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by Danny Leung

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Characteristics of businesses that closed during the COVID-19 pandemic in 2020

by Danny Leung

Abstract

This article compares the characteristics of employer businesses that were closed by September 2020 and remained closed as of November 2020 with those of employer businesses that were active before the onset of the COVID-19 pandemic in February 2020. Characteristics related to the risk of closure are examined, such as business size, age, indebtedness, liquidity and profitability. Based on these characteristics, the risk of closure is estimated for each business. It is found that recently closed businesses are more likely to have a lower estimated risk of closure than those that closed earlier in the pandemic. This suggests that even larger businesses with stronger financial characteristics (based on pre-pandemic financial statements) could be at risk of closing as the pandemic continues.

Author

Danny Leung works in the Economic Analysis Division, Analytical Studies Branch, at Statistics Canada.

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Introduction

The COVID-19 pandemic has had a large impact on Canadian businesses. The Canadian Survey on Business Conditions conducted in September and October 2020 found that almost two-thirds of businesses had laid off half or more of their workforce since the beginning of the pandemic; roughly one-third did not know how much longer they could operate before more staff cuts or closure had to be considered if demand did not recover. This raises the question of what these firms are and whether they differ from those that closed early on in the pandemic.

A large number of businesses closed at the onset of the pandemic. New experimental estimates of monthly business openings and closures[1] show that in April 2020 alone, more than 100,000 employer businesses (13.6% of active employer businesses in February) closed. These business closures contributed to 30% of job losses that month.[2] Although many businesses have reopened and the pace of closures has slowed, there were still 5.2% fewer active employer businesses in the economy in September 2020 compared with February 2020.

Neither the Canadian Survey on Business Conditions nor the statistics on business openings and closures provide information on the characteristics of businesses that have closed. Using new data on closures linked to administrative data on the past financial positions of firms, this article compares the characteristics of businesses that were active in February 2020 with the subpopulation that were closed by September 2020 and remained closed as of November 2020.[3] It also examines how the pre-pandemic characteristics of closed businesses vary depending on when those firms were last active.

This paper complements the work of Fortier-Labonté (2021) that tracks the number of businesses filing for insolvency as well as their financial position before the pandemic. Only a fraction of businesses that close file for insolvency. While corporate insolvencies are measured in the hundreds per quarter, business closures are measured in the thousands per month.

Roughly 100,000 businesses that were active in February 2020 were closed by September and remained closed as of November. They tended to be younger and have fewer employees, less assets, more debt (measured by debt-to-asset ratio) and less liquidity (measured by current-asset-to-current-liabilities ratio), and were less profitable (measured by return on assets and profit margins) than all active businesses in February 2020. Given the many dimensions by which to measure a business's ability to weather the pandemic, the article develops a summary measure of the risk of closure. Businesses that closed at the onset of the pandemic were more likely to have a higher risk of closure than businesses that closed more recently, in September. This finding highlights the possibility that stronger businesses may close as the pandemic continues.

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1. In the experimental estimates, openings are defined as businesses with employment in the current month and no employment in the previous month, while closures are defined as businesses that had employment in the previous month but no employment in the current month. See Lafrance-Cooke, Macdonald and Willox (2020) for more details.
2. See Lafrance-Cooke (2021).
3. At the time of writing, November 2020 data were the latest available.

Characteristics of closed businesses

According to the data that underlie the estimates of monthly openings and closures, roughly 12% of businesses that were active in February 2020 were closed by September 2020 and remained closed as of November 2020.[4] Many of these closures occurred in the first two months of the pandemic (Chart 1). Of the businesses that were active in February but closed by September and remained closed as of November, 22.7% were last active in February and another 21.2% were last active in March. The rate of closures diminished over the summer, as only 5.0% of businesses that were closed by September were last active in July. Heading into the fall, this share increased again, with 12.6% of businesses closed by September being last active in August.[5]

Compared with all active employer businesses in February 2020, those that were closed by September and remained closed as of November are different in many respects. Businesses that were closed by September were more likely to be recent entrants that started employing workers in 2019 or in the first two months of 2020 (Table 1). Of the businesses that were closed by September, 31.4% were recent entrants, compared with 11.4% for all businesses. Businesses that were closed by September were also much smaller in terms of number of employees, at 28.9% the employment size of all active businesses.

