



Macroeconomics, Trade &amp; Investment

# MTI Practice Notes

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

Pierre Bachas, Anne Brockmeyer and Camille Semelet<sup>1</sup>

### SUMMARY

We measure the impact of the COVID-19 crisis and the resulting lockdown on formal firms in Honduras, using monthly value-added tax records for January 2018 to August 2020. Firms' revenue fell by 26 percent, or 342.6 billion lempiras (USD 14.3 billion), in real terms between March and August 2020 and the same period in 2019. Sectors subject to stricter containment measures experienced larger revenue losses. The

service sector was the most severely affected, experiencing a 45 percent revenue loss. Larger firms experienced smaller revenue losses than smaller firms, even when accounting for the sectoral composition of firm-size groups. A non-negligible number of firms remained shut down until the end of available data in August 2020.

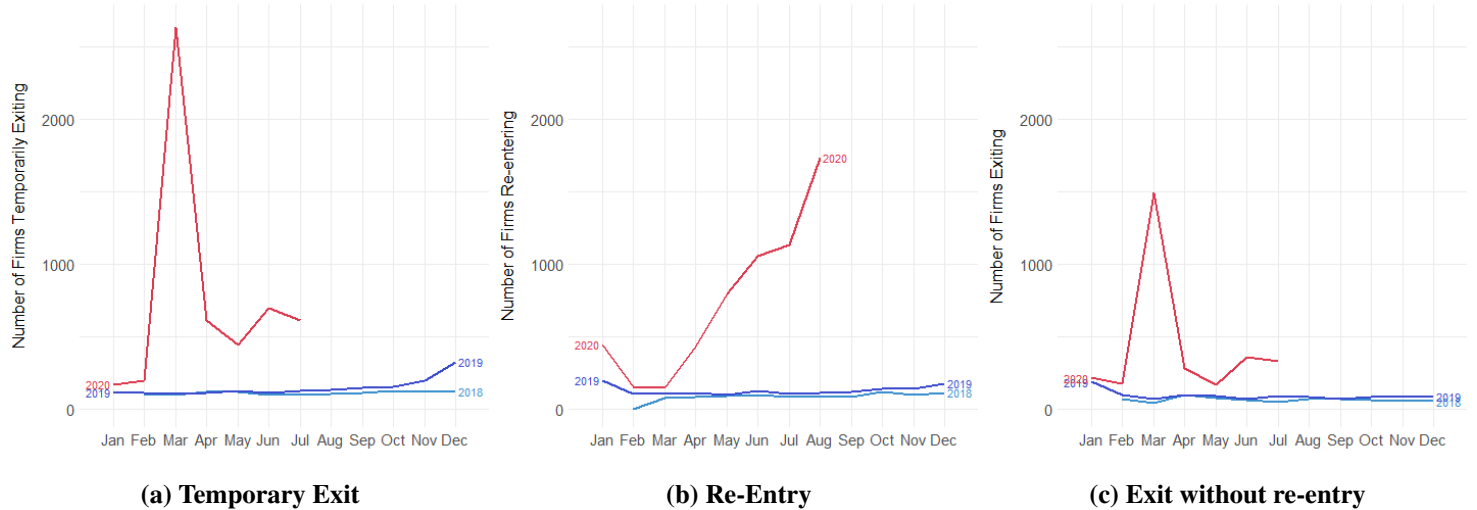
<sup>1</sup>The World Bank; with substantial inputs from Jose Carlo Bermúdez Sanchez, Roldan Manuel Enamorado Irias, Pedro Rafael Zuniga Figueroa, David Fernando Pineda Pinto (Servicio de Administración de Rentas, SAR), Thiago Scot (University of California, Berkeley) and Vedanth Nair (Institute for Fiscal Studies). The findings and conclusions are those of the authors; they do not represent the views of the World Bank or the Servicio de Administración de Rentas in Honduras. We thankfully acknowledge funding by the World Bank through the Knowledge of Change Trust Fund and the Fiscal Policy and Sustainable Growth Unit, and by the UK Foreign, Commonwealth and Development Office (FCDO) through the Centre for Tax Analysis in Developing Countries (TaxDev) at the Institute of Fiscal Studies.

## CONTEXT

In response to the COVID-19 health crisis, the government of Honduras declared a national state of emergency and implemented a strict lockdown beginning March 16, 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 in mid-April, starting with hardware stores, food delivery, and con-

struction. The lockdown was further eased-up on June 8th for most of the country, and on August 3rd for areas with the highest COVID-19 incidence. To mitigate the impact of the crisis on businesses, the government took several fiscal measures aimed at supporting businesses and maintaining employment.<sup>2</sup> Most importantly for the purpose of this paper, firms were allowed to defer their VAT filing and payments if they stopped operating during the lockdown.

Figure 1: Changes in the Number of Firms Filing VAT



Panel (a) shows the number of firms that exited the VAT panel each month (by not filing for at least one month), but subsequently re-entered before the end of the year (or before August for 2020 data). Panel (b) shows the number of firms rejoining the panel each month, after having temporarily exited. Panel (c) shows firms which left the panel and have not re-entered until August 2020 (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. First, the peak in firm exits in March (Panel (a)) corresponds to the beginning of the lockdown in Honduras. Panel (b) shows that firms started re-opening in April, when restrictions were eased, and continued to re-open in larger numbers until August. It is likely however that some businesses took advantage of the exceptional VAT deferral decree and did not report their sales even if they had some, which would lead to an overestimation of the true number of firms with zero turnover. Second, the crisis and resulting lockdown had an immediate impact on the economy, with Panel (a) showing that more than 4000 firms did not file for VAT in March 2020. Third, despite the easing of the lockdown by August 2020, Panel (c) shows that about 2600 firms have not resumed filing by then, indicating possible lasting damage

to the economy. While the data currently does not allow us to fully distinguish between firms that temporarily stopped their operations and firms that have closed down, the extension of the VAT panel data to the end of the 2020 would allow us to identify firms that have re-opened after August 2020.

