

Número 639

**Pandemic and SMEs in an emerging
country**

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SEPTIEMBRE 2024

CENTRO DE INVESTIGACIÓN Y DOCENCIA ECONONÓMICAS



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Abstract

In this paper, we analyze the impact of the COVID-19 pandemic on the sales and expenditures of small and medium-sized businesses in Mexico. Using a novel survey that captures the economic conditions and expectations before and during the pandemic, we also incorporate electricity billing data as a proxy for economic activity and as a revealed measure of firms' flexibility in reducing costs. We examine these variables in relation to firms' characteristics, adaptation strategies, and expectations during the pandemic. Our analysis employs non-parametric tests and a set of econometric models, revealing a significant decline in sales alongside limited flexibility in expenditures. The effects vary depending on the strategies firms adopt to cope with the crisis and their negative expectations regarding a quick return to normality. Consequently, most SMEs face a precarious economic situation, highlighting the need for new policies and strategies to enhance their survival prospects in emerging economies such as Mexico.

Keywords: COVID-19, small and medium-sized enterprises (SME), activity restrictions, electricity consumption, emerging countries.

JEL Codes: D22; L20; Q41.

Resumen

En este artículo, analizamos el impacto de la pandemia de COVID-19 en las ventas y gastos de las pequeñas y medianas empresas en México. Utilizando una encuesta novedosa que captura las condiciones económicas y las expectativas antes y durante la pandemia, también incorporamos datos de facturación de electricidad como un proxy de la actividad económica y como una medida revelada de la flexibilidad de las empresas para reducir costos. Examinamos estas variables en relación con las características de las empresas, las estrategias de adaptación y las expectativas durante la pandemia. Nuestro análisis emplea pruebas no paramétricas y un conjunto de

modelos econométricos, revelando una disminución significativa en las ventas junto con una flexibilidad limitada en los gastos. Los efectos varían dependiendo de las estrategias que adopten las empresas para enfrentar la crisis y sus expectativas negativas sobre un rápido regreso a la normalidad. En consecuencia, la mayoría de las PYME enfrentan una situación económica precaria, lo que resalta la necesidad de nuevas políticas y estrategias para mejorar sus perspectivas de supervivencia en economías emergentes como México.

Palabras clave: COVID-19, pequeñas y medianas empresas (PYME), restricciones de actividad, consumo eléctrico, países emergentes.

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Pandemic and SMEs in an emerging country

Hernán Bejarano Pedro I. Hancevic Héctor M. Núñez*

July 29, 2021

Abstract

In this paper, we analyze the impact of the COVID-19 pandemic on the sales and expenditures of small and medium-sized businesses in Mexico. Using a novel survey that captures the economic conditions and expectations before and during the pandemic, we also incorporate electricity billing data as a proxy for economic activity and as a revealed measure of firms' flexibility in reducing costs. We examine these variables in relation to firms' characteristics, adaptation strategies, and expectations during the pandemic. Our analysis employs non-parametric tests and a set of econometric models, revealing a significant decline in sales alongside limited flexibility in expenditures. The effects vary depending on the strategies firms adopt to cope with the crisis and their negative expectations regarding a quick return to normality. Consequently, most SMEs face a precarious economic situation, highlighting the need for new policies and strategies to enhance their survival prospects in emerging economies such as Mexico.

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1 Introduction

Small and medium-sized enterprises (SMEs) represent about 95% of all businesses worldwide. They generate roughly half of private employment and nearly 60% of value-added (OECD, 2019; World Bank, 2020). A report by [Organization for Economic Cooperation and Development \[2020\]](#), based on a collection of national and cross-country studies, suggests that compared to large companies, SMEs exhibit lower productivity and wages. In critical situations like the COVID-19 pandemic, a key question arises: Why are SMEs more affected than large firms?

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SMEs face significant challenges related to management, access to skilled labor, credit access, and operating cash flows. According to [Beglaryan and Shakhmuradyan \[2020\]](#), three main factors affect SMEs more severely. First, they are overrepresented in sectors where the impact is more direct, such as tourism, retail, and transportation. Second, unlike larger companies, SMEs have less cash reserves. Third, SMEs are more vulnerable due to their higher dependence on global and national supply chains, which have been heavily disrupted during the crisis. Furthermore, SMEs often have fewer resources to identify and implement effective coping strategies.

These characteristics make SMEs more susceptible to shocks in supply and demand, as well as to government-imposed activity restrictions. In contrast, large companies have more diverse channels for buying and selling goods and services, are better positioned to comply with regulatory measures, and often have easier access to financing from financial institutions.

Recent studies on the impact of COVID-19 on firms support our previous argument that the pandemic has had a more significant effect on SMEs than on larger companies. More than half of the SMEs in OECD member countries experienced a substantial reduction in sales, and a similar proportion of entrepreneurs expressed concern about losing their businesses without government assistance during the crisis [[Organization for Economic Cooperation and Development, 2020](#)]. In response, many SMEs began implementing remote work, digitizing their operations, and faced temporary closures, along with reductions in employment and wages. As a result, many companies went bankrupt.

Among the main public policy instruments used to mitigate the impact of the crisis, the most common were deferrals in income tax payments, special lines of credit for SMEs, and salary subsidies. However, little is known about how authorities in developing countries could reduce regulatory complexities and create more opportunities for these companies during crises.

In this study, we investigate the effects that the COVID-19 pandemic had on the economic activity of SMEs in Mexico. We use a representative sample of commercial and service business establishments belonging to small and medium-sized firms in the Metropolitan Area of Aguascalientes. The interest thereon lies in the fact that these particular sectors constitute a significant source of employment, representing almost 34% of total jobs in Mexico [[INEGI, 2020a](#)]. Along with micro businesses, small and medium-sized enterprises (SMEs) are the first to be affected by temporary lock-downs and operation restrictions. Moreover, they are susceptible to abrupt drops in demand. Under these circumstances, consumers commonly opt for goods and services provided by larger establishments, which find it easier to adapt to and meet health standards and restrictions imposed by the authorities. Therefore, this study is of

interest: first, to explore the heterogeneity and details of the effects on sales and expenses of businesses that these policies generated. Second, to capture how businesses' actions diminish the constraints introduced by the contingency, their adaptation measures affect expectations and relate to their energy consumption, among other matters. Our study analysis focuses mainly on variables that are strongly related to the drop of sales and changes in expenses during this pandemic. These measures reflect the chances that firms have at maintaining acceptable during this period. In the end, we seek to help readers interested in understanding how different factors affect establishments' chances of survival.

Our analysis suggests that approximately 37% of SMEs in our sample closed temporarily during the first quarter of the pandemic. In addition, 35% of these establishments fired employees during this period.¹ These results are in line with the [Bartik et al. \[2020\]](#) study for the US, which finds that approximately 43% of this type of business closed due to the pandemic and cut down on the number of employees by 39%. In this regard, [Carvalho et al. \[2020\]](#) shows that using data from those transactions conducted with electronic payment methods, the sales of businesses with these devices decreased by 45% during the pandemic in Portugal. In terms of expectations, establishments in our survey expected conditions returning to normal in approximately 12 months, which shows that the establishments in our sample tended to be more pessimistic than their counterparts in the US, as they expected to regain 65% of the demand in place before the pandemic by September 2020 [[Balla-Elliott et al., 2020](#)]. Lastly, we found that the drop in sales is significantly correlated to the temporary closings, based on annual projections, which can imply a loss of income of up to 73%. Despite the similarity on the magnitude of the effects that the pandemic has on SMEs in different countries, little is known regarding agent's reactions to diminish these negative shocks, our unique survey (ECCOV19-AGS) allows us to search for the mechanism behind the heterogeneous impacts, and reactions to the same pandemic context and policies.

In a pandemic context, firms receive simultaneous shocks in their demand and supply, and overall effects on firm's profitability will be a function of its characteristics, the sector that the firms belong to and of the actions and expectations of their owners and managers. Several variables collected in the ECCOV19-AGS capture not only the physical characteristics and sector to which the establishment belong but some usually unobserved intrinsic characteristics and expectations. Thus, by studying firms' opinions, beliefs, and expectations at the beginning of the pandemic outbreak, we can know how these characteristics affect the impact of sector-specific shocks and common policies on a firm's economic variables.

¹These findings are obtained from the Survey on the Economic Impact of COVID-19 on establishments in the Aguascalientes metropolitan area (ECCOV19-AGS). Aguascalientes is a medium-sized metropolitan area with over one million inhabitants, which could represent the same situation experienced by similar urban conglomerates across the country and the region.

Mexico presents a challenge when we aim to measure economic variables. A high rate of the SMEs are likely to be informal, thus making the availability of administrative data and other records such as balance sheets unlikely to be obtained by researchers. We consider the private information feature of administrative and economic variables, the informality of several firms, and behavioral insights regarding people’s memory to design the questionnaire regarding the relevant economic variables of interest. Therefore, by capturing declared changes in sales and expenses, we hope that even when magnitudes might be different from actual sales and expense’s values, respondents have incentives to report the correct change. In particular, we are interested in measuring in the most feasible and accurate way changes in firm’s economic conditions due to the pandemic. Finally, we explore how this relates to the consumption of essential input electricity. By linking electricity consumption, as a proxy for economic activity, we can analyze how firms’ characteristics, adaptation strategies, and expectations during the pandemic relate to firm’s economic condition. Concretely, we rely on monthly electricity consumption measured in kWh for the period March 2019-September 2020. The results are robust and mark a clear break in electricity consumption at the beginning of the pandemic that continues during the following months. Electricity consumption falls 25% on average after the irruption of the pandemic by mid-March 2020. Likewise, variables related to the labor demand, such as reducing working hours or working days, are closely tied to said drop in sales. On the other hand, measures such as restriction and control of customer entry to establishments seem to help maintain sales levels during the sample period.

The remainder of this paper is organized as follows. Section 2 briefly analyzes the irruption of COVID-19 pandemic and its evolution at the local level. Section 3 describes the main variables collected in the ECCOV19-AGS survey and presents some summary statistics for selected variables. Section 4 presents a formal regression analysis together with the main empirical results of this study. Section 5 contrasts the expected evolution of the economic activity by the business establishments participating in the survey with the actual evolution observed at a more aggregate level, according to INEGI official data. Finally, section 6 provides some policy implications and concludes the paper.