Chart 1
Distribution of closed businesses[1] by month last active
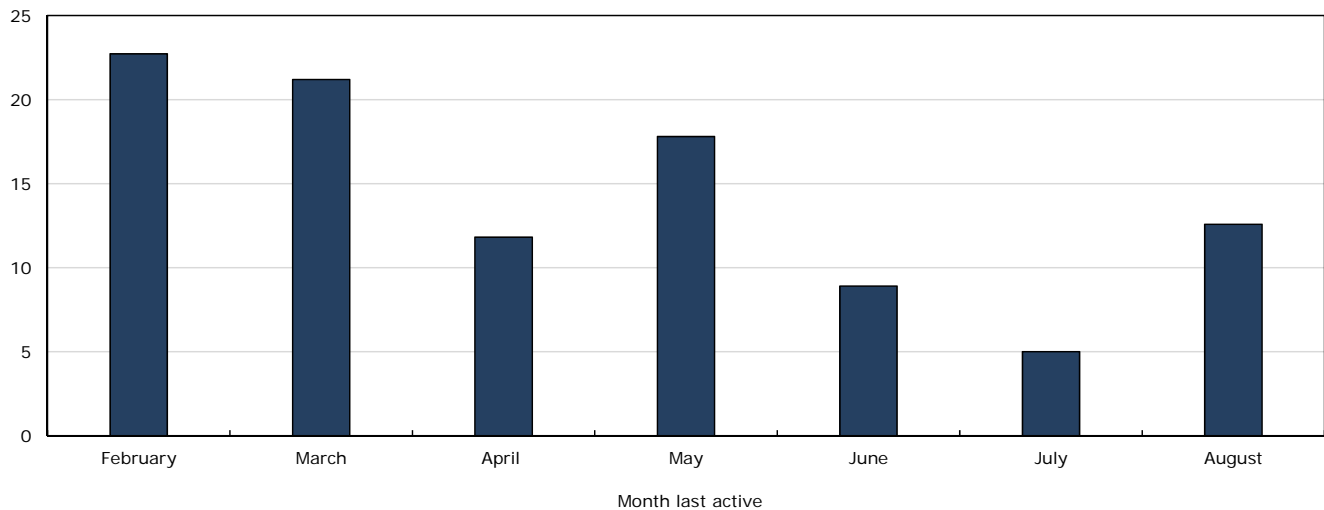
percent

Month last active

1. Active businesses in February 2020 that were closed by September 2020 and remained closed as of November 2020.
Source: Statistics Canada, author's calculations.

The financial characteristics of businesses can be compared by linking data on openings and closures to administrative data on business financials from 2018. Businesses that were closed by September 2020 were not only smaller in employment size than all active businesses in February 2020, they also had a smaller asset size. The median asset size of businesses that were closed by September was 38.0% of the median asset size of all active businesses in February. Regarding financial position, businesses that were closed by September were more indebted (higher median debt-to-asset ratio—0.78 compared with

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4. The numbers in this article cannot be compared directly with the estimates of monthly business openings and closures because the article focuses on the cohort of businesses that were active in February 2020. See Data and methodology section for more details.
5. Seasonal businesses are identified and omitted from the calculation of these results. See Data and methodology section for more details.

0.59) and less profitable (lower return on assets[6]—0.05 compared with 0.10—as well as lower profit margin[7]—0.03 compared with 0.06) and had less liquidity (lower current ratio[8]—1.50 compared with 1.80).

