Box 2

Alternative Indicators to Measure Historical Rates of Business Start-ups and Closures in Colombia

Julian David Castañeda
Felipe Clavijo Ramirez
Camilo Eduardo Sanchez*

1. Introduction

This box offers an analysis of business start-ups and closures in Colombia using information from two sources: The Confecámaras Single Business and Social Registry (RUES in Spanish) and the Integrated Contributions Settlement Form (PILA in Spanish) of the Ministry of Health and Social Protection. Since this analysis is based on sources with representative samples of the business structure that formally operates in the country, it is an important tool for monitoring financial stability due to the high exposure of credit institutions to these agents (54.0% as of January 2021).

The fragility of the corporate sector is usually assessed using traditional indicators related to the financial situation of companies such as those presented in the Corporate sector section of this report (e.g., insolvency, default, and bankruptcy). This information, although quite useful due to the granularity it provides with respect to the financial statements of companies, does not allow for an analysis of business start-ups and includes a reduced sample of companies since it is restricted to those that are monitored by the Superintendency of Corporate Affairs or that have active lending operations with the credit institutions monitored by the Financial Superintendency of Colombia.

The results of this analysis indicate that, between 2019 and 2020, the rate of business start-ups has experienced a decrease at the aggregate level and the closure rate has been on an upward trend since 2015. The tendency of the closure rate was accentuated during the last year and has increased by a greater magnitude compared to the change seen in the start-up rate. In addition, the rate of employment destruction by economic sector exhibits the same behavior as the closure of companies. Finally, we find that the difference between business start-up and closure rates is highly correlated with the real annual growth rate of the gross domestic product (GDP) for the period analyzed.[1]

2. Analysis based on RUES

RUES is a database managed by Confecámaras that contains the business records of all the chambers of commerce in the country and has historical information on the date of issuance, renewal, and cancellation of all the commercial licenses registered in Colombia.

Using the information available as of April 1, 2021, the year each company was created was identified using the oldest registration date, and the year of its closure, using the most recent dates of cancellation and renewal of their associated licenses.[2] Next, for each year *t* of the 1990-2020 period, the companies created, closed down, and in existence were identified using the following criteria:

- *Created*$_t$: companies with year of first commercial registration equal to *t*.
- *Closed down*$_t$: consists of two groups: 1) companies that registered their most recent cancellation in year *t* and for whom the last year in which they renewed any of their licenses was the same or a previous year, and 2) companies that have never cancelled their license(s) and last renewed it in year *t-1*.
- *In existence*$_t$: companies created during a year prior to *t* and that last renewed their license in *t* or a subsequent year.

* The authors are members of the Financial Stability Department of *Banco de la República*. The opinions expressed in this document are those of the authors and do not imply any commitment on the part of *Banco de la República* or its Board of Directors.

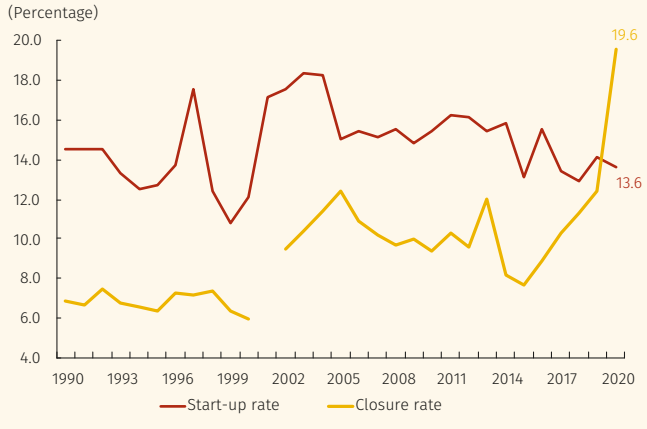
1 The RUES and PILA have information on the companies that operate formally in the country. Thus, the fact that a company is classified as a start-up with the criteria used does not necessarily imply that it is indeed new. Rather it may be reflecting its transition from informality to formality. Similarly, if a company is identified as closed down under the defined methodologies, it does not necessarily imply that it has ceased to operate.