2 Context

2.1 Impact of COVID-19 in World’s Economy

The 2019 coronavirus (COVID-19) pandemic has unprecedentedly impacted the world economy. In recent times, the most significant drop in the world’s economy took place in 2009

with a 1.7% collapse in the GDP [World Bank, 2020] while the estimated drop for 2020 was 3.5% according to International Monetary Fund [2020].² In the case of Mexico, the economic downturn represented a fall of 8.4% during 2020 and the Specialists' Expectations Survey conducted by the Central Bank shows an expected recovery of 4.5% for the year 2021 [Banco de México, 2021]. During the 2008 financial crisis, the closest precedent, Mexico's GDP dropped 5.3%. Some of the hardest hit sectors were manufacturing and construction in which policies and strategies were implemented to improve the chances of survival of small and medium-sized businesses and service providers [Freije et al., 2011]. More recently, Mexico also faced a sanitary crisis in 2009 with the H1N1 swine flu pandemic where the GDP fell 5.3% that year and the negative effects were deeper in the tourism and agricultural sectors.³ The current COVID-19 pandemic has been different from previous crises in terms of its urgency, scope and magnitude of the impacts on the supply and demand chain according to Reinhart [2020]. In addition, it has caused a growth stagnation that has been amplified due to the restrictions on economic activity that were imposed as preventive measures. According to International Labour Organization [2020] about 300 million full-time jobs have been affected, becoming unemployed or experiencing a reduction in wages and/or working hours. Also investment plans, growth prospects and people's consumption patterns have been affected [Beglaryan and Shakhmuradyan, 2020].

2.2 Economic policies after COVID-19 in Mexico

Mexico was one of the Latin American countries that experienced the greatest impact during 2020 due to the pandemic, including a decrease of 8.4% of GDP. This downturn of the economy becomes the worst recession during the last decades (referencia). Reacting to the crisis, and beyond the main goal of reducing the contagions and hospitalizations, the government implemented a series of measures to strengthen the economy. Concretely, the central bank reduced the interest rate and the government provided cash transfers to the unemployed, implemented some credit programs (e.g., micro-credits for entrepreneurs). Some additional aid was granted to SMEs by providing logistical and technological advice, among other things. All of these measures, however, were not sufficient, and the recovery in 2021 was one of the worst in the region. The results of our study are in line with this trend, since

²A report by the World Bank estimated a deeper economic contraction of 4.3% for the world economy. The report is available at <https://www.bancomundial.org/es/news/press-release/2021/01/05/global-economy-to-expand-by-4-percent-in-2021-vaccine-deployment-and-investment-key-to-sustaining-the-recovery>

³The H1N1 influenza resulted in 2.8 billion dollars in losses for the tourism sector, the largest service sector nationwide. This sector was greatly affected by the loss of nearly 1 million tourists. The negative effect remained for about five months. In addition, the increased contagion risk perception affected the exports of swine industry, resulting in a decrease of more than 60% [Smith et al., 2019].

firms' managers in our sample found government aid packages insufficient.

2.3 Evolution of the pandemic and economic policies at the local level

Like the rest of the country, Aguascalientes has faced the dilemma between decreasing the spread of the virus and reducing the economic impact. The first measures aimed at abating the spread of the virus were taken by the federal, state, and municipal governments in the second half of March 2020.⁴ Firstly, the “National Campaign of Healthy Distancing” was established, which recommends, among other matters, postponement of non-essential activities, affecting thousands of businesses as their capabilities were greatly reduced. According to the information provided by the federal government, at the outset of said campaign, there were only 15 confirmed cases of COVID-19 in the state of Aguascalientes. On March 19 the San Marcos National Fair was canceled, confirming the imminent economic crisis in the region with regards to the local economy.⁵ During the campaign, the government issued economic relief measures for families, companies, and businesses, such as discounts and deferral of tax payments, as well as direct subsidies for companies and households.⁶

With the end of the National Campaign, the government instructed to reopen the economy starting on June 1, 2020. The opening was gradual, and there were no more government-mandated closures. On May 14, the federal government established a strategy to the reopen social, educational, and economic activities (Official Gazette of the Federation). Likewise, on May 30, the “National Day of Healthy Distance” was ended. On June 4, the Aguascalientes state government published health security measures for economic and social reactivation (i.e., concrete instructions for the way in which businesses should operate to guarantee certain standards of prevention and health care. In an effort to stimulate the economy, these

⁴In light of the alarming spread and gravity of COVID-19 worldwide, some days prior to the implementation of a national policy, the executive state board of Aguascalientes met for the first time to address the matter on March 17. As a result, the “Health Decree in response to the COVID-19 pandemic contingency” allowed commercial and service establishments to continue operating under certain capacity constraints and sanitary measures.

⁵The San Marcos National Fair is an annual event conducted between April and May in the city of Aguascalientes. It is one of the most important and older celebrations in the country that is attended by 8 million visitors each year, making it an event of great economic magnitude for both the city and the state of Aguascalientes.

⁶On March 28, the state government issued a decree containing “The economic relief program in response to the COVID-19 contingency”. It involved extensions to file taxes and some tax discounts (e.g., Vehicle Acquisition Tax, Taxes on Public Shows, Payroll Taxes, Taxes on the Final Sale of Alcoholic Beverages, and Vehicle Emissions Testing). On the other hand, the Secretariat of Economic Development (SEDEC) created the “Emerging Fund for Economic Development” that consisted of a subsidy of \$ 5,000 MXP for 14 thousand poor families in the state of Aguascalientes. SEDEC also created a relief program for SMEs of the restaurant and bar sector.

measures were updated on July 31, 2020. All these measures failed to increase the economic activity of the state of Aguascalientes in 2020, and it was one of the weakest states in terms of recovery in 2021. ⁷

3 Survey description

The ECCOV19-AGS survey was conducted by the Center for Research and Teaching in Economics (CIDE) with financing from the CONACYT-SENER Energy Sustainability Fund in the Aguascalientes Metropolitan Area (AMA).⁸ The main objective was to gather information on SMEs and to know more about the owners and managers' perception of the impact of the COVID-19 contingency. Specifically, the survey gathers information on the perceived and observed effects that the pandemic and its policies to diminish it has on: economic activity, the difficulties faced, coping strategies, and remedial actions adopted as well as the expectations for the near future.⁹

The sampling frame comprises approximately 1,900 establishments in different sub-sectors of the commerce and service sectors as reported in the National Statistical Directory of Economic Units (DENUE), which follows the North American Industry Classification System (NAICS).¹⁰

To meet the objective of this investigation, we use the classification made by the National Institute of Statistic and Geography (INEGI) and include small- and medium-sized business establishments –i.e., those with 6 to 100 workers. Our random sample contains information from 746 establishments, representing almost 40% of SMEs in different sub-sectors of the commerce and service sectors in the AMA. The survey was collected between June 11, 2020, and August 13, 2020, mostly by phone and in some cases through direct and in-person interviews (35% of the total).¹¹ On average, each interview lasted 12 minutes, and the

⁷By August 14, 2020, when the ECCOV19-AGS survey was completed, the number of positive cases and COVID-19 deaths totaled 5031 and 445, respectively. Also, the general hospital-bed occupancy reached 36% whereas ventilator-bed occupation was 46%. In particular, the government closely monitored these hospital bed occupancy variables (along with additional variables). It used a color classification system (i.e., green, yellow, orange, and red) to determine which economic, educational, and recreational activities were allowed.

⁸The AMA includes the municipalities of Aguascalientes, Jesús María and San Francisco de los Romos.

⁹The questionnaire includes 48 questions set out in six sections, that address changes in economic activity, general expectations, adaptation strategies, evaluation of government actions, and personal appreciations of the COVID-19 pandemic. An English translation of the questionnaire can be found in the appendix A

¹⁰The DENUE is constructed by the National Institute of Statistic and Geography (INEGI) and is based on the most recent economic census. In addition, it is frequently updated with other intercensal surveys.

¹¹There is no official survey or census available that allows for a complete validation of ECCOV19-AGS data. However, we provide some indirect comparisons using the Monthly Survey on Commercial Businesses (EMEC, for its acronym in Spanish) [INEGI, 2020b] and the Monthly Survey of Services (EMS, for its acronym in Spanish) [INEGI, 2020c] in section 3.1.1.

respondents received no payment or incentive of any kind for their participation. Appendix A presents an English translation of the original questionnaire (in Spanish).

3.1 Analysis of the response to COVID-19

Using the results of the ECCOV19-AGS, we have divided the analysis into four sections: evolution of sales and expenses; adaptive and mitigating measures; priorities for the use of resources to face expenses; and perception of actions taken by the different levels of government. In addition, Appendix B presents the participants' perception of the disease caused by the COVID-19, providing certain evidence that the survey was (mostly) answered by people who had an acceptable level of knowledge about the disease.¹²

3.1.1 Evolution of establishments' sales and expenses

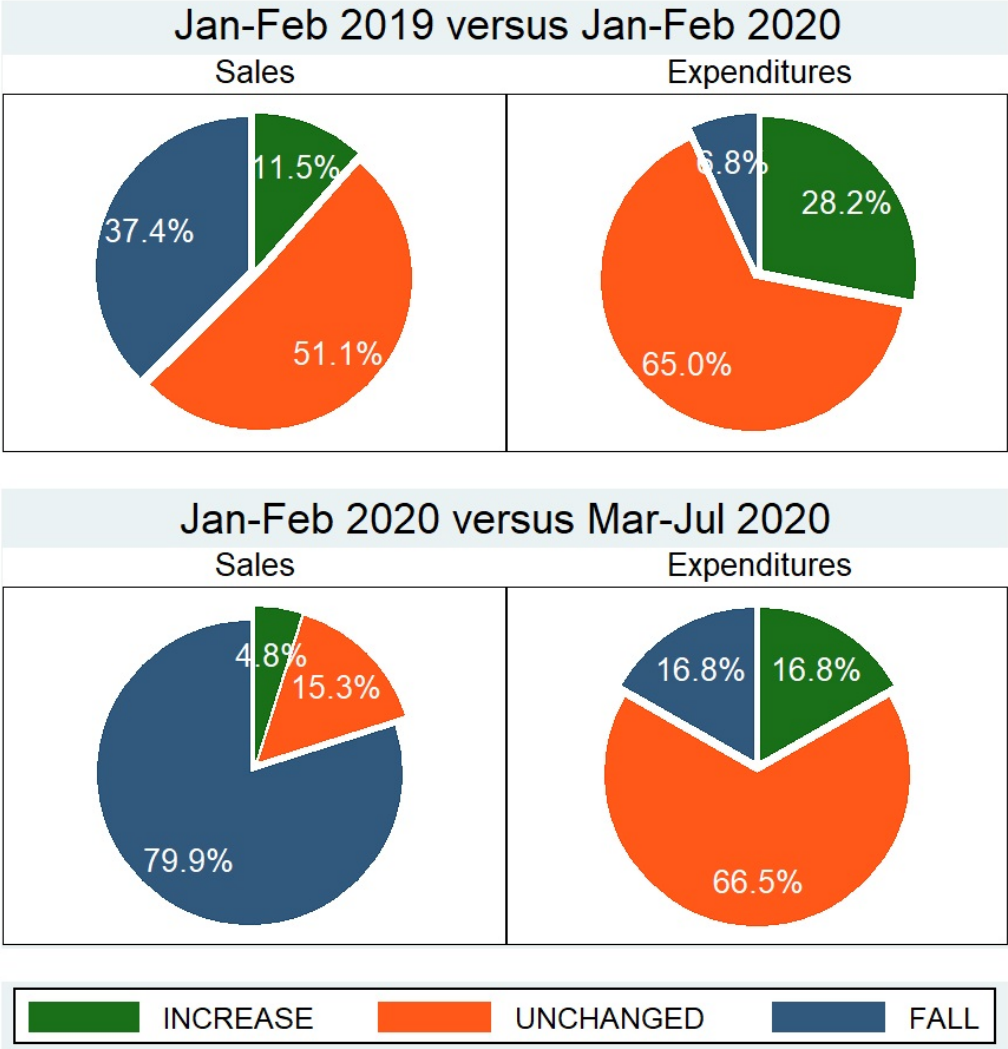
In principle, the pandemic might have heterogeneous impacts on sales and expenses. On the one hand, sales are expected to drop due to the pandemic's effect on demand. Consumers might alter their consumption patterns due to either a voluntary decrease in purchases or compliance with confinement measures and the restrictions imposed on commercial activities. A significant number of consumers might reduce their consumption due to increasing uncertainty, income losses, changes in habits (such as spending more time at home), or simply because someone living at home catches the COVID-19 disease. On the other hand, sales might drop due to the restrictions placed by the authorities on commercial activities.

