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# The impact of COVID-19 on formal firms in the Dominican Republic: evidence from monthly tax returns

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# The Impact of COVID-19 on Formal Firms in the Dominican Republic: Evidence from Monthly Tax Returns

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## Contents



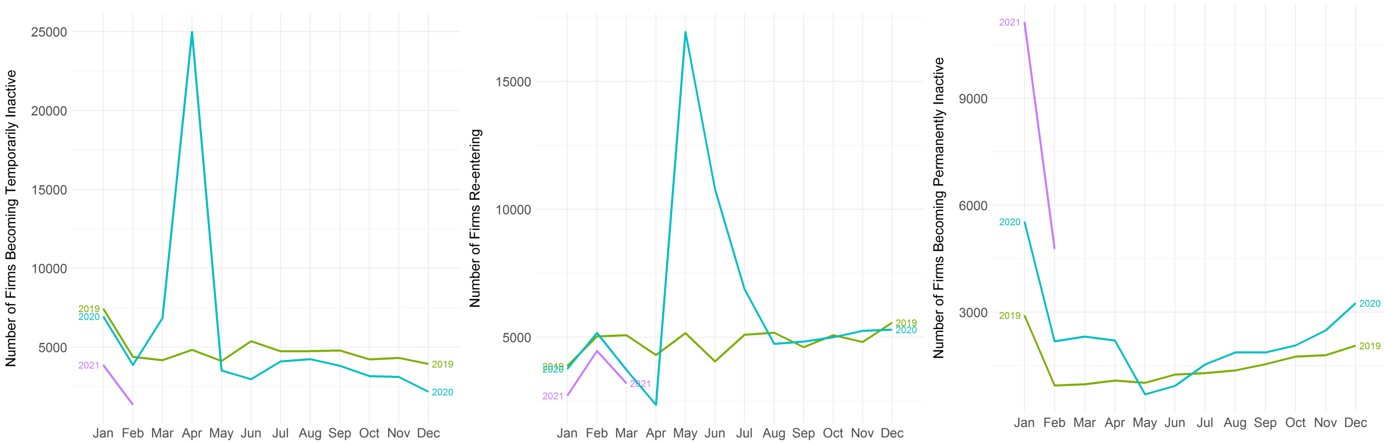
**Summary:** We measure the impact of the COVID-19 crisis and the resulting lockdown on formal firms in the Dominican Republic, using monthly value-added tax (VAT) records from January 2018 to March 2021. Overall, firms' revenue fell by 8.5 percent, or 393 billion Dominican pesos (USD 6.9 billion), in real terms in the 12 months after March 2020 compared to the 12 previous months. The crisis had very different effects on sectors, with the primary, manufacturing and essential retail sectors experiencing a smaller shock than non-essential retail and the hospitality sectors. Whilst most sectors report sales levels in March 2021 similar to pre-crisis levels, the hospitality sector has experienced very little recovery since the initial phase of the crisis, with sales still 50 percent below pre-crisis levels.

*The findings and conclusions are those of the authors; they do not represent the views of the World Bank or the DGII. We gratefully acknowledge funding by the World Bank through the Knowledge of Change Trust Fund and the Fiscal Policy and Sustainable Growth Unit, and UK aid from the UK government through the Centre for Tax Analysis in Developing Countries (TaxDev).

# 1 Context

**In response to the COVID-19 health crisis, the government of the Dominican Republic declared a national state of emergency and implemented a strict lockdown beginning March 17, 2020.** The containment measures included a nation-wide curfew and the closing of national borders. In the beginning, only essential businesses were allowed to remain open. Non-essential activities were gradually allowed to re-open from May 20th, with SMEs permitted to operate at a higher capacity. The tourism sector was gradually re-opened on July 1st, 2020, though a curfew remained in place in much of the country. The curfew regime became stricter in December and January as case numbers increased. Case numbers have since decreased, although curfew measures remain in place as of June 2021 in several regions. To mitigate the impact of the crisis on businesses, the government took several fiscal measures aimed at supporting businesses and maintaining employment.[1] Most importantly for the purposes of this brief, firms were allowed to spread their February VAT payments (normally due in March) over four monthly installments[2], and their March VAT payments (normally due in April) over three monthly installments.[3]. For both delayed and non-delayed payments, firm sales are attributed to the month the sales took place, rather than the month the payment was received.

**Figure 1: Changes in the Number of Firms Filing VAT**




**(a) Temporary Inactivity** **(b) Re-Entry** **(c) Permanent inactivity without re-entry**

Panel (a) shows the number of firms that became inactive (defined as not reporting any sales) each month (by not filing for at least one month), but have subsequently become active. Panel (b) shows the number of firms re-entering, after being temporarily inactive. Panel (c) shows firms which became inactive and have not re-entered by March 2021 (the last month for which data is available). See Figure 7 in the Appendix for first entry.