2 In the RUES database, the same company may have several commercial licenses associated with it for different reasons such as the existence of more than one branch (since a license must be processed for each branch) and the transfer of operations to another city.

Once firms were categorized as part of one of these three groups in each year, the following indicators were calculated: 1) the start-up rate as the ratio between the total number of companies created and the sum of companies created and in existence for each year *t*, and 2) the closure rate equal to the number of companies closed down as a percentage of the sum of these same companies with the number of companies in existence for each year *t*.

As can be seen in Graph B2.1, during the period under study, the rate of business start-ups reached its lowest level in 1999 (10.8%) after having peaked in 1997. The rate reached its highest level in 2003 (18.4%) and since 2018, has remained relatively stable. In contrast, the closure rate was at its lowest in 2000 (6.0%), and since 2015, it has been on an upward trend which became accentuated between 2019 and 2020, year in which it registered its highest level.

Graph B2.1
Aggregate Start-up and Closure Rates

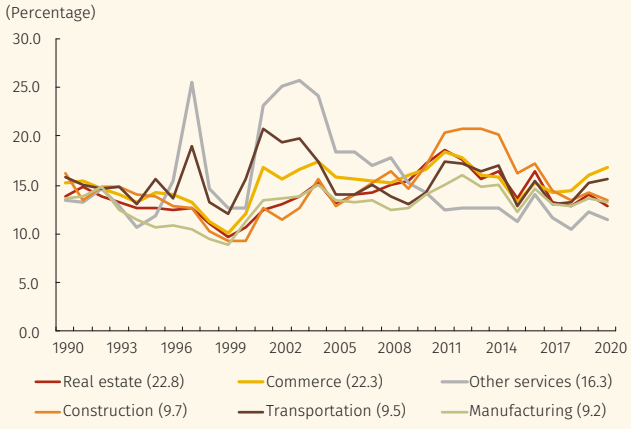


Note: the series for the closure rate is presented with a discontinuity in 2001 because, for this date, the analysis reflects an abrupt increase in the indicator both at the aggregate level and for all economic sectors. This is presumably related to a problem in the registry of information that, if left in the data as it is, distorts the interpretation of the results.
Source: RUES, calculations by *Banco de la República*.

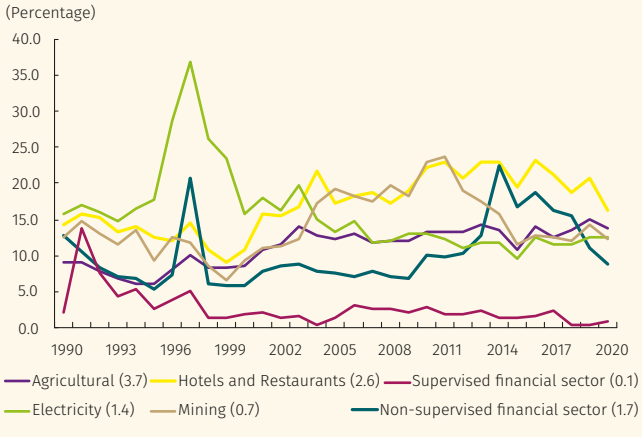
When the trend of the start-up rate is analyzed by economic sector[3], it is clear that the peak seen in 1997 was the result of a higher start-up rate in the sectors of other services, transportation, financial services not supervised by the SFC, and electricity. Meanwhile, the decline in 1999 was more widespread. After the year 2000, most sectors experienced a rebound in their start-up rate. Between 2019 and 2020 in the midst of the health crisis, trade and transportation activities saw rises while financial activities not supervised by the SFC and hotels and restaurants declined (Graph B2.2).

Graph B2.2
Start-up Rate by Economic Sector

A. Six main sectors



B. Remainder sectors



Note: The firms that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and social services, other community, social, and personal services, private households with domestic service, and extraterritorial organizations and entities.
The parentheses next to the legends show the percentage of the number of companies created in each sector during 2020.
Sources: RUES and DANE, calculations by *Banco de la República*.