Conversely, expenses are expected to show less adjustment flexibility than sales. Some disbursements correspond to fixed expenses or are tied to contracts for longer terms than those of the measures and restrictions implemented. Hence, the rent of commercial facilities, payment to utilities (electric, gas, and water), salaries and social benefits, loan payments to financial institutions, and taxes are expenses with relatively little flexibility in the short and medium run.

As a starting point in the analysis, we decompose the effect of the current and pre-existing economic situation. In this regard, we carry out an analysis in two stages. In the first stage, participants were asked to compare the sales and expenses for January and February 2020 to those same months in 2019. This exercise provides a good reference point. As shown in Figure 1, most establishments stated that sales and expenses showed no changes prior to the pandemic (51.1% and 65%, respectively). It can be inferred that most establishments had certain stability before the restrictions imposed due to the pandemic.

¹²We observe compliance with the restrictions imposed by the authorities, as well as the adaptive measures described in this paper, are not only motivated by economic concerns, but also by the population's beliefs about the disease.

In a second stage, participants were asked to compare the changes in sales and expenditures during January and February 2020 to those observed from March 2020 until the date they answered the survey, once their understanding of the dynamics of comparing sales and expenses for two different periods was ensured.¹³ As expected, one side of the picture changes importantly (see Figure 1): 79.9% reported a drop in sales, while the other side does not: 66.5% reported that expenses remained unchanged.



Source: ECCOV19-AGS

Figure 1: Changes in establishments' sales and expenses

An initial analysis of the data reveals several issues, such as heterogeneity in preexisting economic conditions, the difference between variations in sales and expenses, and the different economic situations the establishments claimed to be during the pandemic. Their

¹³Recall that the survey was conducted between June and August 2020.

statistical significance supports all these facts. First, our survey provides evidence of a heterogeneous economic situation among establishments prior to COVID-19. Not all establishments reported being in the same economic situation before the pandemic. Although most were indeed stable in terms of sales and expenses, a significant minority (37.4% of establishments) stated that their sales decreased, while a second minority (11.5%) stated that their sales increased. With regards to expenses, it should be noticed that most establishments considered that their expenses were stable before the pandemic outbreak (66.5%).

Second, there is a downward variation in sales that is economically and statistically significant. The number of establishments that reported a drop in their sales increased from 279 pre-pandemic to 597 during the pandemic. The data reveals a significant difference between reported sale changes before the pandemic (January-February 2020 versus January-February 2019) and during the pandemic (March-July 2020 versus January-February 2020) and both come from different distributions ($z = -10.879$, $\Pr > |z| = 0.0000$).¹⁴

Third, we cannot state that expenses decreased in such a way that the drop in sales was smoothed out so that business profitability was barely affected. Looking at the establishments that reported drops in expenses, we see that this group increased from 6.8% before the pandemic to 16.8% during the pandemic. In other words, only 74 establishments reported having reduced their expenses and this difference is significant at 5%. ($z = 2.013$, $\Pr > |z| = 0.0441$).

In sum, stemming from different economic situations, most establishments stated that their income have been affected by the pandemic while, at the same time, they have been unable to cut down on expenses. Therefore, because of the pre-existing heterogeneity and the subsequent (and exacerbated) heterogeneity due to the pandemic, establishments are three different economic conditions: precarious (sales dropping and expenses remaining unchanged or increasing), stable (sales unchanged and expenses remaining the same or dropping), or promising (sales rising and expenses the same or falling). In the following lines we provide a more complete description to understand how different factors affect the chances of survival of the different establishments.

Using the same responses, Table 1 shows the transition matrix and the probabilities of sales and expenses moving from one state before the pandemic to the same or another state during the pandemic. This exercise serves to consistently quantify how establishments that

¹⁴The distribution of the categorical variables generated by the responses regarding the changes in sales (expenses) between two periods is very likely to fail the assumptions of normality and independence generally required for parametric tests. For this reason, we conducted two non-parametric tests to compare the null hypothesis that the same function generated the responses to these questions before and during the pandemic. These tests are the Wilcoxon Rank Sum test, whose statistic is z , and the Fligner-Policello test, whose statistic is U . The results of both tests are consistent with what is expressed in this article. For simplicity, we only present the results of the Wilcoxon Rank Sum test.

believed their situation was precarious, stable, or promising prior to the pandemic are during the pandemic. For example, only 12 participants answered that their sales increased before and during the pandemic, and their probability of transition is 13%. Therefore, most of the establishments surveyed moved from a state in which their sales were unchanged or dropped prior to the pandemic, to a state in which sales dropped during the pandemic (290 and 240, respectively, as shown in panel A of Table 1). Among all existing possibilities, it is more likely to move from a state in which sales drop prior to the pandemic to one in which sales drop during the pandemic (86%).

Table 1: Sales and expenses transition probability matrices

A. Transition between changes in sales pre and post pandemic					
		Post pandemic change			
		Increase	Same	Drop	Total
Pre-pandemic change	Increase	12	8	66	86
	Same	14	77	290	381
	Drop	10	29	240	279
	Total	36	114	596	746
State transition matrix:					
		Post pandemic change			
		Increase	Same	Drop	
Pre-pandemic change	Increase	0.1395	0.093	0.7674	
	Same	0.0367	0.2021	0.7612	
	Drop	0.0358	0.1039	0.8602	
B. Transition between changes in expenses pre and post pandemic					
		Post pandemic change			
		Increase	Same	Drop	Total
Pre-pandemic change	Increase	79	116	15	210
	Same	44	357	84	485
	Drop	2	23	26	51
	Total	125	496	125	746
State transition matrix:					
		Post pandemic change			
		Increase	Same	Drop	
Pre-pandemic change	Increase	0.3762	0.5524	0.0714	
	Same	0.0907	0.7361	0.1732	
	Drop	0.0392	0.451	0.5098	

Source: own calculations based on ECCOV19-AGS

With respect to expenses, most of the participants moved from a state in which expenses remained unchanged prior to the pandemic and during the pandemic (357 in panel B of Table 1). Accordingly, it is more likely to move between these two states (73%).

Table 2 presents a quantitative analysis, where the interviewees state the magnitude of the changes measured in percentage, both in sales and in expenses, for the same periods previously analyzed. These are simple averages between establishments with the same employed personnel stratum, distinguishing between service and commercial establishments. In other words, said reported averages are not weighted by the level of economic activity of each establishment and could be not representative of the changes in the aggregate level for the sectors analyzed here. However, despite these limitations, we believe that the information provided in Table 2 serves to reflect on the relative magnitude between the changes from one period to another, and how the effects on businesses of different sizes (measured by the number of workers) can be quite heterogeneous.

Table 2: Percentage changes in sales and expenses.

A. January-February 2020 versus January-February 2019					
	Size	Commercial		Services	
Sales	6 to 10 employees	-12.0%	(27.6%)	-12.5%	(27.0%)
	11 to 30 employees	-14.0%	(23.6%)	-8.7%	(24.1%)
	31 to 100 employees	-7.6%	(23.4%)	-7.9%	(19.1%)
Expenses	6 to 10 employees	5.3%	(19.6%)	3.6%	(19.2%)
	11 to 30 employees	1.6%	(17.1%)	2.3%	(10.6%)
	31 to 100 employees	1.9%	(19.4%)	5.7%	(13.2%)
B. March-July 2020 versus January-February 2020					
	Size	Commercial		Services	
Sales	06 to 10 employees	-39.5%	(34.9%)	-46.6%	(34.9%)
	11 to 30 employees	-35.7%	(28.8%)	-44.7%	(34.2%)
	31 to 100 employees	-43.3%	(32.3%)	-41.2%	(34.8%)
Expenses	06 to 10 employees	0.6%	(20.4%)	-2.6%	(24.0%)
	11 to 30 employees	-2.3%	(23.9%)	-6.0%	(20.3%)
	31 to 100 employees	-3.6%	(18.0%)	-7.2%	(22.3%)

Simple average for service and commerce by employed personnel stratum. Source: own calculations using ECCOV19-AGS. Standard deviations are reported in parentheses.

As a form of external validation, it would be useful to compare the ECCOV19-AGS with

the EMS [INEGI, 2020c] and the EMEC [INEGI, 2020b] microdata at 4, 5, or even 6-digit level of the NAICS codes. Several unsuccessful formal attempts were made to obtain such information from INEGI. Therefore, the INEGI data we use in this paper are not directly comparable with those of the ECCOV19-AGS. The latter includes a much larger number of establishments concentrated in just one state (i.e., Aguascalientes) and each business establishment is classified by employed personnel stratum. By contrast, the accessed data from the EMEC and the EMS are representative of all strata jointly considered and both are at the state level. Figure 2 shows the annual growth rate of income (sales in the ECCOV19-AGS) according to the EMEC and EMS in SMEs in Aguascalientes. Both series show a steep fall in income since the beginning of the pandemic by March 2020. It is also notable that both economic sectors were already going through a phase of stagnation and slight recession.