## OVERALL IMPACT

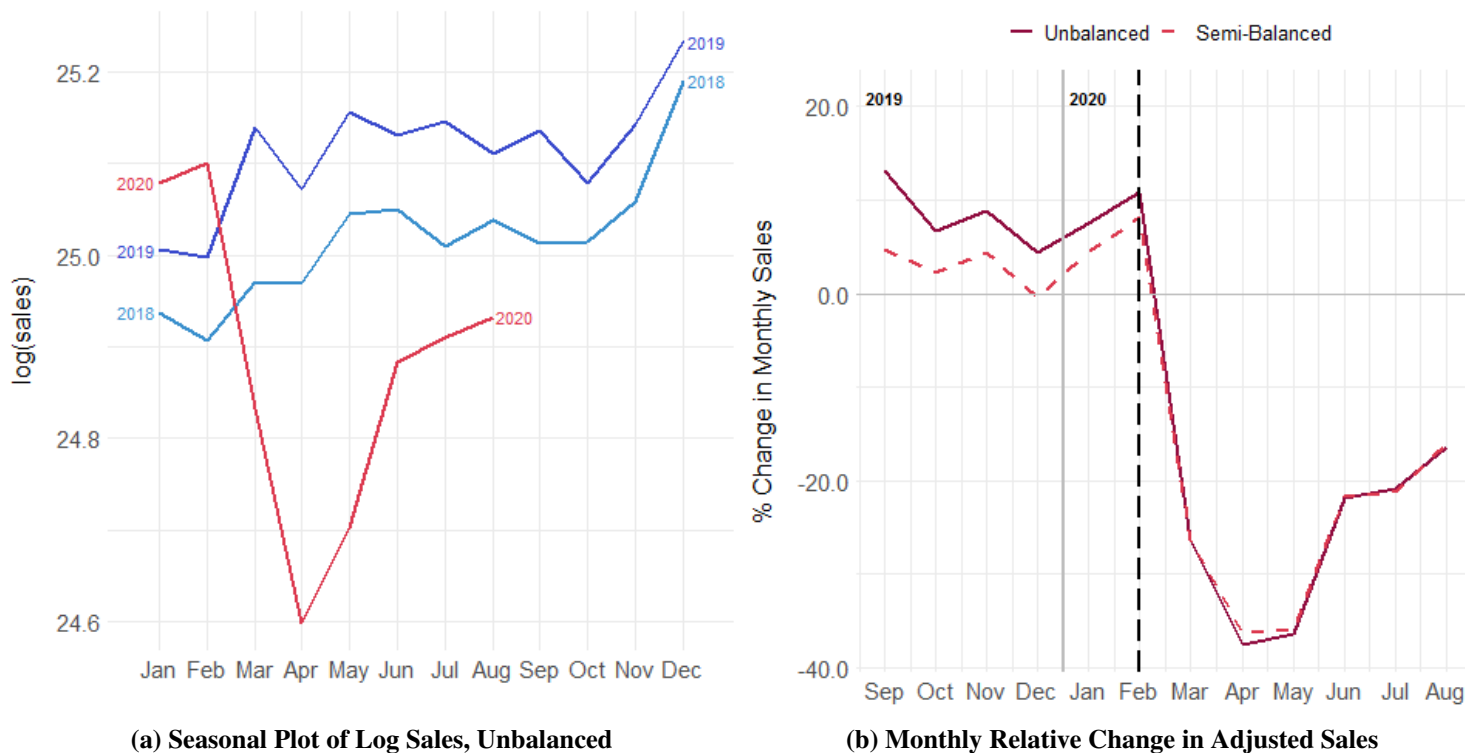
The large rise in the number of firms temporarily exiting the VAT system in Figure 1 motivates the use of an unbalanced and a semi-balanced panel<sup>3</sup> for the rest of our analysis. The true impact of the crisis should fall in between these two estimates. A strictly balanced panel is not considered 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

<sup>2</sup>In particular, companies that maintain their pre-crisis employment level during the 2020 financial year will benefit from a one-off income tax credit (10 percent of salary expenses). Second, advance payments for corporate income tax were reduced, and personal income tax payments and social security contributions were deferred. Third, cleaning products and medicines was fully exempt from the VAT. See the IMF Policy Responses to COVID-19. [website](#) for an updated list of fiscal measures adopted, and the [Decree No. 24-2020](#) on VAT payment deferral.

<sup>3</sup>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 second or third quarter of 2020.

panel on the other hand includes firms that re-appeared in the second or third quarter of 2020, even though they may have disappeared in March. In all analyses, sales are adjusted for inflation.