**Figure 1 examines changes in the number of firms filing VAT, suggesting that the administrative data provide a reliable picture of the impact of the crisis on formal firms.** Panel (a) shows that the peak of firm inactivity is in April, which is the first full month of lockdown in the Dominican Republic. The crisis and resulting lockdown had an immediate impact on the economy, as more than 25000 firms (35 percent of total firms in January 2020) did not file for VAT in April 2020. Panel (b) shows that a large number of temporarily inactive firms resumed activity in May and June 2020, when restrictions were eased, and continued to re-open in larger numbers until August. Panel (c) shows that the number of permanently inactive firms the sample starts to increase from July onwards, despite the easing of lockdown. These firms are described as

[1]Relevant policies include: subsidising of the salaries of formal workers through the ESAF scheme; extending the April payment deadlines for corporate income tax, personal income tax and the Simplified Tax Regime (RST), but not VAT; allowing taxpayers with corporate income tax and VAT liabilities under appeal to settle at a reduced rate, with no additional surcharges; temporary exemptions from advanced CIT and asset tax payments for tourism industry; and the exemption of cleaning products and medicines from VAT. See the IMF Policy Responses to COVID-19 website, the KPMG website., and the website of the Government of the Dominican Republic for an overview of the policy response.

[2]https://dgii.gov.do/publicacionesOficiales/avisosInformativos/Documents/2020/23-20.pdf

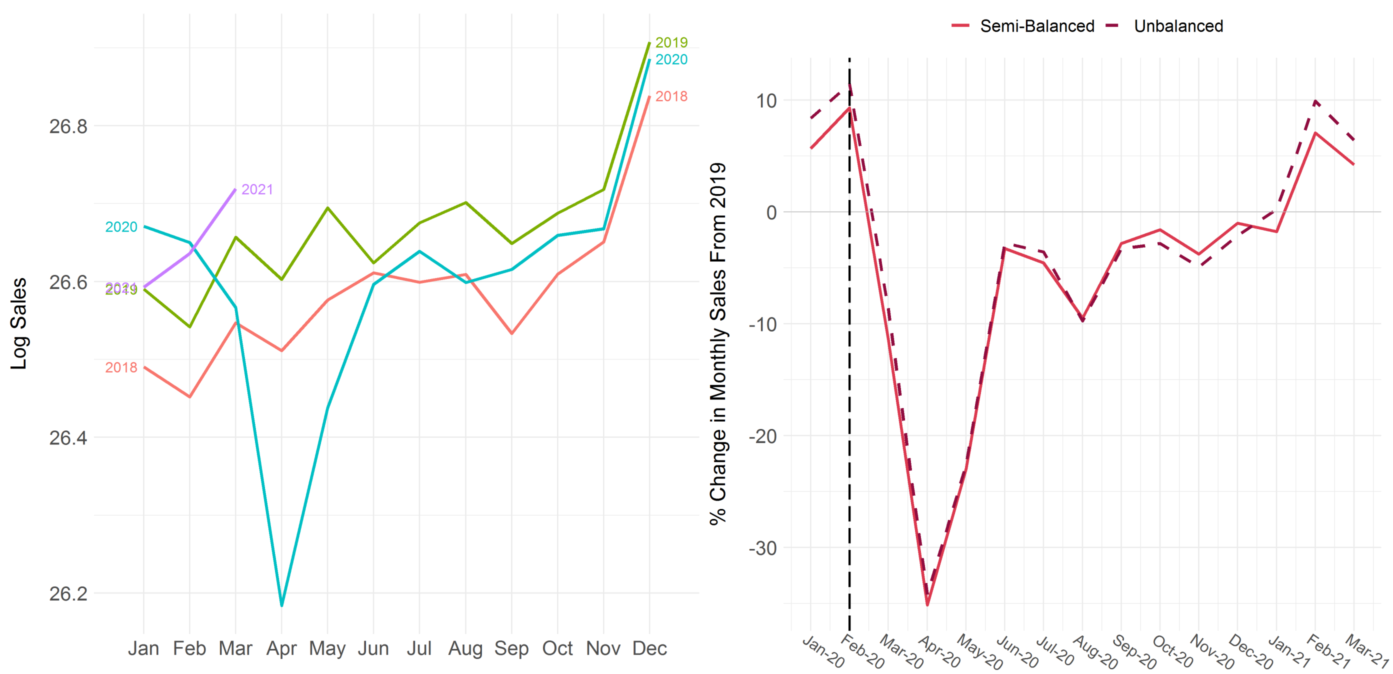
[3]https://dgii.gov.do/publicacionesOficiales/avisosInformativos/Documents/2020/45-20.pdf

permanently inactive because they have not filed a VAT declaration with positive declaration; however, some increase towards the end of the sample is to be expected, as seasonal firms have not had the opportunity to re-enter the sample. In the initial phase of the crisis between March 2020 and May 2020, 5213 firms became permanently inactive (using zero sales as a measure of inactivity), compared to 3084 in the same period last year. This excess of firm inactivity - 2129 firms - is equivalent to 4.3 percent of the total firms in January 2020.

## 2 Overall Impact

**The large rise in the number of firms temporarily exiting the VAT system in Figure 1 motivates the use of an unbalanced and a semi-balanced panel[4] for the rest of our analysis.** The true impact of the crisis should fall in between these two estimates. A strictly balanced panel is not considered as it would exclude the large number of firms that did not file in March or April 2020 because of the lockdown, but resumed their operations in the following months. A semi-balanced panel on the other hand includes firms that re-appeared in the fourth quarter of 2020 or the first quarter of 2021, even though they may have disappeared in March 2020. In all analyses, sales are adjusted for inflation.