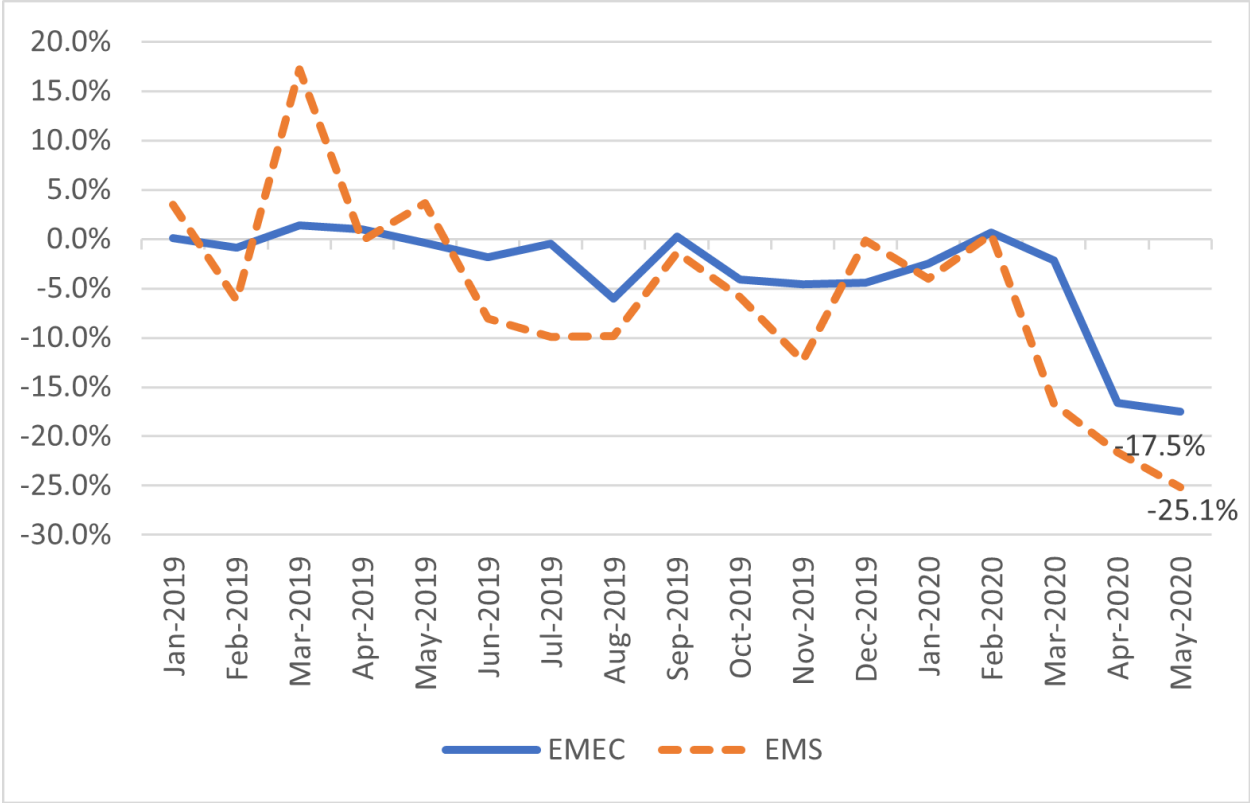


Figure 2: Year-over-year growth of total income of SMEs in Aguascalientes.

Making a closer contrast with the information collected in the ECCOV19-AGS, when the average monthly income in January-February 2020 is compared with the corresponding values for January-February 2019, the EMS reports a drop of 3.9% and the EMEC a fall of 1.9%, while when comparing the average monthly income since the beginning of the pandemic with the previous months (March-July 2020 versus January-February 2020), these

drops are significantly greater: the EMS and the EMEC shows an 8.7% and a 7.4% collapse, respectively.

3.1.2 Adaptive and mitigation measures

We must bear in mind that restrictions on economic activities were relaxed in early June 2020, so establishments were already operating under the “new normality” when the survey started. By then, it was expected businesses react to increase their benefits, whether increasing (or at least recovering) their sale levels or cutting down on expenses. Otherwise, SMEs could shut down soon. In this part of the survey, we ask about the measures SMEs implemented to adapt to the new rules arising from the pandemic, how they tried to mitigate economic losses, and whether they encountered some opportunities.

Table 3 shows the adaptation and mitigation measures implemented by SMEs in our sample. The main measure was to restrict the number of customers within the facilities (90% of services and 87% of commercial establishments), providing a safer environment for customers. In addition, 42% of the establishments implemented the option of starting and boosting online sales. Other important adaptation measures were the use of delivery services and working from home (44% and 36%, respectively).

Table 3: Percentage of establishments that implemented measures during the pandemic

Measure taken	Service businesses	Retailers and wholesalers
Restrictions on people in establishment	90.00%	86.60%
Cut down on production	82.20%	81.40%
Reduced working hours	66.00%	69.80%
Implemented or boosted online sales	42.30%	41.90%
Closed temporarily	41.50%	33.30%
Worked from home	39.60%	32.80%
Cut the number of employees	38.90%	32.10%
Implemented or boosted home deliveries	37.00%	51.20%
Reduced working days	36.20%	27.40%
Applied for government assistance	21.40%	15.50%
Delayed tax payments	15.60%	8.80%
Delayed utilities payments	14.80%	11.40%
Applied for debt refinancing	12.00%	11.10%
Total establishments	387	359

Source: ECCOV19-AGS

Clearly, one of the main reactions likely driven by supply and demand contractions (but

could also be considered as a mitigation measure) was to cut down on production (82% of SMEs). This outcome is naturally correlated with labor demand decisions made by SMEs. In effect, in many cases, there were reductions in working hours (67%), readjustments in the number of employees (36%), or decreases in the number of working days (32%). To a lesser extent, other mitigation measures were requesting for government assistance (17%), deferral of utility and tax payments (13%), and applications for debt refinancing (11%).

In addition, some businesses had to implement more extreme measures such as closing temporarily (41.5% of service establishments and 33.3% of commercial), although part of this is explained by the government’s policies on confinement. Additionally, as shown in Table 4, service establishments closed, on average, 58 days whereas commerce businesses did it only 41 days.

Table 4: Number of days that establishments were closed conditional on the temporary closure.

Type of establishment	Mean	Standard deviation
Service businesses	58.1	35.4
Retailers and wholesalers	41.4	30.1
Total	50.4	34.0

Source: ECCOV19-AGS

3.1.3 Expenditure priorities

In this subsection, we show the order of priorities stated by the survey respondents concerning different components of the establishments’ expenditure. From the different components listed in Table 5, we can observe that there are elements such as electrical power, water, and wages that, aside from being essential for business operations, are probably characterized by the existence of medium and long-term contracts. Survey participants tend to consider these expenditures greatly relevant (extreme importance between 71 and 75%). The second group in the extreme importance category includes payments to suppliers, social benefits, debts, and taxes (between 55 and 69%). This result can be explained because the second group consists of more flexible expenditures, either due to some transitory exemptions (taxes and social dues) or some renegotiations between the parties involved (loans and accounts payable). Lastly, the third group in this same category is related to efforts for market expansion, such as investments and advertising (approximately 23%).

Table 5: Statement of importance of different components of expenditure

Component\Importance	None	Slight	Moderate	High	Extreme
Electrical power	1.1%	0.9%	4.0%	19.2%	74.8%
Water	0.9%	1.2%	5.1%	21.0%	71.7%
Suppliers	1.7%	1.6%	4.7%	22.5%	69.4%
Wages	0.7%	0.4%	1.1%	16.4%	81.5%
Social benefits	2.3%	1.7%	4.6%	22.5%	68.9%
Taxes	2.1%	3.2%	6.7%	22.4%	65.5%
Debt	12.7%	5.6%	9.7%	16.5%	55.5%
Advertising	32.3%	16.9%	18.2%	9.2%	23.3%
Investment	44.8%	9.4%	16.0%	6.2%	23.7%

Source: ECCOV19-AGS

3.1.4 Perception of measures adopted by the government

In principle, there are two main types of possible measures that a government can take during a pandemic: those intended to decrease the spread of the virus, and those that seek to mitigate the economic impact of demand and supply shocks generated by the pandemic. The ECCOV19-AGS captured the opinion of the respondents regarding these two types of reactive measures, differentiating the actions taken by the three different levels of government in Mexico: federal, state, and municipal. For instance, concerning the measures that tend to decrease the spread of the virus, the participants were asked to rate the actions by each level of government concerning sanitary and public health measures and the campaign to prevent the spread of the virus. More generally, Table 6 shows that the majority rating of government responses in these categories is fair or lower.

The participants' perception concerning the rating of government measures worsens when we focus on measures aimed at decreasing the economic impact of the pandemic. In this case, the establishments were asked to provide an opinion on the actions of the federal, state, and municipal governments in terms of the economic assistance received by SMEs and workers. On average, the participants consistently rated the actions of all levels of government in this category as Bad, with the federal government as the lowest rated.

Table 6: Evaluation of government actions at the different levels

Government actions on:	Perception:	Level of government		
		Federal	State	Municipal
Sanitary and public health matters	1. Bad	19.2%	12.2%	11.5%
	2. Poor	25.6%	26.8%	23.7%
	3. Fair	35.0%	35.7%	35.0%
	4. Good	14.7%	19.0%	21.3%
	5. Excellent	4.4%	4.7%	6.0%
	No opinion	1.1%	1.6%	2.4%
	Rating (1 to 5)	2.59	2.77	2.86
Prevention campaign	1. Bad	16.8%	8.3%	8.0%
	2. Poor	23.7%	25.2%	21.4%
	3. Fair	28.8%	38.2%	37.3%
	4. Good	22.9%	21.8%	22.0%
	5. Excellent	6.7%	5.1%	9.7%
	No opinion	1.1%	1.3%	1.6%
	Rating (1 to 5)	2.79	2.90	3.04
Economic assistance for SMEs	1. Bad	33.1%	24.0%	23.5%
	2. Poor	26.1%	26.4%	26.5%
	3. Fair	17.2%	25.5%	23.6%
	4. Good	10.2%	11.7%	12.1%
	5. Excellent	3.8%	2.7%	4.3%
	No opinion	9.7%	9.8%	10.1%
	Rating (1 to 5)	2.17	2.36	2.41
Economic assistance for workers	1. Bad	35.1%	31.6%	30.4%
	2. Poor	24.5%	24.5%	24.5%
	3. Fair	12.7%	16.5%	15.4%
	4. Good	6.2%	7.2%	7.2%
	5. Excellent	2.3%	1.7%	4.0%
	No opinion	19.2%	18.4%	18.4%
	Rating (1 to 5)	1.96	2.06	2.14

Source: ECCOV19-AGS

4 Regression analysis

Once we have presented the main summary statistics and the associated interpretations and conjectures derived from them, it is time to further analyze the relationships among the main variables. In particular, we are interested in understanding more about the relation

between economic activity and the measures implemented by the SMEs during the pandemic of COVID-19. We divide the analysis into two subsections. The first one digs into the link between SMEs’ sales and the associated electricity consumption. The second one analyses the relation among sales, expenses, activity restrictions, and adaptation and mitigation measures.