The characteristics of businesses that were closed by September differed depending on when they were last active. Compared with businesses that were last active in August, businesses that closed in March 2020 and remained closed had lower average employment (3.7 versus 4.9), a smaller median asset size ($99,00 compared with $163,100), a higher debt-to-asset ratio (0.77 versus 0.66), a lower return on assets (0.06 versus 0.08) and a lower current ratio (1.49 versus 1.68).

Table 1

Characteristics[1] of all businesses that were active in February 2020 and those closed by September[2]

| | | Businesses closed by September | | |
	All	**All**	**Last active in March**	**Last active in August**
		percent		
Entrant	11.4	31.4	34.4	29.0
		employees per business		
Average employment	16.3	4.7	3.7	4.9
		ratio		
Median debt-to-asset ratio	0.594	0.779	0.773	0.662
Median return on assets	0.099	0.052	0.056	0.077
Median profit margin	0.056	0.031	0.037	0.046
Median current ratio	1.799	1.501	1.490	1.680
		dollars		
Median assets	346,000	132,000	99,000	163,000

1. Entrant status and employment size of businesses are calculated using information up to 2020, while the financial variables are from 2018.

2. Closed by September 2020 and remained closed as of November 2020.

Source: Statistics Canada, author's calculations.

Business characteristics and the probability of closure

Businesses last active in August 2020 were not necessarily better placed at the beginning of the pandemic than those last active in February 2020. Measurement along a number of dimensions could determine how well-placed a business was. These dimensions could be related, and there may not be a straightforward relationship between them and the overall ability of a business to withstand the impacts of the pandemic. The connection between the debt-to-asset ratio and the probability of closure is an example of a complex relationship (Chart 2).

Chart 2 shows that 8.1% of active businesses in the lowest debt-to-asset ratio decile were closed by September 2020 and remained closed as of November 2020. The closure rate declines to 6.0% for the fourth decile and then subsequently rises to 15.0% for the last decile, which contains businesses with the highest debt-to-asset ratios. Higher closure rates for businesses in the first decile may be related to an

6. Net income before taxes over total assets.
7. Total revenues less total expenses all over total revenues.
8. Current assets over current liabilities.

inability to obtain debt financing and being unable to sustain itself over a period of lower demand. Closure rates decline initially, possibly because the subsequent deciles contain more firms with the ability to obtain debt financing. However, closure rates rise in subsequent deciles as higher debt-to-asset ratios become an indication of a lower ability to maintain debt payments when revenues decline. Businesses in the upper deciles may also be small firms that have high debt-to-asset ratios because of a low level of assets.

Chart 2
Closure rate of businesses[1] by debt-to-asset ratio decile
percent
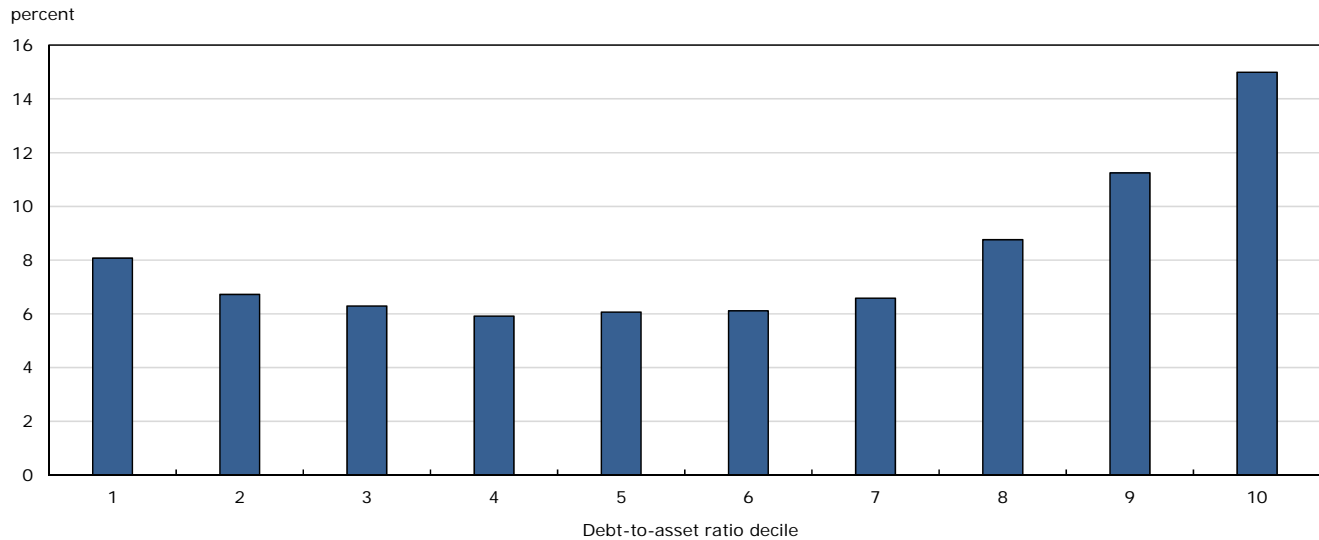
1. Active businesses in February 2020 that were closed by September 2020 and remained closed as of November 2020.
Source: Statistics Canada, author's calculations.