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



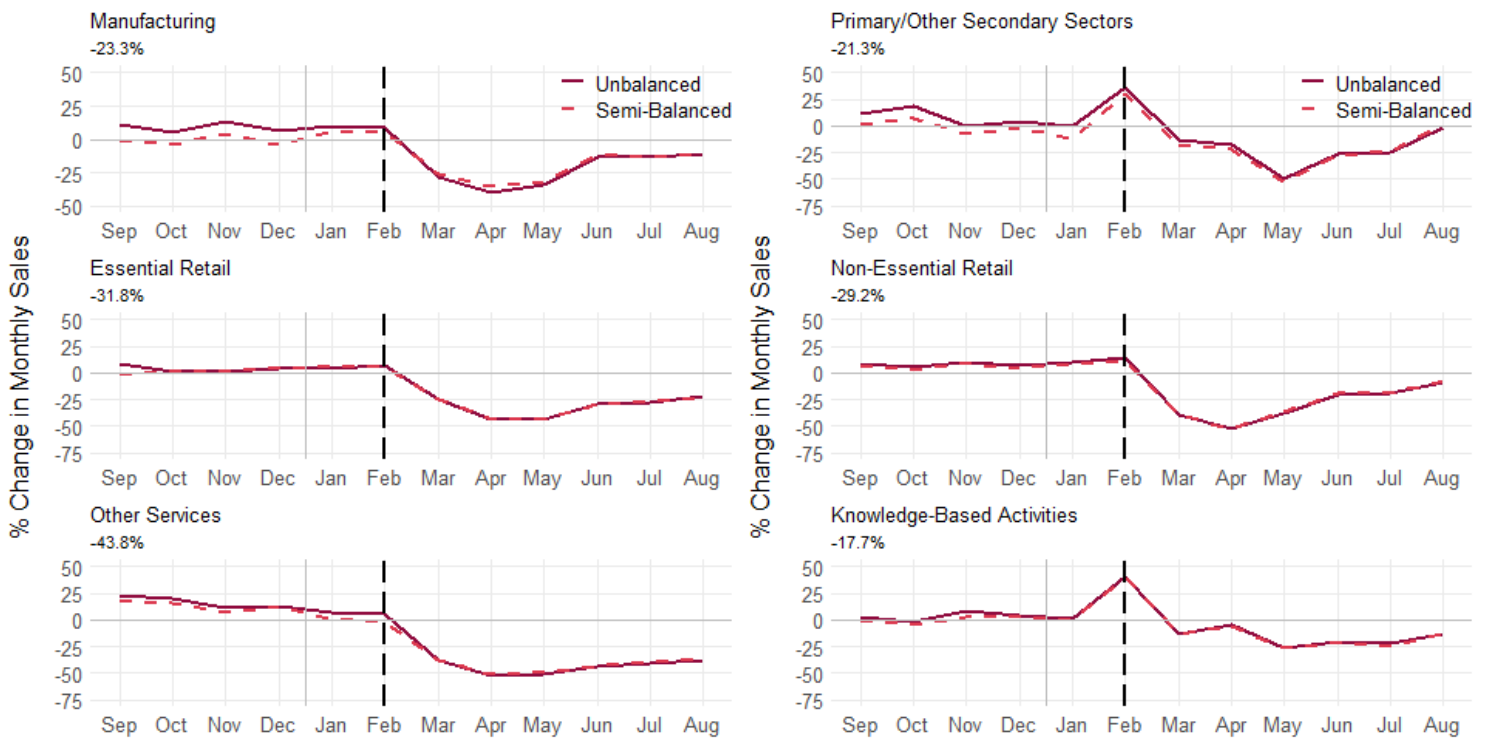
Note: Panel (a) shows the seasonal trends of aggregate log(sales) for all firms filling VAT in 2018, 2019 and 2020 (unbalanced panel, sales are adjusted for inflation). Panel (b) shows the monthly relative change in aggregate adjusted sales, between 2019 and 2020, for a semi-balanced and an unbalanced panel. For example, the monthly change in September 2019 is computed by comparing sales in September 2018 and in September 2019. The black dashed vertical line marks February 2020, the last month before the lockdown was introduced on March 16.

**Figure 2 shows that the crisis led to a large and sharp drop in aggregate reported sales.** 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 and December. In 2020, the same pattern appeared in January and February, but sales dropped dramatically in March. Panel (b) shows that sales dropped by almost 40 percent in April 2020, and remained below 2019 levels by more than 15 percent up

to the end of summer. In comparison to Figure 1, we see that sales were most severely hit in April when the lockdown was fully in place, and the gradual resumption of activities started to show its effect from June. The difference between the balanced 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 stopped operating during these months are small-size firms which only make up a small proportion of aggregate sales.

**IMPACT BY INDUSTRY**

**Figure 3: Impact on VAT Sales by Sector**



Note: These graphs show the monthly year-on-year change in aggregate sales by sector, for the last year of the panel. The percentage above each graph corresponds to the relative change in aggregate sales, between March-August 2020 and March-August 2019, for the unbalanced panel. The black dashed vertical line marks February 2020, the last month before the lockdown was introduced on March 16. The category “Primary/Other Secondary Sectors” includes primary activities and secondary activities excluding Manufacturing (A, B, D, F). The category “Other services” includes services activities (R, I, L, P, S, Q) but excludes Retail, and the category “Knowledge-Based Activities” includes (J, M). Financial and administration activities are not represented here. See Table 1 for the full description of the sector categories and the breakdown of the Retail sector.

**Figure 3 examines the impact on VAT sales by sector, showing that the service sector, which was most affected by social distancing measures, experienced the largest drop in sales.** Sales in services fell by about 44 percent from March to August 2020, compared to the same period in 2019. Within the service sector, the arts and entertainment subsector as well as the accommodation and food services subsector were by far the most severely affected, experiencing a drop of 84 and 74 percent respectively.<sup>4</sup> Perhaps surprisingly, the retail sector has been impacted evenly across essential trade (which includes supermarkets and grocers; pharmacies and health providers; gas stations; and vehicle repair shops) and non-essential trade.<sup>5</sup> Both essential and non-essential retail experienced a 30 percent drop in sales on aggregate between March and August 2020 compared to the previous year, though non-essential retail experienced a larger drop in sales in April and enjoyed a

faster recovery. The timing of the worst part of the shock (maximum monthly drop in sales) differed by a sector’s position in the value chain. 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. This is likely driven by the extractive industry which faced a fall in demand for raw materials from the manufacturing sector.