4.1 Electricity consumption and economic activity in times of the COVID-19 pandemic

The economic activity of firms is strongly related to their energy consumption. With energy as an essential input, most business establishments are able to carry out the production and trade of goods and services. As shown in Table 5, spending on electricity is considered the second most important among all components of business spending (74.8%), only behind labor remunerations (81.5%). In addition, expenditure on electricity may represent a substantial share of SMEs’ operating costs. From a broader perspective, the relationship between electricity consumption and GDP can be used to evaluate the impact that COVID-19 has on the economic activity of the firms [see, for example, Lopez-Prol and Sungmin, 2020]. In the same line of reasoning, Gu et al. [2020] argue that electricity consumption allows the researcher to construct a reliable measure of firms’ exposure to exogenous shocks and also to trace changes in economic activities in the real world. In this section, we combine the self-reported changes in sales and expenses collected in the ECCOV19-AGS survey (see description in section 3) with monthly electricity consumption data. Hence, we use electricity consumption as a proxy (and confirmatory) variable and perform a more robust analysis of the impact that the COVID-19 pandemic has had on SMEs’ operations.

Table 7 presents the results of a set of regression models for which the dependent variable is the logarithm of electricity consumption in kWh for the period from March 1, 2019 to August 31, 2020. The main regressor, *covid*, is a binary variable equals to 1 if the electric bill was issued after March 15, 2020 –i.e., after the pandemic started to hit Mexican Economy. All specifications include establishment fixed effects and month fixed effects. There are four specifications according to each business’ type of tariff: all types of observed tariffs together (model 1), those with residential tariffs (model 2)¹⁵; low-demand business tariff (model 3); and high-demand business tariffs (model 4). In Appendix C we provide a brief description of electricity tariff categories and also present some descriptive statistics for electricity consumption and spending before and after the pandemic outbreak.

¹⁵Although it may look surprising and in fact it is illegal, this conduct is not particular uncommon in Latin American countries where some small businesses manage to contract the residential tariff. Enforcement problems and low applicable penalties make this behavior possible. In a recent paper, ? measure this apparent misclassification phenomenon and quantify the monetary savings (or the extra costs incurred) for this same set of SMEs in the AMA.

Table 7: Effect of COVID-19 on electricity consumption

Dependent variable: log(electricity consumption)				
	(1)	(2)	(3)	(4)
	All	Residential	Low-demand	High-demand
covid	-0.246*** (0.026)	-0.098 (0.095)	-0.266*** (0.032)	-0.253*** (0.048)
constant	6.890*** (0.024)	5.580*** (0.191)	6.473*** (0.045)	8.385*** (0.039)
Adj. R^2	0.912	0.827	0.861	0.900
N	7102	528	4849	1690

Standard errors are shown in parentheses.

All specifications include establishment fixed effects and month fixed effects.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

From Table 7, the pandemic of COVID-19 implied, on average, a drop of 24.6% in the electricity consumption of SMEs. This effect is highly statistically significant, except for users with residential tariffs. More specifically, consumption decreases are very similar among users with low- and high-demand business tariffs, whereas those with residential tariffs suffered a smaller decrease although the effect is not significant at conventional levels. A possible conjecture that would serve to explain the different outcome for business establishments with residential tariffs is as follows. First, establishments with residential tariffs belong to (or are rented by) micro and small firms. Second, compared to larger firms, fewer small businesses closed during the pandemic. Finally, some owners of micro and small firms also live in the business premises. As a result, electricity consumption did not decrease as much as in the largest companies.

In the second group of regressions, we link the changes in electricity consumption with the changes in sales using the same time frame of the ECCOV19-AGS.¹⁶ The dependent variable is the difference between the log(electricity consumption) before and after the pandemic hits the Mexican economy. Clearly, the change in electricity consumption is positively related to changes in sales. Roughly speaking, a drop of 1% in sales is approximately correlated with a 26.5% drop in electricity consumption. Once again, the relationship between those users with residential tariffs is not statistically significant. The heterogeneity among this particular group of businesses is quite substantial, as it is reflected in its higher standard error. Commercial facilities seem to have experienced larger changes in electric consumption, and

¹⁶Recall that the survey respondents were asked to compare the sales and expenses of the period January-February 2020 with those of the period between March 2020 and the time the survey was applied (i.e., June 9 - August 9).

in particular for users with residential tariffs. Although the aggregated effect of *commercial* for all users is statistically not significant. Finally, the number of days the establishment remained closed is quite related to the change in electricity consumption. Although its effect is relatively low.

Table 8: Electricity consumption and the change in sales

Dependent variable: $\log(\text{elect. post covid-19}) - \log(\text{elect. pre covid-19})$				
	(1)	(2)	(3)	(4)
	All	Residential	Low demand	High demand
% change in sales	0.265*** (0.060)	0.376 (0.255)	0.243*** (0.070)	0.377*** (0.094)
commercial	0.027 (0.039)	0.366* (0.198)	-0.012 (0.045)	0.090 (0.056)
# days closed	-0.007*** (0.001)	-0.003 (0.005)	-0.007*** (0.001)	-0.004*** (0.001)
adj. R^2	0.242	0.041	0.264	0.412
N	580	51	442	86

Standard errors in parentheses. Significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Note: *elect. post covid-19* and *elect. pre covid-19* refer to the monthly average consumption in march-august 2020 and jan-feb 2020 periods, respectively. *% change in sales* refers to the percentage change in sales, as reported by the survey respondent, for the same group of months described before. *# days closed* are the number of days the business establishment remained closed. *commercial* is a binary variable indicating whether the establishment correspond to a commercial firm (as opposed to services).

4.2 Sales, expenses, activity restrictions, and adaptation and mitigation measures

So far our analysis has contributed in two folds. First, we provided a descriptive analysis in Section 3 that is very eloquent and illustrates the dynamic situation faced by SMEs during COVID-19. Second, in Section 4.1 we analyzed the relationship between an objective measure of economic activity (i.e., electricity consumption) with a subjective measure of economic activity (i.e., change in sales reported in the ECCOV19-AGS survey). Once this relation was validated for our sample, it is clear that the COVID-19 pandemic emergence by mid March 2020 affected economic activity of SMEs in Aguascalientes Metropolitan Area.

In this subsection, we go a step forward and present a regression analysis that is useful to understand the correlation between the change in sales since the start of the pandemic with previous changes in sales and expenses, the restrictions implemented by the government,

mitigating and adaptive measures taken by the business establishments, among other relevant variables. Table 9 shows the results of the estimated models by OLS. Model (1) uses the 746 companies that were surveyed in the ECCOV19-AGS whereas models (2) to (5) restrict the estimation to those establishments for which electricity billing data is available. Concretely, model (2) presents the results for all the establishments with billing data, model (3) restricts the sample to businesses under residential tariffs, whereas models (4) and (5) consider low- and high-consumption business tariffs, respectively.

As observed in Table 9, the inertia in sales stands out, where on average drops between January-February 2020 and the same period in 2019 translate into falls after the start of the pandemic. It could be said that part of the drop in sales is not only an effect of the pandemic but also of a crisis that was developing before. The emergence of COVID-19 reinforced and accelerated the economic depression. Conversely, changes in pre-COVID-19 expenses have a negative impact on changes in post-COVID-19 sales, but this effect is not statistically significant. Also, changes in Post-COVID-19 expenses are consistent with the evolution of sales in the same period. The signs of these variables are those expected a priori and reinforce the important correlation with post-COVID-19 sale changes. Looking at other relevant variables, the number of days a SME remained closed significantly contributes to the percentage change in post-COVID-19 sales. Every day an establishment remains closed has a significant negative impact on sales (0.2%), representing a 73% annual drop. The variables that reflect labor cost reduction strategies, such as reductions in working hours, reductions in working days, and layoffs have significant coefficients at the 1% level. All of them clearly affected the percentage change in Post-COVID-19 sales.

As for other adaptive measures, the work at home, home deliveries, online sales, and restriction of people in establishments variables appear as measures that correlate with a favorable evolution in sales. However, it should be mentioned that only the latter is shown as statistically significant at the conventional levels. Establishments applying for some type of government assistance are, for the most part, firms facing greater sales drops.¹⁷ Also, the delay in payments to utilities and debt refinancing are negatively correlated with changes in post-COVID-19 sales, whereas delays in tax payments are positively correlated, although none are statistically significant. Moreover, there is no evidence of significant differences in changes in sales among businesses engaged in the provision of services versus commercial businesses (i.e., retailers and wholesalers). Finally, when distinguishing among businesses with different electricity tariffs (models 2 to 5) the corresponding coefficients present similar signs and the sizes of the effects do not differ much for the most part.

¹⁷From section 3.1.4 we know that the general feeling about government assistance is negative, and most respondents are not satisfied with the scarce aid received.

Table 9: Estimated effects of mitigation and adaptation measures on sales

Dependent variable: % change in post-COVID-19 sales	Establishments with electricity billing data				
	Full sample	All tariffs	Resid.	Low-dem.	High-dem.
	(1)	(2)	(3)	(4)	(5)
% change pre-COVID-19 sales	0.1806*** (0.0449)	0.2182*** (0.0481)	0.2663 (0.1937)	0.2345*** (0.0565)	0.2096 (0.1553)
% change pre-COVID-19 expenses	-0.1211* (0.0694)	-0.1033 (0.0745)	-0.1118 (0.2112)	-0.0166 (0.0887)	-0.4483* (0.2672)
% change post-COVID-19 expenses	0.1598*** (0.0571)	0.1581** (0.0619)	0.2401 (0.1778)	0.1048 (0.0736)	0.5029** (0.2126)
Commercial establishment	0.0371 (0.0234)	0.0193 (0.0255)	0.0250 (0.0968)	0.0090 (0.0298)	0.0435 (0.0711)
# days closed	-0.0020*** (0.0004)	-0.0020*** (0.0004)	0.0010 (0.0023)	-0.0023*** (0.0005)	-0.0015 (0.0014)
Reduced working hours	-0.1317*** (0.0257)	-0.1254*** (0.0276)	-0.1250 (0.0922)	-0.1192*** (0.0329)	-0.2023*** (0.0706)
Reduced working days	-0.0795*** (0.0272)	-0.0808*** (0.0294)	-0.1315 (0.0936)	-0.0714** (0.0354)	-0.0372 (0.0851)
Cut jobs (in %)	-0.0964** (0.0479)	-0.0936* (0.0515)	-0.1442 (0.1485)	-0.1077* (0.0600)	0.1046 (0.1799)
Work at home	0.0430* (0.0246)	0.0478* (0.0269)	-0.0254 (0.0931)	0.0596* (0.0316)	0.0101 (0.0750)
Home deliveries	0.0106 (0.0246)	0.0149 (0.0266)	-0.0403 (0.0946)	0.0311 (0.0316)	-0.0025 (0.0740)
Online sales	0.0436* (0.0249)	0.0453* (0.0270)	0.0614 (0.0983)	0.0439 (0.0319)	0.0085 (0.0766)
Restricted number of people	0.0956*** (0.0356)	0.0891** (0.0370)	0.1528 (0.0912)	0.0681 (0.0429)	0.0525 (0.3694)
Applied for government assistance	-0.0822** (0.0321)	-0.0729** (0.0342)	-0.0379 (0.1106)	-0.0486 (0.0397)	-0.2947** (0.1127)
Applied for debt refinancing	-0.0041 (0.0396)	-0.0105 (0.0421)	0.0505 (0.1187)	-0.0106 (0.0511)	-0.0969 (0.1249)
Delayed tax payments	0.0429 (0.0390)	0.0406 (0.0429)	-0.0688 (0.1426)	0.0713 (0.0504)	-0.0603 (0.1526)
Delayed utilities payments	-0.0595 (0.0370)	-0.0523 (0.0390)	0.0050 (0.1403)	-0.0469 (0.0443)	-0.0975 (0.1424)
Constant	-0.3513*** (0.0423)	-0.3469*** (0.0448)	-0.3715*** (0.1150)	-0.3438*** (0.0525)	-0.1955 (0.3894)
adj. R^2	0.200	0.195	0.109	0.185	0.222
N	746	627	57	483	86

Standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

It is worth clarifying that the regressions we have presented in this subsection are intended to simply illustrate the existing correlations among a selected group of variables, that according to our understanding are relevant. It is not possible to identify causal effects given the available data. The simultaneity effects are quite evident and there are no proper instruments available to solve these potential endogeneity problems. Notwithstanding, the analysis of the correlations presented here is undoubtedly very illustrative and builds on a deeper understanding of the difficult situation SMEs have faced during the COVID-19 pandemic.

In a last set of estimations, Table 10 presents the results of regressing the difference between $\log(\text{electricity post COVID19})$ and $\log(\text{electricity pre-COVID19})$ on the same set of covariates used in the models of Table 9. The main idea is to compare the effects of those same variables on the observed changes in electricity consumption. The percentage change in pre-COVID-19 sales has a similar impact, both in sign and magnitude, and it is highly statistically significant. However, the correlations with changes in expenses are not significant. Commercial facilities experienced deeper changes in electricity consumption than services. However, there were no significant differences regarding changes in post-COVID-19 sales. The effect of the variable number of days closed is more pronounced, although the statistical significance is somewhat lower than before. Other variables like reduced working hours, reduced working days, and percentage cut in jobs have the same sign as before but are not statistically significant. The remaining regressors have mixed signs and none of them is statistically significant at conventional levels, with only exception being debt refinancing. In particular, the variable delayed utilities payments (which encompasses water and electricity), has a positive effect on the percentage change in electricity consumption. Perhaps this is indicative of some firms relaxing their restrictions on electricity consumption and waiting for some aid from the government or the electric utility through some debt relief program. Indeed, some partial aid was effectively provided, but only for households and not for companies.¹⁸

¹⁸Since the quarantine translated into a larger number of people spending more time at home and so higher residential electricity bills due to increased consumption, the government decided that the national utility, CFE, could not penalize the higher consumption of electricity by reclassifying the domestic 01 tariffs into high consumption tariffs (DAC) during the pandemic. This measure was applied to the consumptions made from March 30 onwards. It is necessary to clarify that the reclassification towards lower rates was carried out normally.

Table 10: Change in electricity consumption: mitigation and adaptation measures

Dependent variable: $\log(\text{electricity post COVID19}) - \log(\text{electricity pre-COVID19})$				
	All	Residential	Low demand	High demand
% change pre-COVID19 sales	0.1655* (0.0996)	-0.2124 (0.4801)	0.2761** (0.1228)	0.0870 (0.1756)
% change pre-COVID19 expenses	0.0053 (0.1467)	0.3937 (0.5922)	-0.0325 (0.1861)	-0.3868 (0.2833)
% change post-COVID19 expenses	0.0441 (0.1447)	0.1184 (0.4594)	-0.0008 (0.1920)	0.2340 (0.1877)
Commercial establishment	0.1086** (0.0434)	0.3456 (0.2745)	0.0902* (0.0516)	0.0951 (0.0750)
# days closed	-0.0058*** (0.0013)	-0.0025 (0.0090)	-0.0057*** (0.0015)	-0.0058*** (0.0017)
Reduced working hours	-0.0786 (0.0589)	-0.0170 (0.2325)	-0.0809 (0.0738)	-0.0693 (0.0931)
Reduced working days	-0.0991* (0.0565)	-0.0469 (0.3697)	-0.1409** (0.0685)	0.0866 (0.1048)
Cut jobs (in %)	-0.0472 (0.1413)	0.6561 (0.7918)	-0.1531 (0.1580)	-0.1702 (0.2810)
Work at home	-0.0265 (0.0502)	-0.1340 (0.2747)	-0.0407 (0.0617)	0.0434 (0.0758)
Home deliveries	0.0300 (0.0474)	-0.1342 (0.3311)	0.0306 (0.0496)	0.0784 (0.0916)
Online sales	-0.0356 (0.0465)	-0.1796 (0.3205)	-0.0368 (0.0527)	-0.0759 (0.0758)
Restricted number of people	0.0682 (0.0649)	0.1163 (0.2041)	0.0849 (0.0727)	-0.0641 (0.1765)
Applied for government assistance	0.0518 (0.0630)	-0.1097 (0.3785)	0.0847 (0.0751)	-0.2646 (0.1738)
Applied for debt refinancing	-0.1544* (0.0788)	-0.1553 (0.2493)	-0.1760* (0.0974)	-0.0744 (0.1301)
Delayed tax payments	0.0334 (0.0764)	0.0702 (0.2482)	0.0248 (0.0856)	0.1005 (0.2419)
Delayed utilities payments	0.0803 (0.0743)	-0.0495 (0.2298)	0.1183 (0.0873)	0.0108 (0.2216)
Constant	-0.1427* (0.0789)	-0.1457 (0.1711)	-0.1411 (0.0939)	0.0283 (0.2087)
adj. R^2	0.133	-0.249	0.156	0.161
N	580	51	442	86

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5 Exit expectations

One important unknown for all economic agents, and particularly for merchants, entrepreneurs and workers participating in the study, is what will happen in the short and medium term with the pandemic. One factor that stands out is each establishment's relative optimism, by anticipating an earlier recovery with respect to the country as a whole, 11.7 months as opposed to 17.4, respectively (see Table 11).

Table 11: Expectations: months to return to economic normality

	Mean	Std. Dev.
For the establishment	11.68	(8.12)
The country as a whole	17.36	(13.76)

Source: ECCOV19-AGS.

Secondly, as shown in Table 12, ECCOV19-AGS inquired about expectations for changes in income and expenses for September 2020, December 2020 and June 2021. That is, an approximate horizon of 3, 6 and 12 months, considering the dates of the survey. As expected, the rebound (recovery) in income will be gradual, starting from a timid 6% in the short term to 28% over a year. Similarly, the changes in expense percentages run from 2.5% to 15%. One factor to be highlighted is the largest increase in sales (income) with respect to expenses, bearing in mind the adverse impact suffered prior to and during the pandemic (see section 3.1.1).

Table 12: Expected changes in sales and expenses with respect to the March-July 2020 situation

Expectations leading up to the month of:	Commercial sector		Services	
	Income	Expenses	Income	Expenses
September 2020	5.8%	2.5%	5.9%	4.5%
	(25.5%)	(12.6%)	(21.1%)	(15.1%)
December 2020	20.5%	9.0%	18.4%	9.4%
	(29.1%)	(21.9%)	(28.6%)	(18.1%)
June 2021	27.9%	15.1%	28.1%	13.5%
	(33.5%)	(23.3%)	(33.4%)	(18.7%)

Standard deviations in parentheses. Source: ECCOV19-AGS

When we decompose expectations in those expected in the short-run (3 months), medium-run (6 months), and longer-run (12 months), a clear pattern emerges. The pattern has two

relevant characteristics. First, both sectors, commercial and services, expect recovery to be slower early during 2020, and accelerate towards December of 2020, and accelerates towards June of 2021. Second, respondents at both commercial and services establishments tend to expect that income will always vary at a greater magnitude than expenses. This pattern of expectations will be consistent with beliefs that commercial and services activities will converge to normality during 2021. If establishments based on their expectations on the perception of activity changes during the early part of the pandemic outbreak, our findings reveal in Table 2 that during 2020 the large income decline was not accompanied by the correspondent expenses reduction. Then expectations seem to reflect that a larger increase of income accompanied by a smaller increase of expenditures will lead establishments to return to normality.

Because expectations regarding income and expenses could vary across sectors, Table 12 presents the responses of the establishments in the service sector and the commercial separately. We test the hypotheses that the expectations of both sectors are generated from the same distribution. We find that commercial and service sectors have similar expectations regarding income in the quick and long run. We fail to reject the hypothesis that expectations are generated from different distributions and have different means for those expectations until September, as well as those for and June 2021 ($z = -0.101$, $\Pr |z| = 0.9193$ and $z = -0.038$, $\Pr |z| = 0.9696$). Similarly, for those expectations regarding December 2020, we found that the commercial sector has a more positive expectation or recovery than those in the service sector but it fails to be highly significant ($z = -1.848$, $\Pr |z| = 0.0645$). Similarly, we fail to reject the hypothesis that expectations are generated from different distributions and have different means for the three different periods, till September 2020 ($z = 1.445$, $\Pr |z| = 0.1485$), December 2020 ($z = 0.225$, $\Pr |z| = 0.8219$), and June 2021 ($z = -1.570$, $\Pr |z| = 0.1164$). Therefore, it appears that expectations across both sectors regarding income, and expenses are similar.

5.1 Expectations vis-a-vis facts

Using the most recent information from EMS [INEGI, 2020c] and EMEC [INEGI, 2020b], we can compare the expectations described previously with what these indexes show during the most recent pandemic time. These results do not only provide support to the statistical differences between them. The actual changes are reported in Table 13.