To overcome the issue of non-linearity, multidimensionality, and the fact that not all dimensions may move in the same direction all the time, a probability (risk) of closure was estimated for each business using dimensions[9] presented in Table 1 and controls for industry and province. Specifically, a probit regression model was estimated with an indicator for whether a business closed by September and remained closed as of November as the dependent variable, and the dimensions and controls mentioned above as explanatory variables. To account for non-linearity, a set of categorical variables was developed for each dimension.[10] More details on this approach are presented in the Data and methodology section of the article.

Changes in closed businesses over time

The estimated regression model coefficients were used to calculate a probability of closure for each business. Chart 3 shows how the estimated risk of closure for businesses, based on characteristics from before the onset of the pandemic, has evolved. In Chart 3, the estimated probability of business closure is ranked by quintile and divided between those that were last active early and late in the pandemic. At 49.8%, the share of businesses that closed early in the pandemic (last active in February or March) in the quintile with the highest risk of closure is distinctly higher than the 42.1% for businesses that were last active in July or August. By contrast, only 2.2% of businesses that were last active in February or March were in the quintile associated with the lowest risk of closure. This can be compared with 5.0% for

9. To avoid collinearity, only one measure of profitability (return on assets) was used in the probit regression.
10. Similar to the relationship between the closure rate and the debt-to-asset ratio, there are also non-linearities in the relationships between the closure rate and other financial variables.

businesses that were last active in July or August. These findings suggest that the businesses that closed earlier in the pandemic were more likely to have a higher estimated risk of closure; as the months passed, the share of businesses with a lower estimated risk of closure increased.

Chart 3
Distribution of closed businesses[1] by predicted risk of closure quintile and period last active

percent
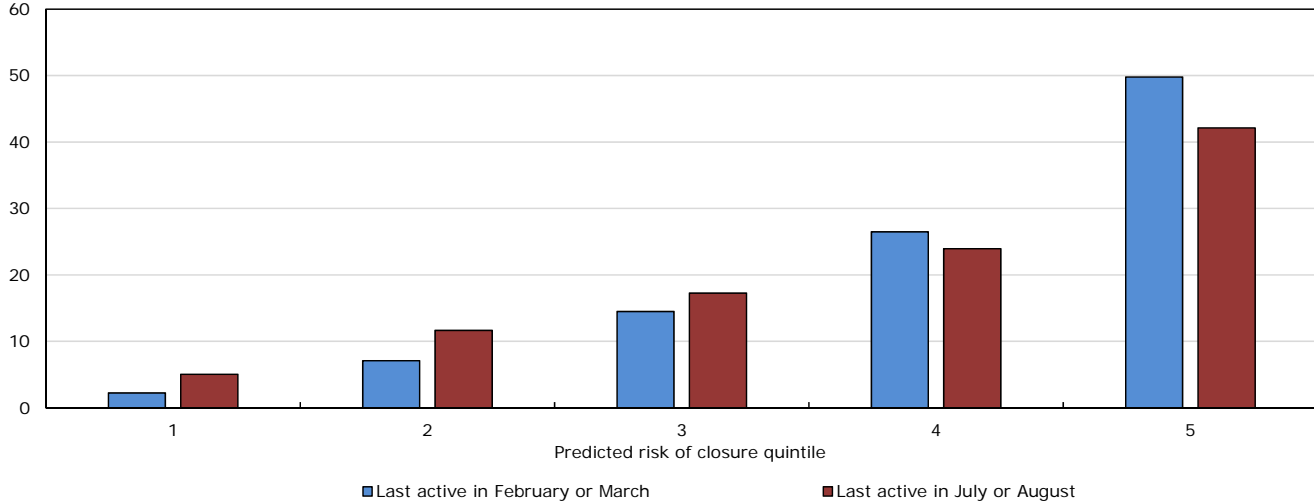
1. Active businesses in February 2020 that were closed in September 2020 and remained closed in November 2020.
**Source**: Statistics Canada, author's calculations.