**Figure 2: Aggregate Impact on VAT Sales**




**(a) Seasonal Plot of Log Sales, Unbalanced** **(b) Change in Sales, Relative to 2019**

Note: Panel (a) shows the seasonal trends of aggregate log sales for all firms filling VAT in 2018, 2019, 2020 and 2021 (unbalanced panel, sales are adjusted for inflation). Panel (b) shows the monthly relative change in aggregate sales, relative to the same month in 2019, for a semi-balanced and an unbalanced panel. For example, the the value for March 2021 is computed by comparing sales in March 2019 and in March 2019. The black dashed vertical line marks February 2020, the last month before the lockdown was introduced in March.

**Figure 2 shows that the crisis lead to a large and sharp drop in aggregate reported sales, but sales in March 2021 have recovered above their pre-Covid levels.** Panel (a) compares sales in 2020 to sales in 2019 and 2018, for an unbalanced panel of firms. In 2018 and 2019, the log of aggregate sales followed a similar trend: sales were lower than average in January and February, and higher than average in November

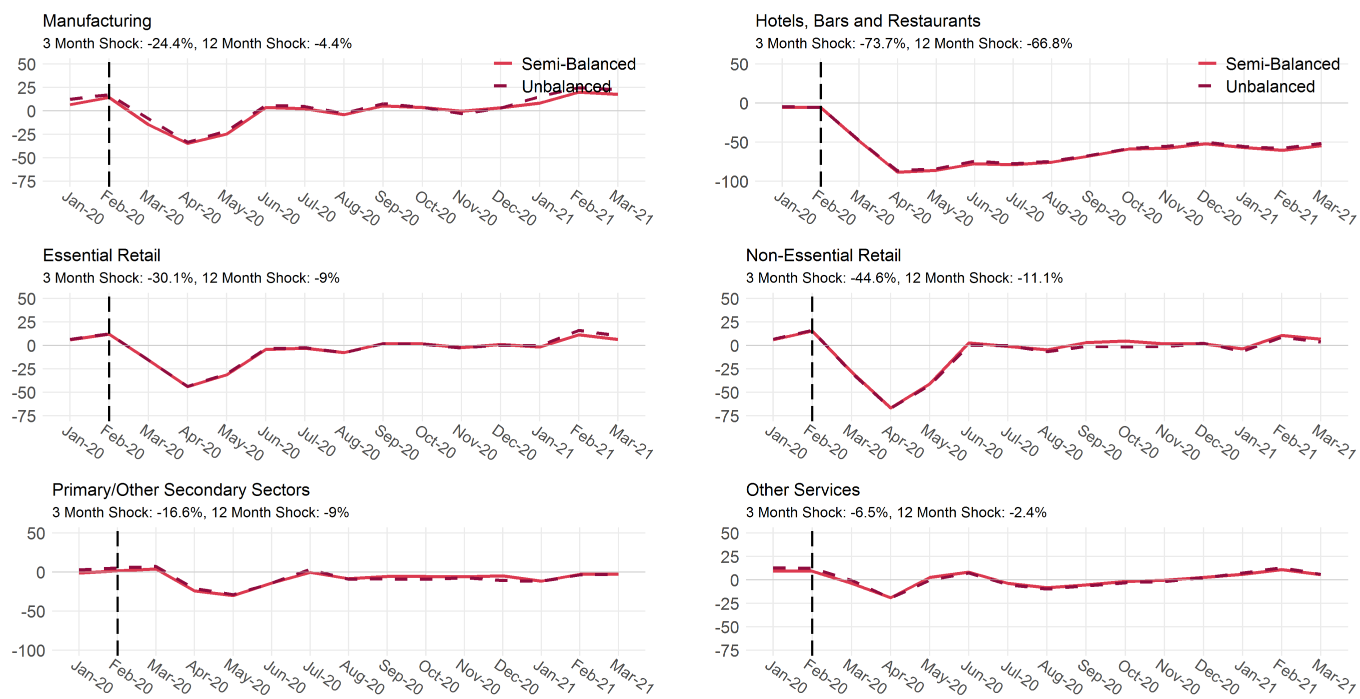
[4] The unbalanced panel includes all firms, independently of their lifetime in the panel. Firms in the semi-balanced panel must appear at least once in every quarter of 2018 and 2019, and in the third or fourth quarter of 2020.

and December. In 2020, the same pattern appeared in January and February, but sales dropped dramatically in April. Panel (b) shows that sales dropped by almost 40 percent in April 2020. Sales recovered quickly, reaching close to pre-crisis levels in December 2020, and pre-crisis 2019 levels in early 2021. This pattern is similar to the one found in Honduras, where we conducted a similar analysis, though the recovery in Honduras is more gradual.[5] Overall, sales in 2020 were 6.5 percent lower than sales in 2019, equivalent to 291 billion Dominican pesos (USD 5.1 billion).

The difference between the unbalanced and the semi-balanced data in Panel (b) is almost imperceptible during the months of the crisis, which suggests that most of the firms that temporarily stopped operating in the beginning of the crisis are small-size firms which only make up a small proportion of aggregate sales.