Table 13: Actual % change in income and expenses with respect to the March-July 2020 situation

Month	Commercial sector		Services	
	Income	Expenses	Income	Expenses
September 2020	1.7%	5.3%	5.3%	1.7%
December 2020	21.2%	16.2%	14.5%	19.3%
April 2021	4.9%	6.8%	5.2%	3.2%

Source: EMS [INEGI, 2020c] and EMEC [INEGI, 2020b]

We compare the EMS and EMC indexes changes in a variation on income and expenses. Thus, we test the hypotheses that the EMS and EMEC series rates are generated from the same distribution pre-covid19, until March 2020, and post-covid19, from April 2020 till September 2020; we obtain the following results. We reject this hypothesis for EMS income ($z = 4.343$, $\Pr |z| = 0.0000$), EMEC income ($z = 2.635$, $\Pr |z| = 0.0000$), EMS expenses ($z = 3.806$, $\Pr |z| = 0.0001$), and EMEC expenses ($z = 0.976$, $\Pr > |z| = 0.3291$)¹⁹. These statistics support the intuition that the magnitude of the means on the first two rows of Table 12 is different from those of the third row and that the rates at which firms reported changes to INEGI are different pre-COVID and post-COVID. Furthermore, the results of these tests are consistent with those reported in our survey. At the same time, we observe all negative rates at the income variables; we fail to find statistically significant differences in the expenses of those firms in the commercial sector. Thus, these statistics provided some degree of external validity of the findings reported in section 2 of the current document, where we observed similar signs and results.

In Table 12 we compared expectations across the commercial and services establishments. We failed to reject the hypothesis that expectations were generated differently across establishments in different sectors in almost all cases. Furthermore, when we compare the expectations that respondents expressed with the observed changes in income and expenses Table 13, it is clear that most of the respondents were optimistic. Optimism was present in two ways. First, all sectors expected a greater rebound during the months leading to September 2020 than what they experienced. Second, expectations for short and larger runs trended to overestimate income recovery and underestimate expenses increments. We reject the hypothesis that average expected income variations will be smaller than the observed income variations for commercial and services establishments. These rejections are consistent across

¹⁹We performed two non-parametric tests, the Wilcoxon rank-sum test, with the statistic z , and the Kolmogorov Smirnov test; for the sake of simplicity, we report the results of the Wilcoxon test. Notice that for EMS and EMEC, the last available period is April 2021 whereas the corresponding last period in our survey is June 2021.

sectors and periods ²⁰. For example, commercial establishments expected greater income variations for the period till September 2020 ($t = 3.1870$, $\Pr(T > t) = 0.0008$), December 2020 ($t = 12.7007$, $\Pr(T > t) = 0.0000$), and June 2021 ($t = 12.7007$, $\Pr(T > t) = 0.0000$). In contrast, differences from realized mean income variations for service establishments were more realistic for the short run, i.e., we fail to reject the hypothesis that expected income variations was greater than the observed variation of income till September 2020 ($t = 0.5526$, $\Pr(T > t) = 0.2904$). But, reverted to be optimistic for the medium, December 2020 ($t = 8.7049$, $\Pr(T > t) = 0.0000$), and longer run, June 2021 ($t = 12.9191$, $\Pr(T > t) = 0.0000$).

Additional evidence of establishments' difficulties at estimating expected variations can be observed when comparing commercial and service sectors' expectations about future expenses. Overall, we found that while commercial establishments trended to sub-estimated expenses variation in the short and medium run. Expectations of those in the service-providing establishments overestimate the increments of expenses for the short and longer run. Thus, we could label their expectations regarding expenses as pessimistic. This can be seen if we observe Table 12, we could notice that while commercial establishments expected expenses to vary only 2.5% for the period that goes till September 2002 while the actual average expenses rose by 5.3% points during the same period ($t = -4.2510$, $\Pr(T < t) = 0.0000$). Similar sub-estimation is presented for the period till December 2020 ($t = -6.4360$, $\Pr(T < t) = 0.0000$). Therefore, we observe that commercial establishments and those service sector differ on their expectations regarding variation on expenses for two of the three periods for which they were requested to provide an expected variation.

6 Concluding comments and discussion

In this article, we use a novel survey specially designed to capture information regarding the situation, opinions, and expectations of commercial and service SMEs in the Aguascalientes Metropolitan Area, a middle-sized urban area located in Mexico. We combine the responses of small and medium-sized business establishments in issues related to the economic impact of the COVID-19 pandemic, their knowledge and opinions regarding political responses, the adaptation and mitigation measures taken, and the expectations on future sales (income) and expenses with electricity billing data before and after the outbreak of the pandemic. The main results of our analysis can be synthesized as follows.

²⁰We performed t-tests for all the comparisons in this paragraph. We reported the t statistic and the results for the one-side test comparing the average expected income (expenses) expectations to those reported by the EMEC and EMS surveys

First, most establishments were greatly impacted during the first quarter of the pandemic outbreak (April-June 2020). During this period, we observed that reported sales fell between 35% and 47% on average, depending on the establishments' size and whether they belong to the service or commercial sector. Similarly, expenses dropped between 1% to 7%. This heterogeneity reveals the differentiated impacts of the pandemic on sales and expenses and the subsequent measures implemented to buffer those impacts. At the same time, there is significant preexisting heterogeneity of economic conditions across establishments. Although we cannot identify how the heterogeneous starting point depends on the firms, the establishments' intrinsic features, the general characteristics, or the respondents' characteristics, we can instead describe the unequal situation that SMEs had before the arrival of COVID-19 in Mexico.

Second, the distribution of perception of changes in expenses across establishments seems not to be very different when comparing the pre-pandemic period (January-February 2019 versus January-February 2020) with the early pandemic period (January-February 2020 versus March-July 2020). However, the comparisons among the distribution of perception of changes in income as reported by the same establishments and the same time frames were completely different. Sales were severely affected by the pandemic. These discrepancies between expenses and income translated into a massive loss of profitability in businesses, since after the start of the pandemic, most of them suffered a fall in sales and, on the other hand, expenses decreased at a slower pace or remained unchanged. These facts reveal that while most known policies modified their income-generating capabilities, very few known policies smooth their fixed expenses. A particular example of this is the rules that reduced business capacity leading establishments to perform temporary closures.

The impact of temporary closures on economic activity was significant and explained most of the previously mentioned drop in sales during the sample period. It is natural to expect that the initial effect of the pandemic on firms' balance sheets will impact their chances of recovery. In that sense, our survey also helps elucidate establishments' mechanisms to cope with the crisis. Most respondents stated that they adopted some production reduction strategies such as reduction of business hours, reduction of working days, and cuts in the number of employed personnel. Similarly, the acting space of different firms varies substantially. While some firms could mitigate the impact on their income sources through implementing (or improving) online sale channels and home delivery services, others could reduce their expenses by working from home. In contrast, some firms failed at detecting these coping strategies and are most likely to perish with a prolonged crisis.

The results presented in this paper were mostly based on self-reported variables coming from the ECCOV19-AGS survey. However, these results were reinforced by the effects of

the pandemic on SMEs' electricity consumption, a variable that closely accompanied the reported drop in sales. That relationship was highly statistically significant. As a result, we were able to find evidence in self-reported variables and a directly observed objective variable.

Finally, this paper reveals the difficulties that respondents had at creating the correct expectations of recovery. The responses reveal that most establishments expect a genuine recovery, not before June 2021. Furthermore, when contrasting establishments' expectations to those established indexes of economic activity, we conclude that establishments' expectations differ from the actual data reflecting economic activity. In addition, differences in the expectations and recovery rates of commercial and service establishments portrait a better description of the complexity of the recovery process. We observe that while both commercial and service providers overestimated income recovery, establishments in the service sector were more prudent at estimating future changes in expenses.

These results call for academicians and policymakers to consider the heterogeneity of the problem that small and medium-sized companies face when their economic activity is directly and indirectly impacted by a pandemic outbreak and subsequent measures to reduce the epidemic impact. The heterogeneity of starting economic conditions, the substantial differences policies had on income-generating activities and expenses, the perceived lack of coping strategies, and the expectations will surely affect the final impact. Furthermore, the described heterogeneity predicts that post-pandemic, the fabric of the economy, i.e., the mixture of different SMEs, could be very different. Besides, the ECCOV19-AGS survey reveals that winners and losers are not determined by market forces but by a combination of improvised policies and policies that are only oriented to diminish the epidemiological impact of the pandemic. Of course, while most of us could agree that economic measures must always be following health and prevention policies, details and complementary economic measures could also improve social welfare by preventing healthy firms from perishing under the rubble of arbitrary restrictions.

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A Translation of the original questionnaire of the ECCOV19-AGS survey

In this section we display the of translation from Spanish to English of the original questionnaire of the ECCOV19-AGS survey.

SURVEY ON ECONOMIC IMPACT OF COVID-19 IN ESTABLISHMENTS OF THE METROPOLITAN AREA OF AGUASCALIENTES (ECCOV19-AGS)

OBJECTIVE OF THE SURVEY

Gather information from the opinions of Aguascalientes businessmen from the different commercial and service subsectors that allow knowing the impact of the contingency caused by the COVID-19 pandemic. Specifically, gather information about the perceived effects on economic activity, the difficulties faced, the remedial strategies and actions that have been adopted and the expectations about the future in the short and medium term.

NOTICE OF PRIVACY

The Center for Economic Research and Teaching (CIDE) campus Aguascalientes, with address at Circuito Tecnopolo Norte 117, Colonia Tecnopolo Pocitos II, C.P. 20313, Aguascalientes, Ags., In compliance with the provisions of the Federal Law on Protection of Personal Data Held by Private Parties, guarantees that the personal information you provide will be used strictly confidential. The data corresponding to the establishment will be used for academic purposes and only in an aggregate way at the economic subsector level.

CONSENT

The establishment you represent has been selected to voluntarily respond to this survey. The information collected in the ECCOV19-AGS will be the basis for an academic research by the Department of Economics of CIDE campus Aguascalientes. The data collected will be kept secure and in accordance with international standards. The response to this survey serves as a declaration of compliance with the terms mentioned above.

1. GENERAL DETAILS OF THE ESTABLISHMENT AND CONTACT

Activity class	Internal identifier Number	Stratus	State	Municipality

NAME AND LOCATION OF THE ESTABLISHMENT

Name:	
Address:	
Municipality:	City:
State:	ZIP Code:

RESPONSIBLE FOR PROVIDING THE INFORMATION

Name:	
Position:	
Phone number 1:	Phone number 2:
Email Address:	

2. CHANGES IN ECONOMIC ACTIVITY

Next, we will ask you some questions about changes in your economic activity ...

To answer the following questions, compare the months of January and February 2020 (that is, before the pandemic was declared) with the same months in 2019.

2.1. Do you consider that the sales or the number of services performed by the establishment ...? [circle or mark the answer with an X]

- a. ... increased?
- b. ... remained the same? [Go to 2.3]
- c. ... decreased?

2.2. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos
- b. ----- percent

2.3. Do you consider that the expenses incurred by the establishment (such as purchase of inputs, payment of services and taxes, payment to suppliers, maintenance expenses, etc.) ...

[circle or mark the answer with an X]

- a. ... increased?
- b. ... remained the same? [Go to 2.5]
- c. ... decreased?

2.4. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos
- b. ----- percent

To answer the following questions, compare January and February 2020 (that is, before the pandemic was declared) with the situation presented from March to date.