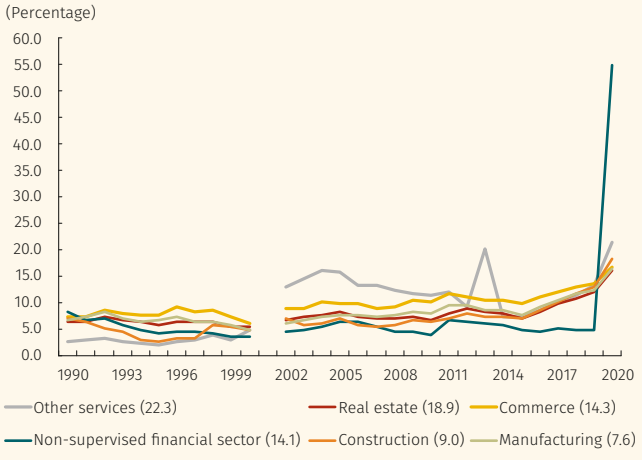
On the other side, the closure rate has shown an upward trend since 2015 for all sectors, except for the financial sector not surveilled by the FSC (Graph B2.3). Between 2019 and 2020, this trend was accentuated and the rate for the latter sector increased registering the highest level seen historically (55.0%), mainly due to insurance agents and brokers, other financial service activities (except insurance and pensions), and financial activities of employee funds and other associative forms of the solidarity sector.

In addition to the above, the correlation coefficient for the 2006-2020 period, between the net rate of business start-ups, calculated as the difference between the rate of start-ups and the rate of closures, and the real, annual GDP growth by economic sector, was computed. As shown in Table B2.1, this correlation is positive for all sectors except for the agricultural one; and for commerce, manufacturing, construction, mining, and hotels and restaurants, it has a

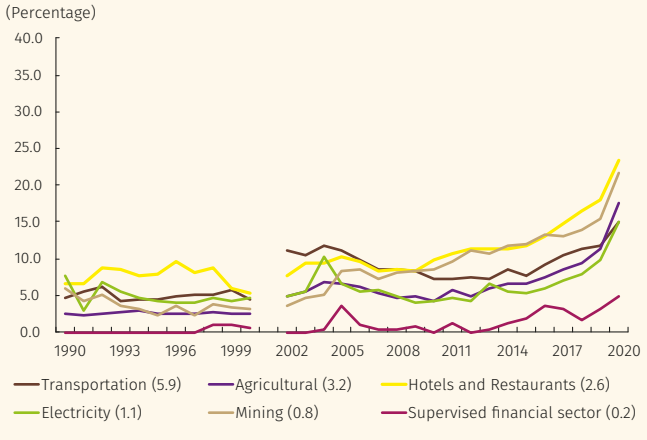
3 In what remains of the box, abbreviations will be used for the following sectors: 1) real estate, rentals and business: real estate; 2) agriculture, animal husbandry, hunting, forestry, and fishing: agricultural; 3) mining and quarrying: mining; 4) electricity, gas and water: electricity; 5) transportation, warehousing, and communications: transportation; and 6) financial intermediation and insurance: finance.

Graph B2.3
Closure rate by Economic Sector

A. Six main sectors



B. Remainder sectors



Note: the series are presented with a discontinuity in 2001 because, for this date, the analysis reflects an abrupt increase in the closure rate both at the aggregate level and for all economic sectors. This is presumably related to a problem in the registry of information that, if left in the data as it is, distorts the interpretation of the results.
The companies that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and social services, other community, social, and personal services, private households with domestic service, and extraterritorial organizations and entities.
The parentheses next to the legends show the percentage of the number of companies closed down in each sector during 2020.
Sources: RUES and DANE, calculations by *Banco de la República*.

level greater than or equal to 0.7. At the aggregate level, the correlation is 0.8.

3. Analysis based on social security contributions

Another source that makes it possible to study the performance of companies in Colombia is the PILA. This micro-database of the Ministry of Health and Social Protection compiles anonymized records of social security payments by contributor and company and by economic sector since July 2008. This information makes it possible to obtain measurements of business start-ups and closures between January 2010 and June 2020 by considering the dates in which a company starts and stops making social security contributions for its employees.[4][5]

In addition, having the records of the number of employees in each company added another dimension to the analysis of the real sector: the start-up and closure rates by size of the company and the construction of an indicator of the proportion of employment that is destroyed at the aggregate level and within each economic sector.