# 3 Impact by Industry

**Figure 3: Impact on VAT Sales by Sector, Compared to the Equivalent Month in 2019**




Note: These graphs show the change in aggregate sales by sector, relative to the equivalent month in 2019. For example, the value for March 2021 is the percentage difference between March 2021 and March 2019. The "3 Month Shock" refers to the total value of sales in the 3 months after the COVID-19 crisis (March 2020-June 2020), relative to the same period in 2020, and the "12 Month Shock" refers to the total value of sales in the 12 months after the COVID-19 crisis (March 2020-February 2021), relative to the preceding 12 months (March 2019-February 2020). The black dashed vertical line marks February 2020, the last month before the lockdown was introduced in March. The category "Primary/Other Secondary Sectors" includes primary activities and secondary activities excluding Manufacturing (A, B, C, E, F). The category "Other services" includes services activities (I, J, K, L, M, N, O) but excludes "Retail" and "Hotels, Bars and Restaurants". See Table 1 for the full description of the sector categories. "Essential Retail" refers to CIUU3 codes 521191, 521192 and 523131-524990.

**Figure 3 examines the impact on VAT sales by sector, showing that the hospitality sector, which was most affected by the lockdown restrictions, experienced the largest fall in sales, and has still not recovered to pre-Covid levels.** The '3 month shock', i.e. the loss in sales in the first three months of the crisis, relative to March 2019 to June 2019 was 75 percent for the hospitality sector, and the '12 month shock',

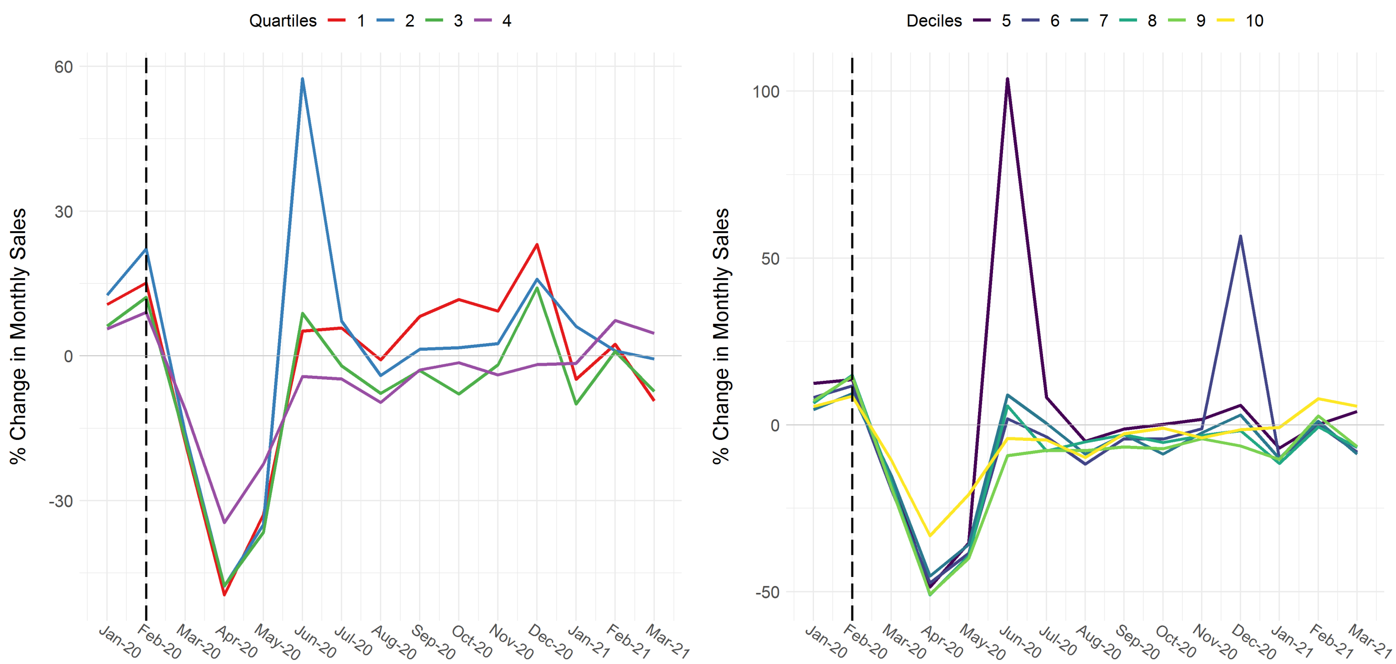
[5] Bachas et al. (2021). "The Impact of COVID-19 on Formal Firms in Honduras: Evidence from Monthly Tax Returns". Available on the World Bank website.

i.e. the loss in sales in the year after March 2020 compared to the year before March 2020 was 67 percent for the hospitality sector. Retail was also badly hit in the initial phase, though "Non-Essential Retail" suffered more than "Essential Retail". The primary and secondary sectors experienced their largest drop in sales in May, compared to April in the other sectors, suggesting a one-month lag in the shock. The economic recovery for most sectors was underway from summer 2020, and despite the striking exception of the hospitality sector, all broad sector groupings report higher sales in March 2021 than in March 2019[6].

**Despite the disparities across industry groups, it is worth noting that all sectors still experienced a significant fall in sales compared to the previous years and that this shock is long-lasting for most firms.** Only the agriculture, finance, mining and public administration sectors experienced higher sales in the 12 months following March 2020 than the 12 months before[7].