**Despite the disparities across industry groups, it is worth noting that all sectors still faced a significant shock compared to the previous years and that this shock is long-lasting for most firms.** By the end of the summer, only the mining industry and health activities overcame the shock and managed to exceed 2019 levels in aggregate sales.<sup>6</sup>

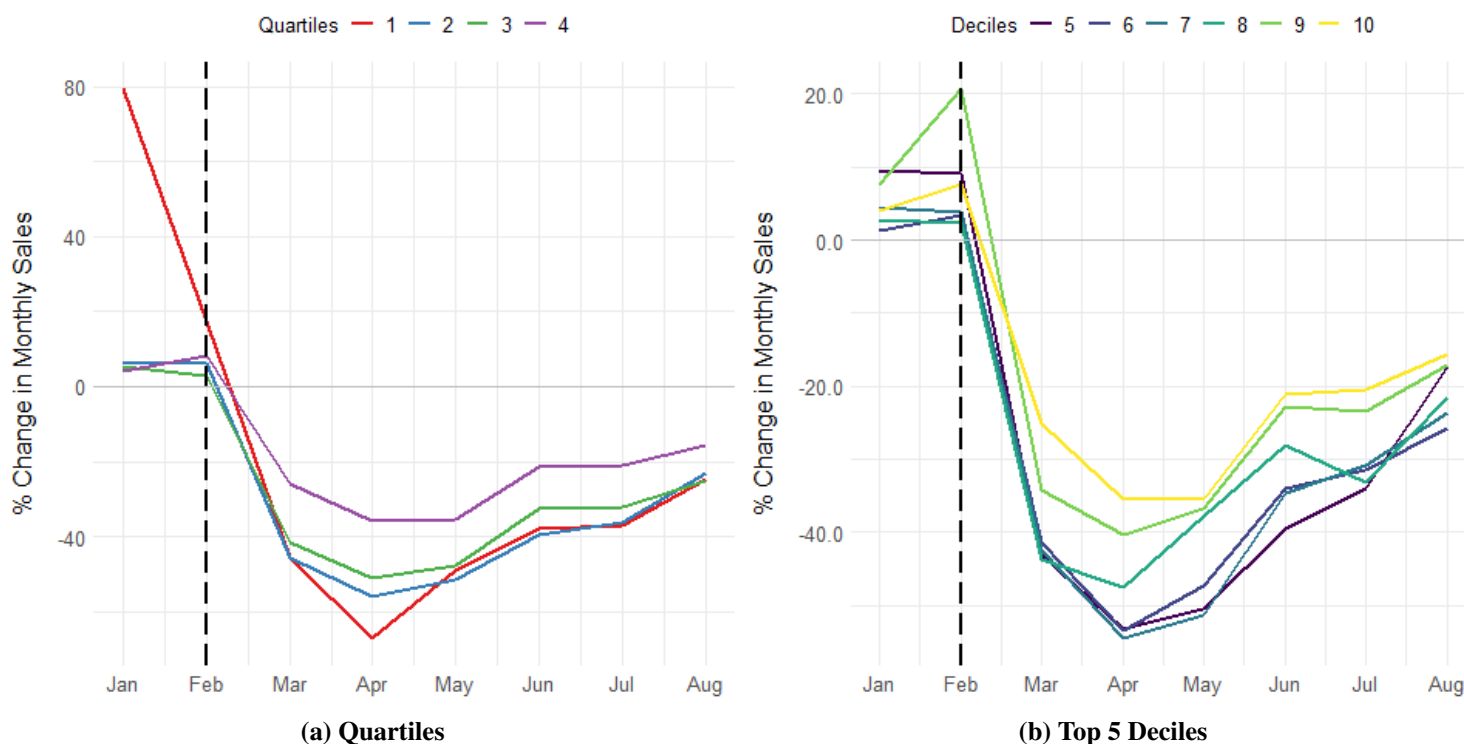
**IMPACT BY FIRM-SIZE**

<sup>4</sup>Table 1 in the Appendix lists all sectors by decreasing order of the overall shock faced from March to August 2020, and Figure 5 shows similar graphs as Figure 3 for all subsectors.

<sup>5</sup>See full description of essential retail activities in Appendix Table 3.

<sup>6</sup>See Figure 6 in the Appendix for the detail by sectors.

**Figure 4: Impact on VAT Sales by Firm Size**



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 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 relative 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 on March 16. Firms in the semi-balanced panel must appear at least once in every quarter of 2018 and 2019, and in the second and/or third quarter of 2020.

In Figure 4 we study the impact of the shock by firm size, showing that small firms experienced a significantly larger drop in sales than large firms. We plot the relative change in aggregate adjusted sales by quartiles and deciles of 2018-2019 average sales, for the semi-balanced panel.<sup>7</sup> Panel (a) shows that the size of the shock decreases with firm size, with the smallest quartile of firms experiencing a 65 percent sales drop, compared to a 35 percent sales drop for the largest quartile. After the initial shock had passed, the smallest quartile of firms experienced the same sales drop as mid-sized firms. Panel (b) breaks down the change in sales for the top 5 deciles of firm size and confirms that the largest firms faced a smaller shock overall.