The general results show that the highest start-up rate was registered in January of 2010 (21.5%) when 61,895 companies had been created during the previous twelve months, and the lowest rate was seen in June 2020 (13.1%; 50,662 companies). Meanwhile, the 2011-2019 period showed an average start-up rate of 17.5%. As for closures, there has been an increase since April 2017, exceeding the start-up rate. Nevertheless, during the first half of 2020, this trend became accentuated, and in June, 148,157 companies disappeared which meant a 47.7% increase compared to June 2019 (Graph B2.4).

4 It is common for companies to fall behind in their social security payments for a few months without this implying their closure. Therefore, companies that permanently cease to make contributions are considered destroyed.

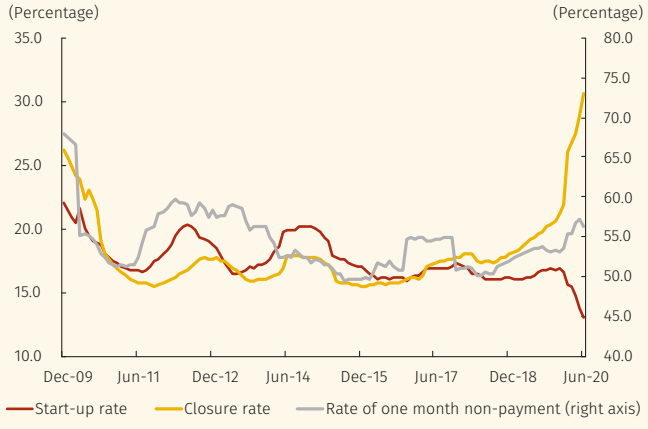
5 For each month, the start-up and closure rates are calculated by considering the number of companies created and closed down in the previous twelve months, including the month of analysis.

Table B2.1
Correlation coefficient: Net Rate of Business Start-ups vs. Real Annual GDP Growth by Economic Sector

Sector	Mining	Construction	Hotels and Restaurants	Manufacturing	Commerce	Electricity
Correlation coefficient	0.9	0.8	0.8	0.7	0.7	0.6
	Transportation	**Real estate**	**Other services**	**Financial**	**Agricultural**	**Total**
	0.6	0.5	0.3	0.3	-0.1	0.8

Source: RUES and DANE, calculations by *Banco de la República*.

Graph B2.4
Aggregate Start-up, Closure, and Non-payment rates



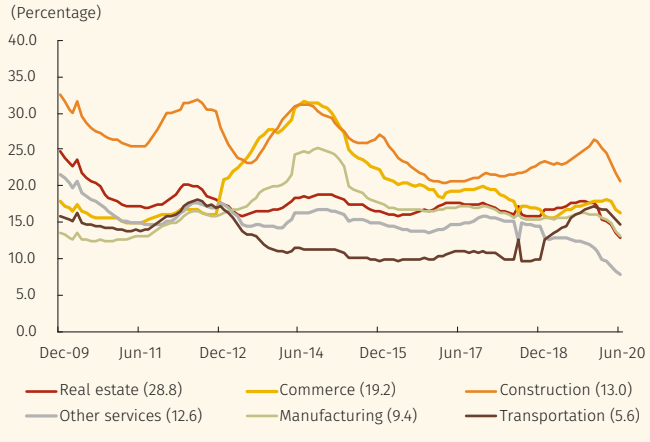
Source: Ministry of Health and Social Protection, authors' calculations

Since the last observation in the sample may include firms that were behind on social security payments during June 2020 but have not necessarily been closed down, we calculated the rate of companies that were behind on social security payments in each month of analysis and we found that the increase in company closure persisted, even when controlling for this effect.