Although their share has increased, the number of closed businesses with a lower risk of closure may not have increased because the overall number of business closures has declined. Chart 4 further breaks down the distribution of closed businesses by last month active shown in Chart 1 into categories of lower risk, medium risk and higher risk.[11] The contribution of low-risk closures has remained relatively constant over time at around 1.1%, while the contributions of medium- and high-risk closures have declined.

It is possible that closed businesses last active in February are different from those last active in August in ways not considered above. For example, closures that occurred in March are more likely to be permanent than those that occurred in September, although businesses that closed in September remained that way until at least November. The issue of seasonal closures has been addressed by removing businesses that exhibited a possible seasonal pattern in the past (were closed in August, September, October or November in 2019, but had activity in previous months that year) from the analysis. Furthermore, most provinces did not start re-implementing restrictions in response to COVID-19 until October 2020.

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11. Businesses classified as lower risk are in the bottom three deciles of the predicted risk of closure distribution, while businesses classified as being at higher risk of closure are in the top three deciles of the predicted risk of closure distribution. Remaining businesses are in the medium risk category.

Chart 4
Distribution of closed businesses[1] by predicted risk of closure[2] and month last active
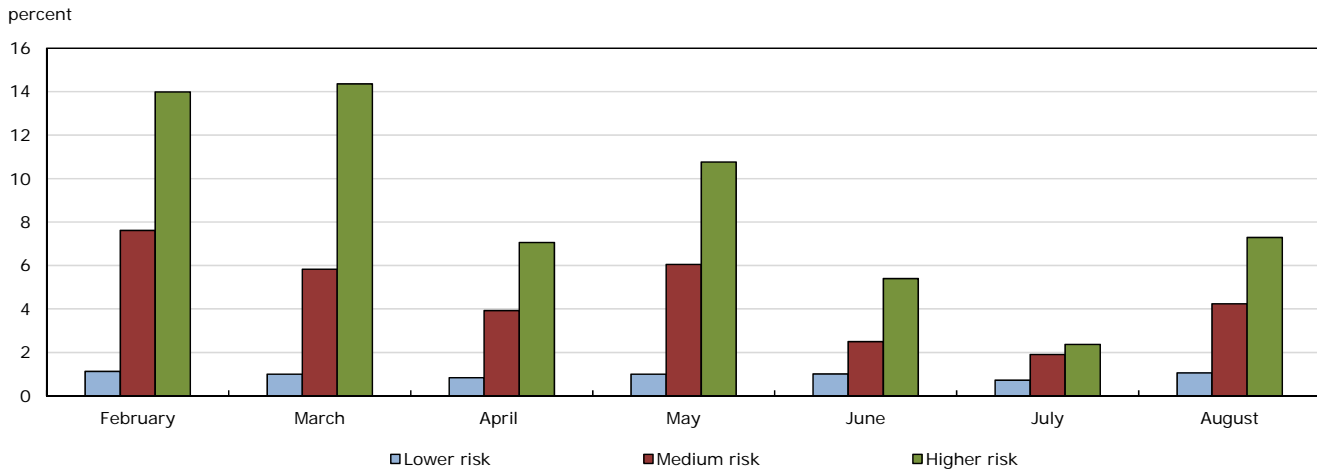
percent