Figure 5 shows that this result is not due to the sectoral composition of firm-size groups, i.e. the fact that smaller firms are over-represented in retail. When we reproduce Figure 4 (a) for the manufacturing and retail sectors separately, the difference in the size of the shock across the firm-size distribution becomes even more striking. Within the manufacturing sector (Figure 5, Panel a), smaller firms experienced a shock almost 50 percentage points greater than the shock experienced by larger firms. Within the retail sector (Panel b), the picture is very similar although large retailers still faced a bigger shock than large manufacturers. Small retailers (in the first quartile) recovered faster than the small manufacturing firms.

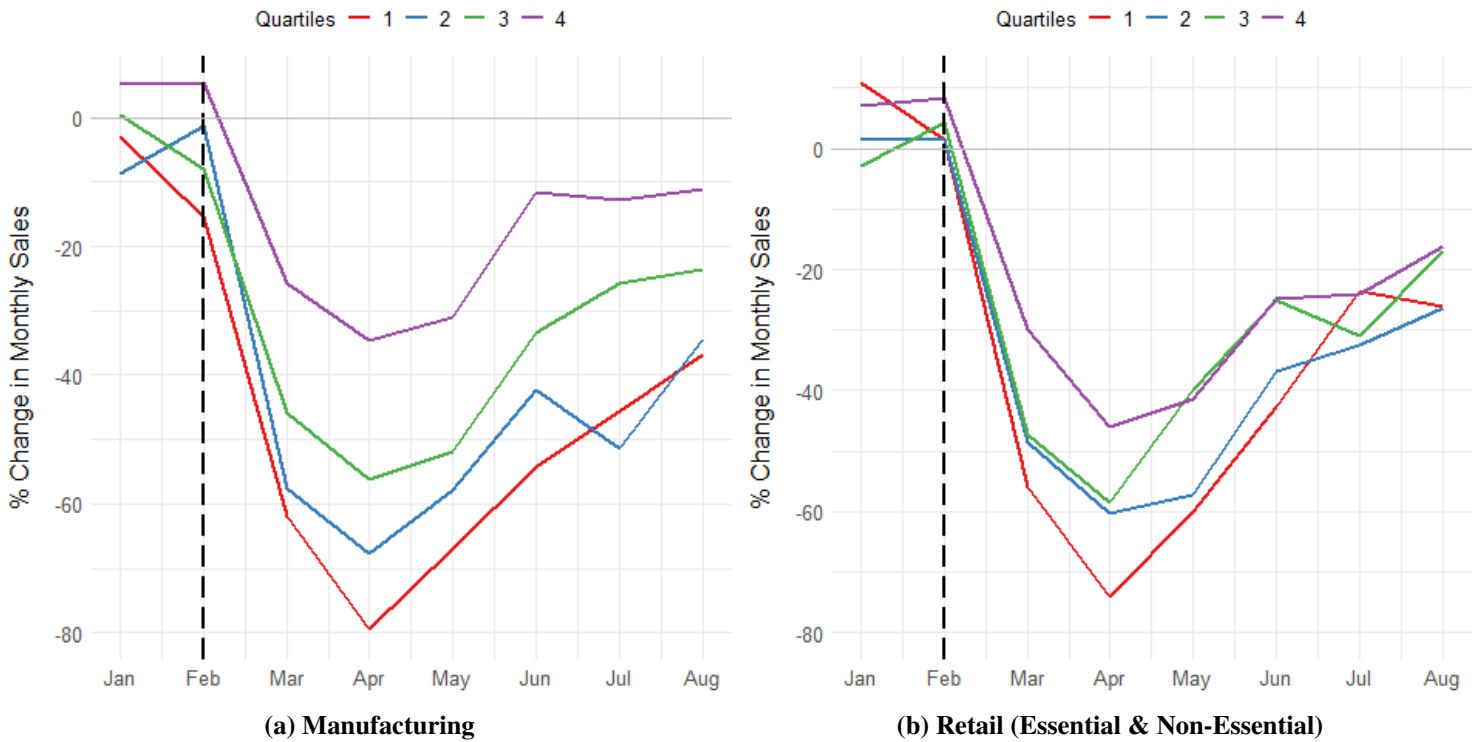
## DISCUSSION

This note is a first attempt to measure the impact of the COVID-19 crisis and the lockdown on firms' revenues and assess heterogeneity in the size of the revenue shock. Our results suggest that a large number of firms, possibly up to 2600 (9.4% of the pre-crisis firm population) may have shut down completely. The lockdown caused a drop in sales of almost

40% in April 2020, with a gradual yet incomplete recovery until August 2020. Service sector firms and small firms in all sectors have been hit hardest and will likely constitute the majority of firm closures. Our results also highlight the need for further research on these issues. Extended data for the second half of 2020 would provide a better picture of the number of firms that ceased their activity completely, and on the

<sup>7</sup>Figure 8 in the Appendix plots the percent change in sales for quartiles for the unbalanced panel and shows a similar trend.