# 4 Impact by Firm-Size

**Figure 4: Impact on VAT Sales by Firm Size, Relative to 2019**




**(a) Quartiles** **(b) Top 5 Deciles**

Note: Panel (a) presents the change in sales compared to the equivalent month in 2019, by quartiles of average 2018-2019 sales, for a semi-balanced panel of active firms only (see Figure 8 in the Appendix for the unbalanced panel figure). Firms that have no sales in 2018 and 2019 are dropped. See Table 2 for the quartile thresholds. Panel (b) shows the change in sales for the top 5 deciles, also based on the average 2018-2019 sales distribution. The black dashed vertical line marks February 2020, the last month before the lockdown was introduced in the end of March. Firms in the semi-balanced panel must appear at least once in every quarter of 2018 and 2019, and in the fourth quarter of 2020 and/or first quarter of 2021.

**In Figure 4 we study the impact of the shock by firm size, and find that larger firms have recovered much more slowly than smaller firms.** We plot the relative change in aggregate adjusted sales by quartiles and deciles of 2018-2019 average sales, for the semi-balanced panel.[8] Panel (a) shows that the

[6]Table 1 in the Appendix lists all sectors by decreasing order of the overall shock faced from March to November 2020, and Figure 5 shows similar graphs as Figure 3 for all subsectors.

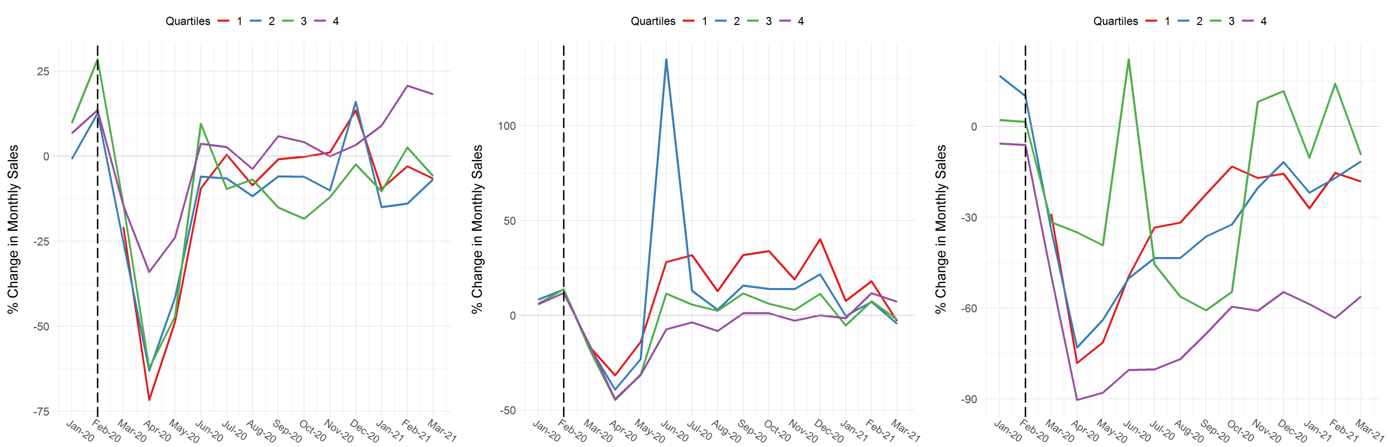
[7]See Figure 6 in the Appendix for the detail by sectors.

[8]Figure 8 in the Appendix plots the percent change in sales for quartiles for the unbalanced panel and shows a similar trend.

smallest three quartiles of firms experienced a similar sales shock in April of between 40 and 50 percent, whilst the largest quartile of firms experienced a more modest fall in sales of 30 percent. Panel (b) shows that the smaller shock experienced by the top quartile is concentrated in the top decile. After the initial shock, firms in the bottom two quartiles tended to recover faster, experiencing sales growth relative to 2019 levels. Unlike Figure 1 and 2, this pattern is very different to the experience of Honduras, where smaller firms experienced much larger sales losses than larger firms and do not recover faster.

**Figure 5 shows that large manufacturing firms have coped with the crisis well, whilst large hospitality firms are still struggling.** Figure 5 reproduces Figure 4 (a) for the manufacturing, (essential) retail sector and hospitality sector separately. Within the manufacturing sector (Figure 5, Panel a), larger firms experienced a much smaller initial shock than smaller firms (35 percent relative to 70 percent), and by June the largest quartile of firms were regularly exceeding 2019 sales levels. In the retail sector, the smallest quartile of firms experienced a shock 20 percentage points smaller than the largest quartile, and smaller firms generally performed better over the subsequent months. Figure 3 shows that the hospitality sector was the most severely affected overall, and Panel (c) shows that this is being driven by the largest quartile of firms. Whilst the smallest three quartiles of hospitality firms are reporting sales levels in March 2021 that are 10-20 percent lower than March 2019 levels, the largest quartile of firms are still reporting sales 60 percent lower than March 2019 levels. This may be due to the restrictions on international tourism.