1. Active businesses in February 2020 that were closed in September 2020 and remained closed in November 2020.
2. Businesses in the higher or lower closure risk category have a predicted risk of closure in the top 3 or bottom 3 deciles. Remaining businesses are in the medium risk category.
Source: Statistics Canada, author's calculations.

Data and methodology

This article is based mainly on microdata that underlie the February 2021 release of experimental data on business openings and closures at the national level for the November 2020 reference month—specifically, Statistics Canada's Business Register and PD7 payroll deduction files from the Canada Revenue Agency. A business was active in February 2020 if it had employees according to the PD7 data. This set of active employer businesses in February is the basis for analysis in this article. A business that was active in February 2020 but closed by September and remained closed as of November had employees in February, but not in September, October and November. For businesses closed by September, their last month active is that when they last had employees.

The numbers in this article cannot be compared directly with the estimates of monthly business openings and closures because they are not seasonally adjusted in the same way, and because the article focuses on the cohort of businesses that were active in February 2020. The latter restriction excluded new businesses that have entered the economy since February 2020.

To account for the possibility that some businesses that closed in September may be seasonal, businesses that were closed in August, September, October or November of 2019 but showed activity in preceding months of the year were excluded. The exclusion of these seasonal businesses most affects the number of closed businesses last active in February and March. Presumably, these businesses are mainly active in winter, had their previous seasons curtailed by the onset of the pandemic and have not yet reopened. The main conclusions of the article are not impacted by the exclusion or inclusion of these seasonal businesses.

Data about active employer businesses in February 2020 were linked to the T2 Corporation Income Tax Return and the T4 Statement of Remuneration Paid. The T2 data provide financial variables such as assets, liabilities, current assets, current liabilities and net income; the T4 data help establish whether unincorporated active businesses are recent entrants. Data from these sources are for 2018.

A probit regression was estimated to examine the relationship between a business that closed by September and its characteristics prior to the onset of the pandemic. Controls for industry (North American Industry Classification System, three-digit) and the province or territory of businesses are

included in the regression, as well as controls for cases where information does not exist to calculate the financial variables for businesses. The estimated coefficients were then used to calculate a predicted risk of closure based on the prior characteristics of each firm. The firm-level estimates of the predicted risk of closure are the basis for charts 3 and 4.[12]

Conclusion

The COVID-19 pandemic has had far-ranging impacts on the economy. Many businesses have had to significantly scale back their activities, and others have had to close their doors. Businesses that closed early in the pandemic, in March and April, were more likely to have a higher risk of closure than those that closed in September. Future analysis will track whether stronger firms, based on pre-pandemic financial characteristics, will make up an increasing share of business closures in the coming months. Analysis will also be extended to examine the relationship between a firm's predicted risk of closure and its use of government support programs under the Government of Canada's Economic Response Plan.

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12. Sensitivity checks were carried out to examine whether the main findings of the article are affected by the inclusion of entrants (that cannot be linked to prior financial characteristics) in the analysis or by changes in the industrial composition of closures. When entrants are excluded from the analysis, the finding that recently closed businesses are more likely to have a lower estimated risk of closure than businesses that closed early in the pandemic becomes stronger. Since it is not possible to distinguish between stronger and weaker entrants using their prior financial characteristics, their exclusion simply makes the importance of those financial characteristics more distinct. To examine the impact of changes in the industrial composition of closures, the contribution of a firm's industry to its predicted risk of closure was subtracted from its predicted risk of closure. Analysis based on these predicted risks that abstract from industry effects does not alter the main conclusions of the article.