**Figure 5: Impact on VAT Sales by Firm Size Within Sector**



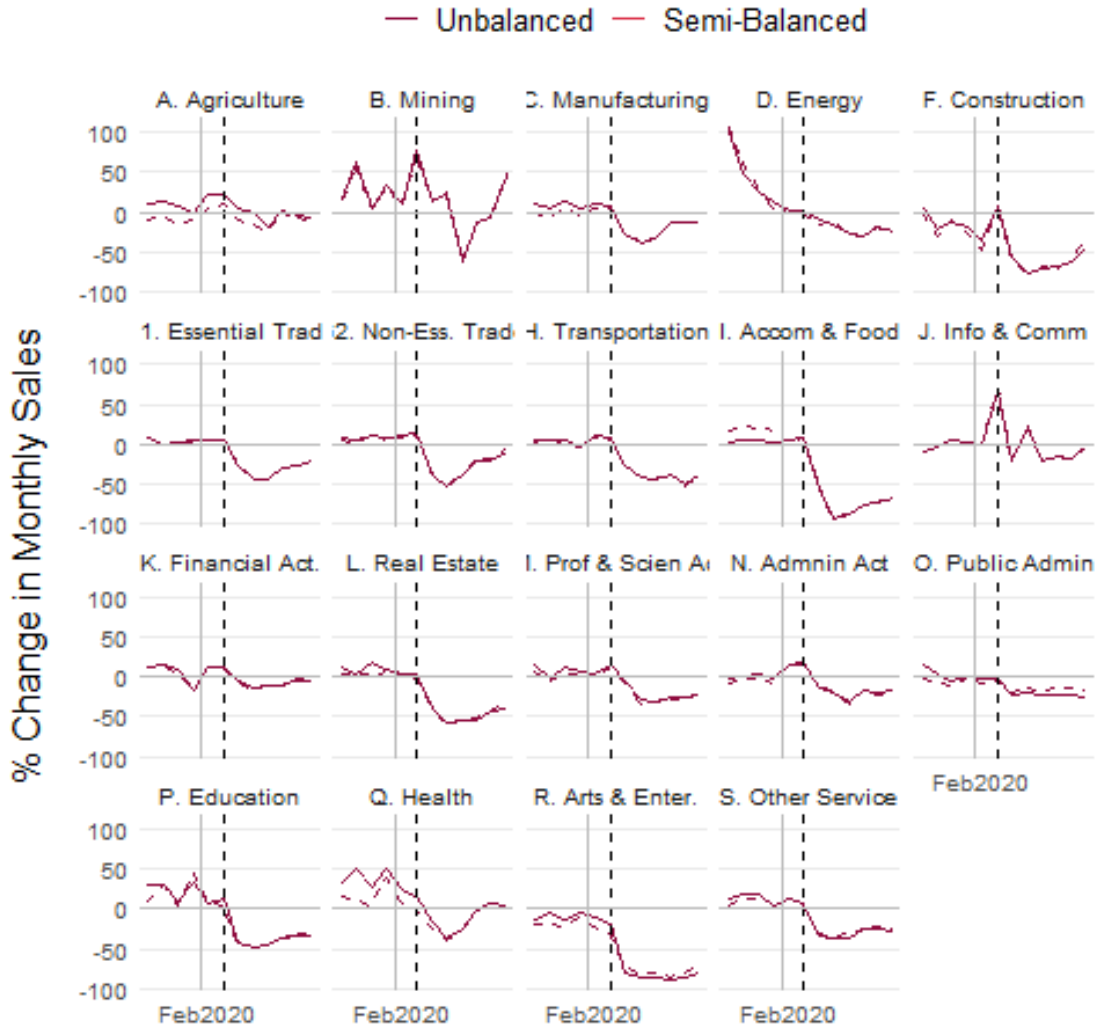
Note: These graphs present the monthly relative change in adjusted sales between 2019 and 2020, by quartiles of average 2018-2019 sales, for a semi-balanced panel of active firms, by sectors (see Figure 9 in the Appendix for the unbalanced panel equivalent). Firms that have no sales at all from 2018 to 2019 are dropped. Panel (a) shows quartiles for the manufacturing sector and panel (b) for the retail sector. The black dashed vertical line marks February 2020, the first full month before the lockdown was introduced on March 16th. Firms in the semi-balanced sector must appear at least once in every quarter of 2018 and 2019, and in the second and/or third quarter of 2020.

pace of the recovery. 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)<sup>8</sup>.

<sup>8</sup>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.

Figure 6: Relative Change in Sales 2018-2020, from September 2019 to August 2020, All Sectors



Note: These graphs show the monthly relative change in aggregate sectors' adjusted sales, between September 2019 and August 2020, by sectors. The black dashed vertical line marks February 2020, the first full month before lockdown was introduced on March the 16th.

Table 2: Average Firm Sales and Value-Added (in thousand) in 2019, by Quartiles and Panels

Quartiles	Unbalanced			Balanced		
	Sales	Value-Added	N	Sales	Value-Added	N
1	9.7	2.9	6,788	21.4	10.0	4,462
2	73.0	38.9	7,067	135.3	73.8	4,461
3	330.3	189.6	7,128	555.7	307.0	4,461
4	13,113.2	5,505.5	7,165	18,660.0	7,529.6	4,461

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 second and/or third quarter of 2020.