**Figure 5: Impact on VAT Sales by Firm Size Within Sector, Relative to 2019**




**(a) Manufacturing** **(b) Retail (Essential)** **(c) Hotels, Bars and Restaurants**

Note: These graphs present the change in sales relative to the equivalent month in 2019, by quartiles of average 2018-2019 sales, for a semi-balanced panel of active firms, by sectors (see Figure 9 in the Appendix for the unbalanced panel equivalent). Firms that have no sales at all from 2018 to 2019 are dropped. Panel (a) shows quartiles for the manufacturing sector, Panel (b) for the (essential) retail sector and Panel (c) for the hospitality sector. The black dashed vertical line marks February 2020, the first full month before the lockdown was introduced in the end of March. Firms in the semi-balanced panel must appear at least once in every quarter of 2018 and 2019, and in the fourth quarter of 2020 and/or first quarter of 2021.

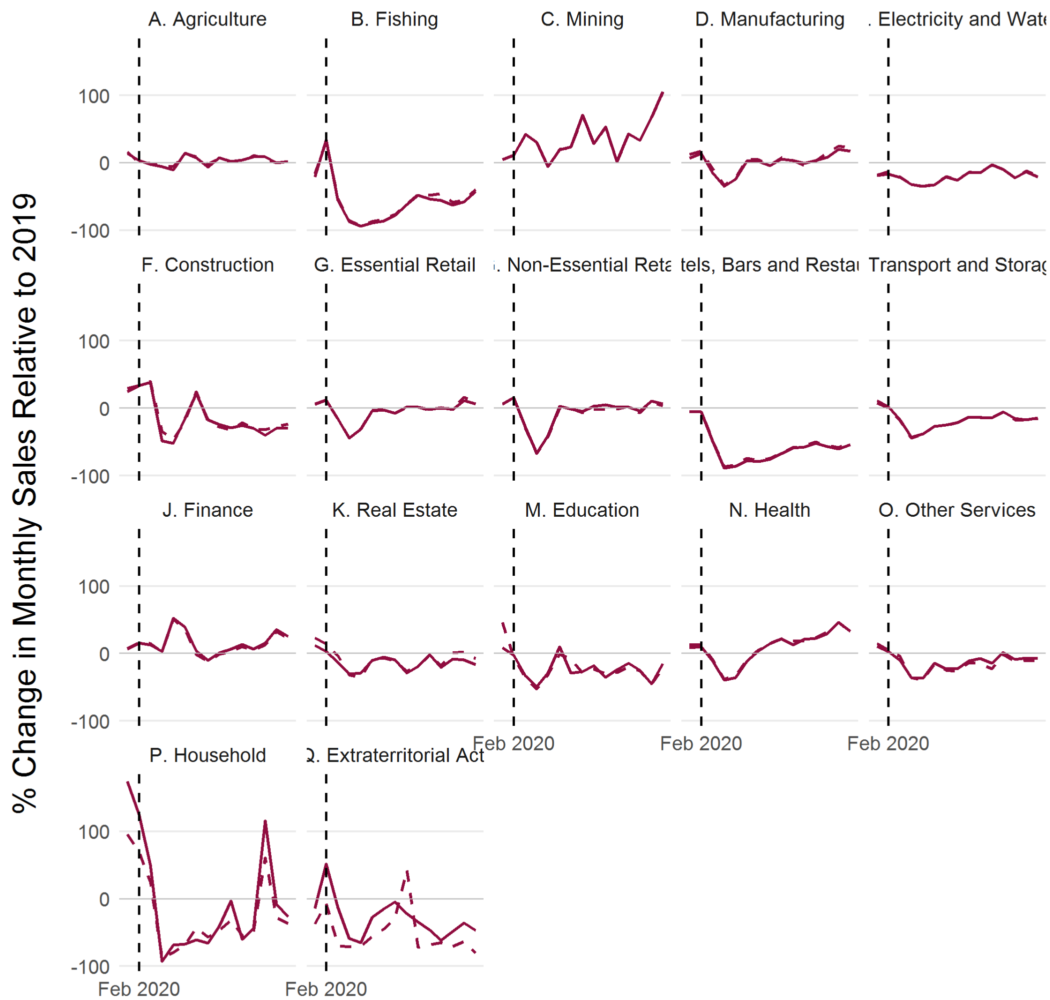
# 5 Discussion

This note assesses the impact of the COVID-19 crisis and the lockdown on firms' revenues and assess heterogeneity in the size of the revenue shock, in the Dominican Republic. The Dominican Republic is in the economic recovery phase of the COVID-19 crisis, with most sectors reporting similar or higher sales in March 2021 than they did in March 2019. The glaring exception to the recovery is the hospitality sector, which has experienced very little recovery since the initial phase of the crisis, suggesting the need for sector-specific support measures. More granular data for sectors would allow us to to provide a better picture on the shape of the recovery between essential and non-essential retail sectors. Data on personal income tax and pay-as-you earn filings would allow studying how firms respond to the revenue shock, in particular whether they reduced employment and wages. Linking these various datasets with location tags (and ideally with some measure of consumer spending) would allow for a more finely-grained analysis of the demand and supply response to the crisis, as in the analysis conducted by Chetty et al. (2020)[9].

[9] Chetty, R., Friedman, J.N., Hendren, N. and Stepner, M., 2020. How did covid-19 and stabilization policies affect spending and employment? A new real-time economic tracker based on private-sector data (No. w27431). National Bureau of Economic Research.

