluntary credit limits was much lower in 2019 (6.9%), but this will decrease further in 2020 (4.1%). In this group, it was the experience of having borrowed successfully in the past that may have solved the self-limitation during the pandemic. The firms that opted for voluntary decrease of loan demand in the 5 years preceding the survey are specific: the share of firms opting for the same option in 1-year retrospective surveys has remained stable between 65% and 70%, indicating that the position of firms that have been pessimistic for years has remained stable regardless of the pandemic period. Finally, we are also interested in the firms that received partially or completely rejected loan applications in the 5 years prior to each survey: in these two groups, the pandemic did not lead to a significant increase in loan applications, which is consistent with the findings of *Aristei and Angori* (2022), i.e. the experience of credit failure discourages firms from approaching credit institutions in the longer run.
- Based on the dimensions reviewed, we cannot accept the third hypothesis either, due to the fact that several firm segments reacted differently to the pandemic than the national trend.

For the fourth hypothesis, we rely on Table 5 presented above:[9]

- In both 2019 and 2020, the proportion of firms opting for voluntary credit limits decreased as firm size increased, in line with international results. By 2021, the change is such that the share of large firms that are hesitating has jumped to the point where it is equal to the share of small firms, but this is not significant due to the relatively low number of large firms.

9 For an overview of the results, see Szabó (2019).

- A characteristic of all three periods is that as firms age, self-imposed loan demand restraint decreases, which supports the hypothesis that deepening relationships with financial institutions and years of experience in credit management may mitigate the reluctance to apply for credit. This result is also in line with the findings of the international literature.
- We were able to capture the attitude of companies towards innovation in the survey by asking whether the investment planned by respondents in the year following the survey is innovative or not according to the respondents. This has allowed us to roughly categorise between 30-40% of firms (companies planning to invest) in each year from an innovation perspective. The results show that the proportion of firms that were discouraged was consistently higher among firms planning to invest in innovation. This is both consistent with the Danish analysis of *Christensen and Hain* (2014) and in contrast to the findings of *Hernández-Cánovas et al.* (2014) with results from Spain
- Overall, we can say that the pandemic did not change the order of different corporate segments regarding voluntary loan demand decrease, i.e. the hypothesis can be accepted.

We have previously indicated that we will address the low explanatory power of the first two hypotheses. To test this fifth hypothesis, we examined the longer-term borrowing experience of 5 years, cross-tabulated with the 1-year hesitancy. The calculation shows that in 2019, 47.2% of unsure loan applicants had not applied for a loan in the previous 5 years for fear of being turned down, rising to 50.3% in 2020 and 51% in 2021. This indicates that, on the one hand, about half of the firms with voluntary credit limits, although they would need a loan, are still keeping away from banks on a permanent and conscious basis, and on the other hand, this proportion is slowly increasing over the three surveys. A relationship between the two variables is found at the 1% significance level for all three years of the study. In terms of the strength of the relationship, the corresponding indicators show a medium-strong correlation: the results show that medium-term credit market experience affects self-limitation over one year by between 23% and 34%. As the first and second hypotheses were tested, we found that self-imposed loan demand restraint decreased in 2020 and increased again in 2021, and all types of indicators of the strength of the relationship reached their maximum in 2020 (table 6), so that at the peak of the coronavirus pandemic, the uncertainty was mainly reduced among those who had not been discouraged from borrowing 5 years earlier, and by the end of 2020, voluntary credit constraints were mainly reduced among those who had a similar attitude towards borrowing within 5 years. The fifth hypothesis is therefore accepted overall.

Table 6. Indicators measuring the strength of the relationship in cross-tabulations comparing discouragement and credit market experience in the last 5 years (2019-2021, dependent variable: discouragement in the year prior to the survey, independent variable: credit market experience in the 5 years prior to the survey)

	2019	2020	2021
Lambda	0.25	0.32	0.29
Goodman and Kruskal tau	0.23	0.31	0.29
Uncertainty coefficient	0.29	0.34	0.31

Source: own calculation based on MFB-INDIKÁTOR surveys

Summary

The coronavirus pandemic has also had a serious impact on corporate borrowing plans, with various restrictions, changes in production and sales conditions, rethinking of investment plans, deterioration in liquidity and general uncertainty. On the one hand, the need for external financing has typically increased, while on the other hand, the tightening of credit supply and the deteriorating financing conditions have overshadowed the prospects for access to credit. Among firms that were discouraged from borrowing because of an expected rejection, the former factor mitigated this caution, while the latter increased it.

In recent years, the share of credit-constrained firms in the total corporate sector in Hungary has been between 2-3% according to ECB surveys and between 13-16% according to MFB surveys. This difference is due to the fact that the ECB's questionnaire asks about borrowing experiences for six months, while the MFB's questionnaire asks about borrowing experiences for one year, and thus the latter is more likely to have borrowing intentions. Both sets of data show, however, that the share of firms that suppressed their demand for credit for fear of failure temporarily declined at the height of the pandemic and then rose to pre-pandemic levels a year later. The results show that, overall, the survival instinct was stronger among firms in 2020 than the disincentive to enter the credit market due to deteriorating credit conditions. As discouragement at sector level returned to pre-virus levels by 2021, when the situation returned to normal, the aversion to banks was only temporarily alleviated. Our final hypothesis explored the inertia of deep-seated resentment towards credit institutions on firms' decisions, estimated at 23-34% over the last three years.

We also made searches that which segments' reactions differed from the national level. These include agribusinesses, firms with rigid financing relationships and firms with a long history of suppressed credit demand, which have in common that the pandemic has not fundamentally altered the voluntary restrictions on credit demand. The group of firms aged 30 years or more is a special case, where the crisis has even slightly increased the already relatively strong confidence in banks.

The analysis also showed that the pandemic and the subsequent recovery did not change the characteristics of the smaller segments, i.e. that, for example, as firm size grows and the age of firms increases, there is a higher rate of self-limitation in applying for credit. ■

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