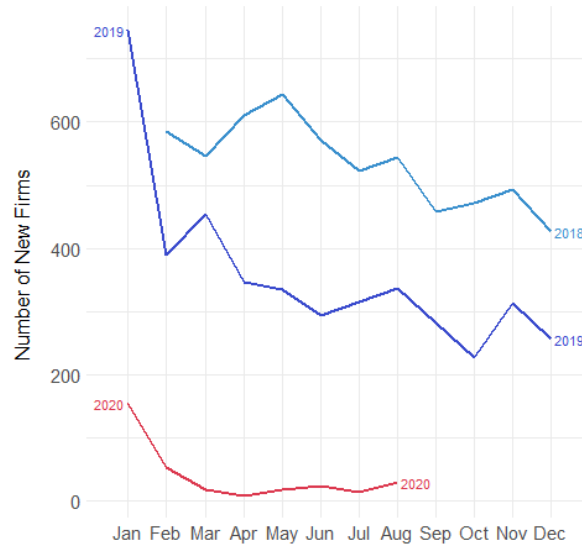
**Table 1: Sectors, by Decreasing Order of Shock Size during March-August 2020**

Sector	Full Sector Name	Unbalanced Panel			Balanced Panel		
		Shock	Sales (% Agg. Sales)	N (2019)	Shock	Sales (% Agg. Sales)	N (2019)
R	Arts, Entertainment and Recreation	-84.7	0.1	277	-78.9	0.1	176
I	Accommodation and Food Services	-75.0	1.4	918	-74.4	1.5	628
F	Construction	-63.1	2.2	1221	-62.4	1.9	598
U	Activity of Extraterritorial Organizations and Bodies	-56.2	0	7	-41.5	0	2
Z	Undefined Category	-52.1	0.1	281	-52.2	0.1	210
T	Activity of Households As Employers, Activities of Households for Own Use	-51.2	0	4	-54.0	0	3
L	Real Estate Activities	-48.9	1.3	1454	-47.5	1.2	1025
H	Transportation and Storage	-39.7	2.6	1068	-40.1	2.7	758
P	Education	-39.5	0.5	478	-38.7	0.3	186
G1	Essential Wholesale and Retail Trade	-31.8	20.5	2118	-31.7	22.3	1539
S	Other Service Activities	-31.8	2.2	4785	-28.4	1.9	3356
G2	Non-Essential Wholesale & Retail Trade	-29.2	13.6	5751	-28.4	14.2	4149
M	Professional, Scientific and Technical Activities	-24.2	1.4	1786	-25.8	1.4	1202
C	Manufacturing	-23.3	34	2729	-21.6	32.5	1997
O	Public Administration and Defence, Compulsory Social Security	-22.9	0.2	66	-15.3	0.2	39
D	Energy (Electricity, Gas, Steam and Air conditioning supply; Water supply Sewerage, Waste Management and Remediation Activities)	-20.7	7.1	334	-21.3	7	236
N	Administrative Activities	-20.4	1.7	1203	-21.1	1.7	817
J	Information and Communication	-11.2	3.1	869	-11.3	3.5	638
Q	Human Health and Social Work Activities	-10.3	0.7	720	-12.5	0.6	362
K	Financial and Insurance Activities	-8.2	1.9	568	-8.7	2	282
A	Agriculture, Forestry and Fishing	-4.5	4.8	1024	-12.3	4.4	521
B	Mining and Quarrying	3.6	0.5	60	4.2	0.6	42

Notes: Sectors follows the NACE Rev. 2 classification. Sector D includes both “D” - Electricity, Gas, Steam and Air conditioning supply” - and “E” - Water supply, Sewerage, Waste Management and Remediation Activities - original NACE Rev. 2 categories. Original sector “G” - Wholesale and Retail Trade - is split between essential and non-essential activities. Essential activities have the following 4 digit codes: 4530, 4772, 4730, 4661, 4712, 4711, 4520, 4721, 4620, 4645, 4781, 4653, 4630, 4722, 4791 (see Table 3 for details); the rest is classified as non-essential. Columns “shock” present the percentage change of aggregate adjusted sales from March-August 2019 to March-August 2020 by sectors, for both panels.