# Appendix

**Figure 6: Change in Sales Relative to 2019, January 2020 - March 2021, All Sectors**



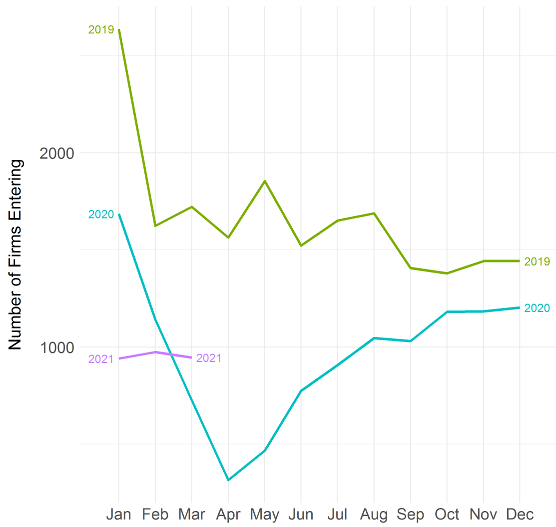

Note: These graphs show the change in sectors' sales, relative to the equivalent month in 2019. For example, the value for March 2021 is constructed by comparing the values for March 2021 to March 2019. The black dashed vertical line marks February 2020, the first full month before lockdown was introduced in March. "Essential Retail" refers to CIUU3 codes 521191, 521192 and 523131-524990.

**Table 1: Sectors, by Decreasing Order of Shock Size during March-June 2020**

| Sector | Full Sector Name | 3 Month Shock | 12 Month Shock | Sales (% Agg. Sales) | N (2019) |
|---|---|---|---|---|---|
| B | Fishing | -65.6 | -75.44 | 0 | 22 |
| H | Hotels, Bars and Restaurants | -65.1 | -72.14 | 3.9 | 4602 |
| Q | Extraterritorial Act. | -55.8 | -69.95 | 0 | 89 |
| P | Household | -48.8 | -57.24 | 0 | 47 |
| M | Education | -31 | -40.25 | 0.6 | 1008 |
| F | Construction | -23 | -13.45 | 4.5 | 4286 |
| I | Transport and Storage | -22 | -33.88 | 6.8 | 4704 |
| O | Other Services | -19.3 | -26.52 | 2.3 | 4459 |
| E | Electricity and Water | -18.1 | -29.22 | 5.7 | 435 |
| K | Real Estate | -16 | -23.53 | 6 | 15884 |
| G2 | Non-Essential Retail | -13.1 | -45.62 | 3.3 | 6873 |
| G1 | Essential Retail | -8.5 | -29.67 | 30.5 | 22783 |
| D | Manufacturing | -2.8 | -20.86 | 18.5 | 5656 |
| A | Agriculture | 1.8 | -3.25 | 2.6 | 1416 |
| N | Health | 5.5 | -26.09 | 1.3 | 1974 |
| J | Finance | 9.7 | 22.85 | 11.2 | 1878 |
| C | Mining | 30.3 | 18.77 | 1.9 | 68 |
| L | Public Admin | 89.6 | 74.37 | 1 | 95 |

Notes: Sectors follow the CIIU3 classification. The three month shock refers to the change in sales in the first three months of the COVID-19 crisis relative to the previous year (March 2020-June 2020 vs March 2019-June 2019). The 12 month shock refers to the change in sales in the 12 months March 2020 to February 2021, relative to March 2019 to February 2020.