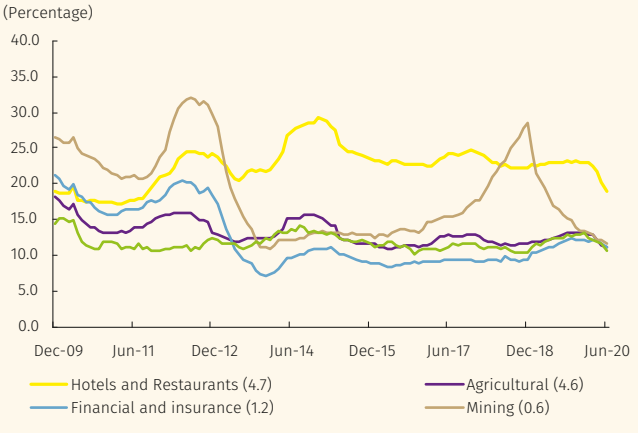
Graph B2.5 shows the evolution of the business start-up rate and the closure rate by economic sector. During the first years of the sample, there was a positive trend in the real estate, mining, and construction sectors, consistent with the economic expansion that took place between 2009 and 2014. After that, sectors maintained relatively stable start-up rates. However, between June 2019 and June 2020, there was an average decrease of 2.5 percentage points (pp), but the largest impact of the health crisis was on the start-up of businesses in the real estate, construction, and hotels and restaurants sectors.

Graph B2.5
Start-up and Closure rates by Economic Sector

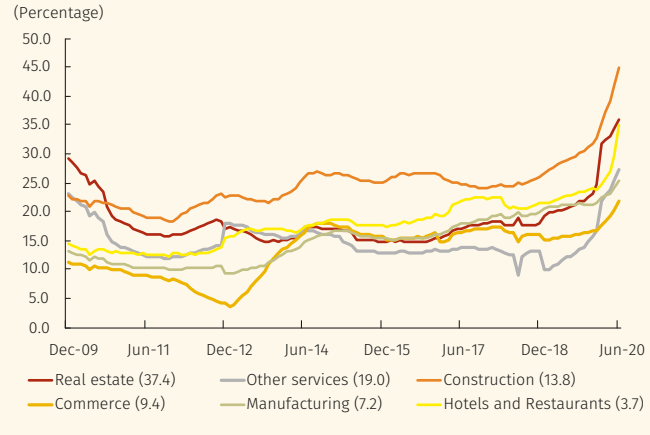
A. Start-up: six main sectors



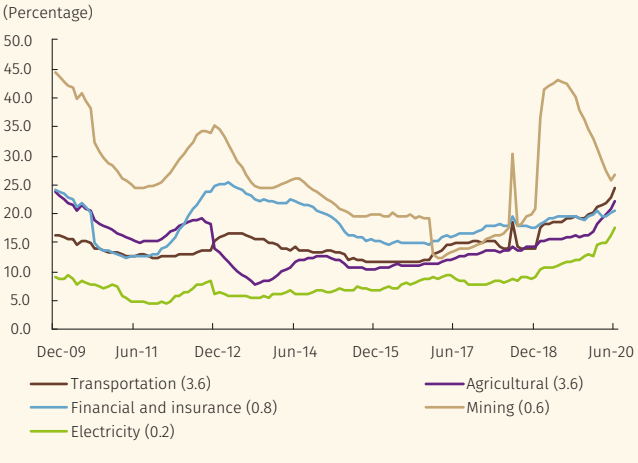
B. Start-up: remainder sectors



C. Closure: six main sectors



D. Closure: remainder sectors



Note: The firms that belong to the following economic sectors are grouped under 'other services': public administration and defense, education, health and social services, other community, social, and personal services, private households with domestic service, and extraterritorial organizations and entities.
The parentheses next to the legends show the percentage of the number of companies created and closed down in each sector in June 2020.
Source: Ministry of Health and Social Protection and DANE, calculations by *Banco de la República*.