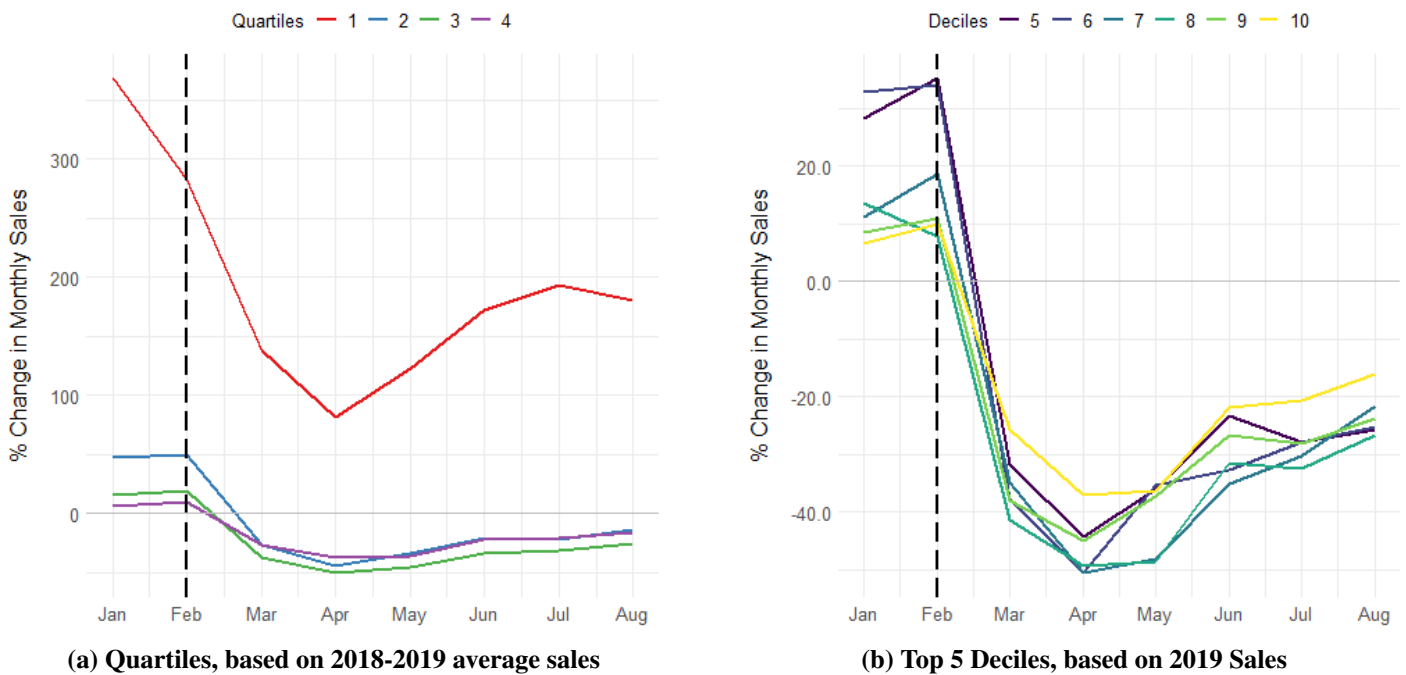


**Figure 7: VAT Payments – Number of First Entry**



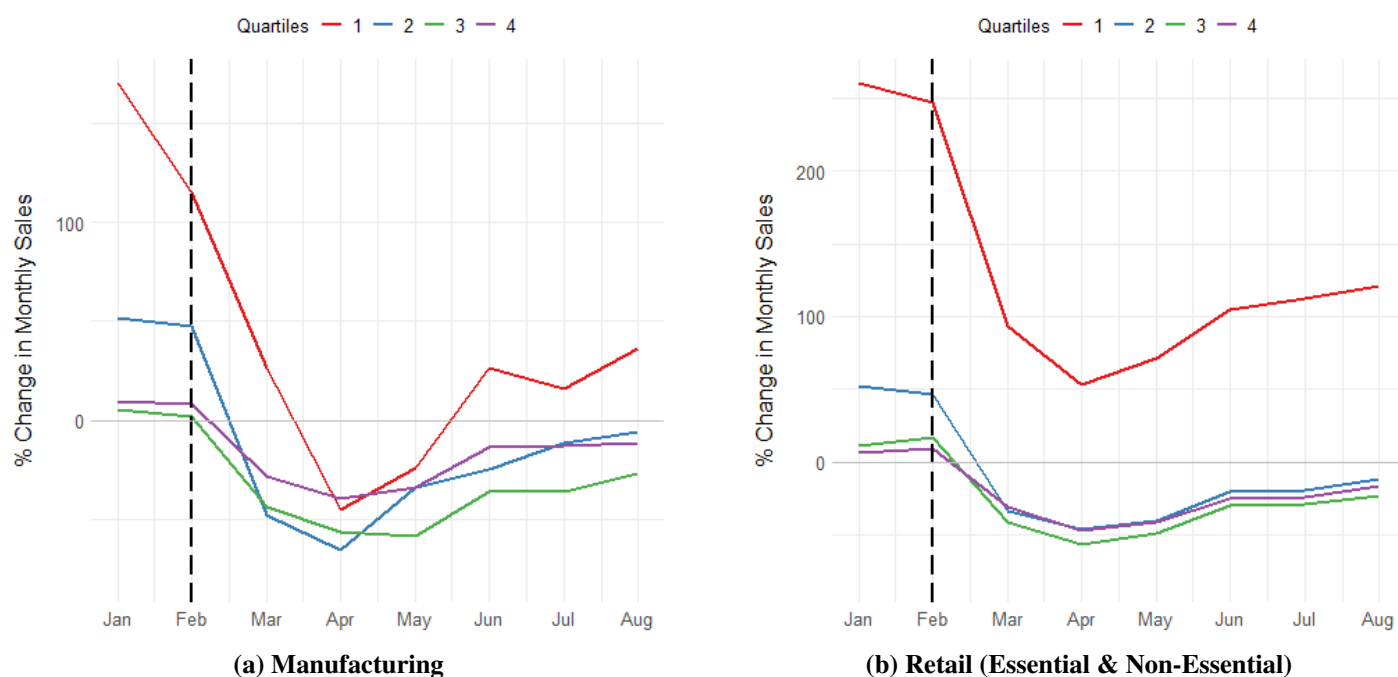
Note: This graph shows the number of firms that first entered the VAT panel, from February 2018 to July (or August) 2020. Figure 1 presents exit and re-entry patterns.

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



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 on March 16.

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



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 and panel (b) for the retail sector. The black dashed vertical line represents the monthly change marks February 2020, the first full month before the lockdown was introduced on March 16.

**Table 3: Retail and Wholesale Trade: Businesses Considered Essential (G1)**

Reference to ISIC Rev. 4	Description
4530	Retail trade of motor vehicle parts and accessories
4772	Dispensing chemist in specialised stores
4730	Retail sale of automotive fuel in specialised stores
4661	Wholesale of solid, liquid and gaseous fuels and related products
4712	Retail sale in non-specialised stores
4711	Retail sale in non-specialised stores with food, beverages or tobacco
4520	Maintenance and repair of motor vehicles
4721	Retail sale of food, beverages and tobacco in specialised stores
4620	Wholesale of agricultural raw materials and live animals
4645	Wholesale of household goods
4781	Retail sale via stalls and markets
4653	Wholesale of agricultural machinery, equipment and supplies
4630	Wholesale of food, beverages and tobacco
4722	Retail sale of beverages in specialised stores
4791	Retail sale via mail order houses or via Internet