**Figure 7: VAT Payments – Number of First Entry**



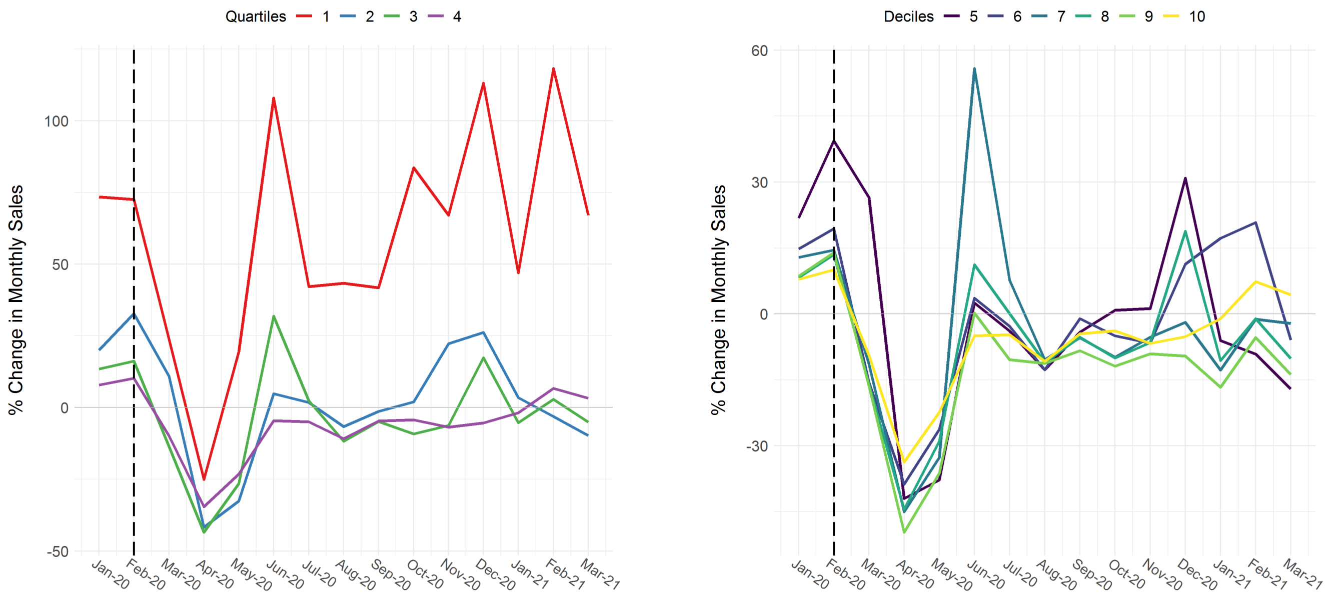

Note: This graph shows the number of firms that first entered the VAT panel, from February 2018 to February 2021. Figure 1 presents exit and re-entry patterns.

## Table 2: Average Monthly Firm Sales (in Thousand Dominican Pesos) in 2019, by Quartiles and Panels

| | Unbalanced | | Semi-Balanced | |
|---|---|---|---|---|
| Quartiles | Sales | N | Sales | N |
| 1 | 29 | 14032 | 68 | 10659 |
| 2 | 118 | 18507 | 297 | 10835 |
| 3 | 432 | 20768 | 1067 | 10869 |
| 4 | 16189 | 23022 | 29997 | 10995 |

Notes: Quartiles are based on 2018-2019 average adjusted sales for active firms only, i.e. firms with null reported sales in 2018 and 2019 are not included. Firms in the semi-balanced must appear at least once in every quarter of 2018 and 2019, and in the fourth quarter of 2020 and / or first quarter of 2021.

## Figure 8: Impact on VAT Sales by Firm Size – Unbalanced Panel

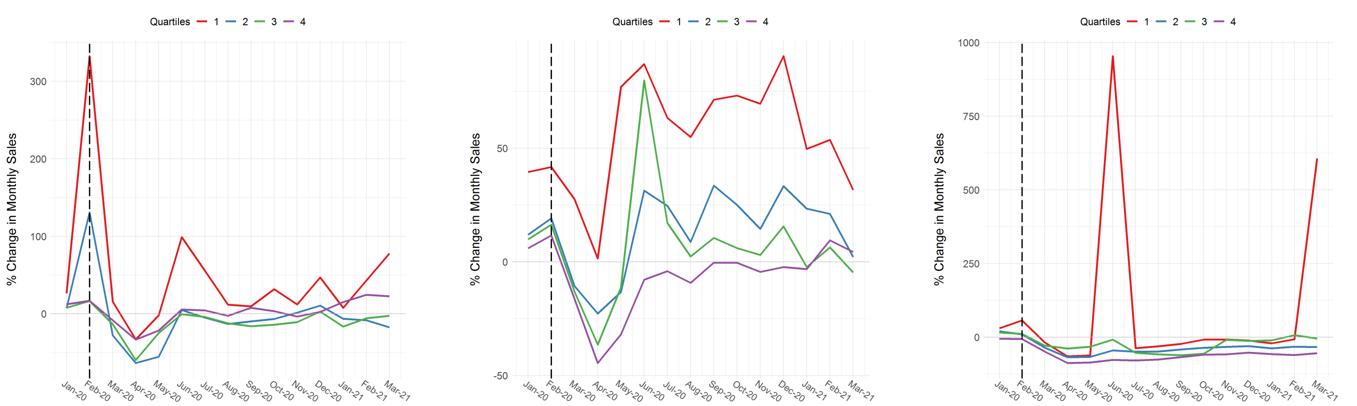



(a) Quartiles, based on 2018-2019 average sales

(b) Top 5 Deciles, based on 2019 Sales

Note: Panel (a) presents the monthly relative change in adjusted sales between 2019 and 2020, by quartiles of average 2018-2019 sales, for a semi-balanced panel of active firms only (see Figure 4 for the semi-balanced panel figure). Firms that have no sales at all from 2018 to 2019 are dropped, see Table 2 for the quartile thresholds. Panel (b) shows the relative change in adjusted sales for the top 5 deciles, also based on the average 2018-2019 sale distribution. The black dashed vertical line marks February 2020, the first full month before the lockdown was introduced in the end of March.

## Figure 9: Impact on VAT Sales by Firm Size Within Sector – Unbalanced Panel




(a) Manufacturing

(b) Retail

(c) Hotels, Bars and Restaurants

Note: These graphs present the monthly relative change in adjusted sales between 2019 and 2020, by quartiles of average 2018-2019 sales, for a semi-balanced panel of active firms only, by sectors (see Figure 5 for the unbalanced panel figure). Firms that report zero sales from 2018 to 2019 are dropped. Panel (a) shows quartiles for the manufacturing sector, Panel (b) for the retail sector and Panel (c) for the hospitality sector. The black dashed vertical line represents the monthly change marks February 2020, the first full month before the lockdown was introduced in the end of March.