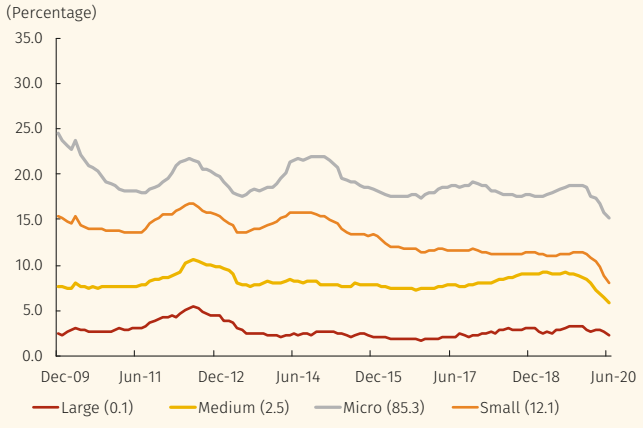
Moreover, construction and mining are sectors in which a higher percentage of companies tend to close down. In the case of the former, the business closure rate increased 16.2 pp as a consequence of the health crisis and registered its maximum value as of June 2020. As for the latter, its closures had increased during 2019. However, the crisis does not seem to have had an influence, and closures decreased during 2020. The real estate and hotels and restaurants sectors, whose sensitivity to measures of temporary and total economic shutdowns is notable, have experienced the materializing of historical closure rates of 36.0% and 35.0% respectively. As for the destruction of employment, it is a reflection of the closure of companies.

The analysis by company size[6] shows that for the period under analysis, both the business start-up and closure rates are consistently higher for those that are smaller in size (Graph B2.6, panel A). Nonetheless, the economic crisis affected business start-ups equally for all company sizes. However, micro and small businesses have clearly suffered the most from the consequences of the economic crisis since their closure rates showed significant increases (Graph B2.6, panel B). During the last year of analysis, 757,754 jobs had disappeared, 81.0% of which belonged to micro and small companies. This implies that the number of jobs in Colombia decreased by 12.0% between June 2019 and June 2020.

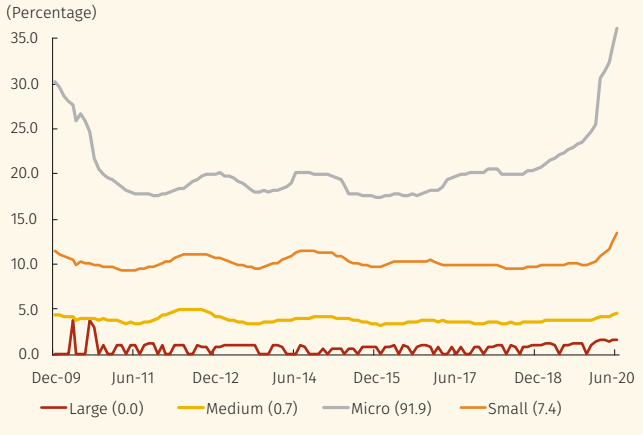
From the results presented, it can be concluded that between 2019 and 2020, in the context of the health crisis caused by Covid-19, the business start-up rate has experienced a decrease at the aggregate level for all company sizes and the vast majority of economic sectors. At the same time, the closure rate has risen by a larger magnitude compared to the change in the start-up rate, a trend that holds true for most economic sectors and for micro and small firms. In contrast to what has been seen for the start-up rate, some sectors have been more affected in terms of closures (e.g., construction, non-supervised financial services, and restaurants and hotels) just like micro and small businesses. Finally, we consider that the analyses derived from the sources of information used in this box can provide additional valuable perspectives on the state of fragility of the Colombian business sector and thus, it is important to constantly monitor them.

Graph B2.6
Start-up and Closure rates by Company Size

A. Business start-ups



B. Closure of companies



Note: The parentheses next to the legends show the percentage of the number of companies created or closed down by size in June 2020.
Source: Ministry of Health and Social Protection, calculations by *Banco de la República*.

References

Confederación Colombiana de Cámaras de Comercio (2020). *Registro Único Empresarial y Social (RUES).*

Crane, L.; Decker, R.; Flaaen, A.; Hamins-Puertolas, A.; Kurz, C. (2020). "Business Exit During the Covid-19 Pandemic: Non-Traditional Measures in Historical Context," Finance and Economics Discussion Series, no. 2020-089, Washington: Board of Governors of the Federal Reserve System.

Ministerio de Salud y Protección Social (2020). *Planilla Integrada de Liquidación de Aportes (PILA).*

6 In accordance with Act 590/2000, companies with up to ten employees were classified as micro-companies. The companies that have a staff of ten to fifty employees were classified as small. The companies that have up to two hundred employees were classified as medium-sized and companies with a higher workforce were classified as large.