2.5. Do you consider that the sales or the number of services performed by the establishment ...? [circle or mark the answer with an X]

- a. ... increased?
- b. ... remained the same? [Go to 2.7]
- c. ... decreased?

2.6. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos
- b. ----- percent

2.7. Do you consider that the expenses incurred by the establishment (such as purchase of inputs, payment of services and taxes, payment to suppliers, maintenance expenses, etc.) ... [circle or mark the answer with an X]

- a. ... increased?
- b. ... remained the same? [Go to section 3]
- c. ... decreased?

2.8. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos
- b. ----- percent

3. GENERAL EXPECTATIONS

Now we will ask you some questions about your expectations about the situation in general and your establishment in particular ...

3.1. Until what date do you think the measures that hinder the normal operation of the establishments (social distancing, temporary closures, take-out, or exclusive sales for home delivery, etc.) will govern? [If the informant does not provide "day", put the first day of the month]

Date: -----/-----/-----

For the following questions consider the current situation and compare it with what you hope will happen in the future ...

3.2. Towards SEPTEMBER 2020, do you think that the revenue of the establishment will... [circle or mark the answer with an X]

- a. ... increase?
- b. ... decrease?
- c. ... remain the same? [Go to 3.4]

3.3. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos
- b. ----- percent

3.4. Towards SEPTEMBER 2020, do you think that the expenses of the establishment (such as purchase of inputs, payment of services and taxes, payment to suppliers, maintenance, etc.) will [circle or mark the answer with an X]

- a. ... increase?
- b. ... decrease?
- c. ... remain the same? [Go to 3.6]

3.5. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos

b. ----- percent

3.6. Towards DECEMBER 2020, do you think that the revenue of the establishment will...
[circle or mark the answer with an X]

a. ... increase?

b. ... decrease?

c. ... remain the same? [Go to 3.8]

3.7. How much did they change? [Listen to the answer and fill in the information depending on the case]

a. ----- pesos, out of a total of: ----- pesos

b. ----- percent

3.8. Towards DECEMBER 2020, do you think that the expenses of the establishment (such as purchase of inputs, payment of services and taxes, payment to suppliers, maintenance, etc.) will [circle or mark the answer with an X] a. ... increase? b. ... decrease? c. ... remain the same? [Go to 3.10]

3.9. How much did they change? [Listen to the answer and fill in the information depending on the case]

a. ----- pesos, out of a total of: ----- pesos

b. ----- percent

3.10. Towards JUNE 2021, do you think that the revenue of the establishment will... [circle or mark the answer with an X]

a. ... increase?

b. ... decrease?

c. ... remain the same? [Go to 3.12]

3.11. How much did they change? [Listen to the answer and fill in the information depending on the case]

a. ----- pesos, out of a total of: ----- pesos

b. ----- percent

3.12. Towards JUNE 2021, do you think that the expenses of the establishment (such as purchase of inputs, payment of services and taxes, payment to suppliers, maintenance, etc.)

will [circle or mark the answer with an X]

- a. ... increase?
- b. ... decrease?
- c. ... remain the same? [Go to 3.14]

3.13. How much did they change? [Listen to the answer and fill in the information depending on the case]

- a. ----- pesos, out of a total of: ----- pesos
- b. ----- percent

3.14. In how many months do you think the establishment will return to economic normality? [convert to months, example 1 year = 12 months]

Months: -----

4. ADAPTATION STRATEGIES

Now we will ask you some questions about the adaptation strategies you have carried out in this time of pandemic ...

4.1. Indicate whether the establishment has taken any of the following measures since the beginning of the coronavirus contingency ...

1- Was the production and/or commercialization of goods or services reduced? [circle or mark the answer with an X]

- a. Yes
- b. No [Go to 2]

Is this action still used?

- a. Yes
- b. No

2- Was the length of the working day reduced? [circle or mark the answer with an X]

- a. Yes
- b. No [Go to 3]

Is this action still used?

- a. Yes

b. No

3- Was the number of working days reduced? [circle or mark the answer with an X]

a. Yes

b. No [Go to 4]

Is this action still used?

a. Yes

b. No

4. Was the number of employees reduced (either full or part time)? [circle or mark the answer with an X]

a. Yes

b. No [Go to 5]

How much did the number of employees change?

a. _____ out of a total of: _____

b. _____ percent

Was it temporary or permanent? [circle or mark the answer with an X]

a. Temporary

b. Definitive

Is this action still used?

a. Yes

b. No

5. Was home office implemented? [circle or mark the answer with an X]

a. Yes

b. No [Go to 6]

Is this action still used?

a. Yes

b. No

6. Was the home delivery system implemented or reinforced? [circle or mark the answer with an X]

a. Yes

b. No [Go to 7]

c. Does not apply [Go to 7]

Is this action still used?

- a. Yes
- b. No

7. Was the online sales system implemented or reinforced? [circle or mark the answer with an X]

- a. Yes
- b. No [Go to 8]
- c. Does not apply [Go to 8]

Is this action still used?

- a. Yes
- b. No

8. Were restrictions applied to the number of customers who can enter the establishment? [circle or mark the answer with an X]

- a. Yes
- b. No [Go to 9]

Is this action still used?

- a. Yes
- b. No

9. Any other measure(s)? Please specify _____

Is (Are) this (these) action(s) still used?

- a. Yes
- b. No

4.2. Consider the period from March 2020 to the current date and answer if this establishment ... [Listen and complete the following table indicating: 1. Yes, 2. No]

	1. Yes 2. No
1. Has applied for any support or credit from the government government agencies? (For example: "Apoyo a Empresarios Solidarios" program)	
2. Has requested a refinancing plan from financial institutions?	
3. Has failed in paying any taxes (either federal or local)?	
4. Has failed in paying for utilities (electricity, gas, water, etc.)?	

4.3. From March 2020 to the present date, was the establishment temporarily closed at any time? [circle or mark the answer with an X]

- a. Yes
- b. No [Go to 4.5]

4.4. Between what dates was it closed?

From (ddmmyy): ____/____/____ to (ddmmyy) ____/____/____

4.5. Was the definitive closure of the establishment ever considered? [circle or mark the answer with an X]

- a. Yes
- b. No

4.6. For the following questions consider a scale from 1 to 5 where:

- 1 is "nothing important."
- 2 is "slightly important."
- 3 is "moderately important."
- 4 is "very important."
- 5 is "extremely important."

During the current contingency, how important do you consider keeping paying for... [mark with an X the answers in the corresponding boxes from 1 to 5]

	1	2	3	4	5
1. ... electricity?					
2. ... water ?					
3. ... suppliers?					
4. ... wages, salaries, etc.?					
5. ... social benefits (Social Security, pension, etc.)?					
6. ... taxes?					
7... bank debts or to other financial entities?					
8... advertising or promotional expenses?					
9... investments (of any kind)?					

4.7. In how many months do you think the country will return to economic normality?
[convert to months, example 1 year = 12 months]

Months: -----

5. EVALUATION OF THE GOVERNMENT ACTION

5.1. In this question you will evaluate the actions of the federal and local governments (state and municipal) from the beginning of the Covid-19 pandemic to the current date.

To do so, use the following scale from 1 to 5 where:

1 is “Bad”

2 is “Poor”

3 is “Fair”

4 is “Good”

5 is “Excellent”

1) How do you consider the actions in sanitary and public health matters ...

[mark with an X the option chosen for each level of government]

	1. Bad	2. Poor	3. Fair	4. Good	5. Excellent	Does not know
... by the federal government?						
... by the state government?						
... by the municipality government?						

2) How do you consider the prevention campaign ...

[mark with an X the option chosen for each level of government]

	1. Bad	2. Poor	3. Fair	4. Good	5. Excellent	Does not know
... by the federal government?						
... by the state government?						
... by the municipality government?						

3) How do you consider the financial aid to SMEs...

[mark with an X the option chosen for each level of government]

	1. Bad	2. Poor	3. Fair	4. Good	5. Excellent	Does not know
... by the federal government?						
... by the state government?						
... by the municipality government?						

4) How do you consider the economic aid to workers...

[mark with an X the option chosen for each level of government]

	1. Bad	2. Poor	3. Fair	4. Good	5. Excellent	Does not know
... by the federal government?						
... by the state government?						
... by the municipality government?						

6. PERSONAL PERCEPTIONS OF COVID-19

Now we are going to ask you a few questions about your personal views on covid-19 ...

6.1 How contagious do you consider COVID 19 disease? [circle or mark the answer with an X]

- a. nothing contagious
- b. little contagious
- c. something contagious
- d. very contagious

6.2. Do you consider that the coronavirus disease (COVID 19) is risky for your health? [circle or mark the answer with an X]

- a. Yes
- b. No [Go to 6.4]

6.3. For which group or groups of the population is it most risky? [Listen to the answer and mark the one(s) that apply]

- a. Elderly
- b. Children and youth
- c. Adults
- d. People with pre-existing diseases
- e. Pregnant
- f. Everyone
- g. Others (specify): -----

6.4. Do you think the following measures are important to prevent infections? [For each question in the table, check: 1.Yes, 2.No]

	1. Yes 2. No
1. Hand washing?	
2. Keep 2 meters to other people?	
3. Sanitization of floors and surfaces for daily use?	
4. Sterilization of food at the time of purchase?	
5. Use of face masks?	

Very well. Those were all the questions. We thank you very much for your time in answering this survey. Do you have any additional comments?

Comments: _____

DATE AND TIME OF SURVEY

1. Date 1 _____	Time 1 _____
2. Date 2 _____	Time 2 _____
3. Date 3 _____	Time 3 _____
4. Date 4 _____	Time 4 _____
5. Date 5 _____	Time 5 _____

SURVEY RESULT CODE

01 (Not Located) Establishment not located in the registered address	
02 (Temporary closure) Establishment with temporary closure of operations	
03 (Definitive Closure) Establishment with definitive closure of operations	
04 (Change of activity line) Establishment that changed its line of business	
05 (Damaged) Establishment that is closed due to having suffered an accident, for example: collapse, fire, etc.	
06 (Negative) The respondent refuses to answer the survey due to various situations such as insecurity, lack of time, management policy, etc.	
07 (Full) The interview was completed successfully	
08 (Incomplete) The interview was partially conducted (and answered)	

COMMENTS AND OBSERVATIONS

B Perception of the disease

In this section, we aim to understand, at least from the participants' perspective, the establishments' perception on the disease caused by the COVID-19. We observe that the degree to which the population complies with the restrictions imposed by the authorities, as well as the adaptive measures described below in this document, is not only motivated by economic concerns, but also by the population's beliefs about the disease. Figure 3 shows the distribution of how the infectious the disease is perceived to be. Clearly, most believe that COVID-19 is highly contagious (67.2% of the participants), followed by those who believe that it is moderately contagious (26.8%). Only 6% of the participants believe the effect is little or none.

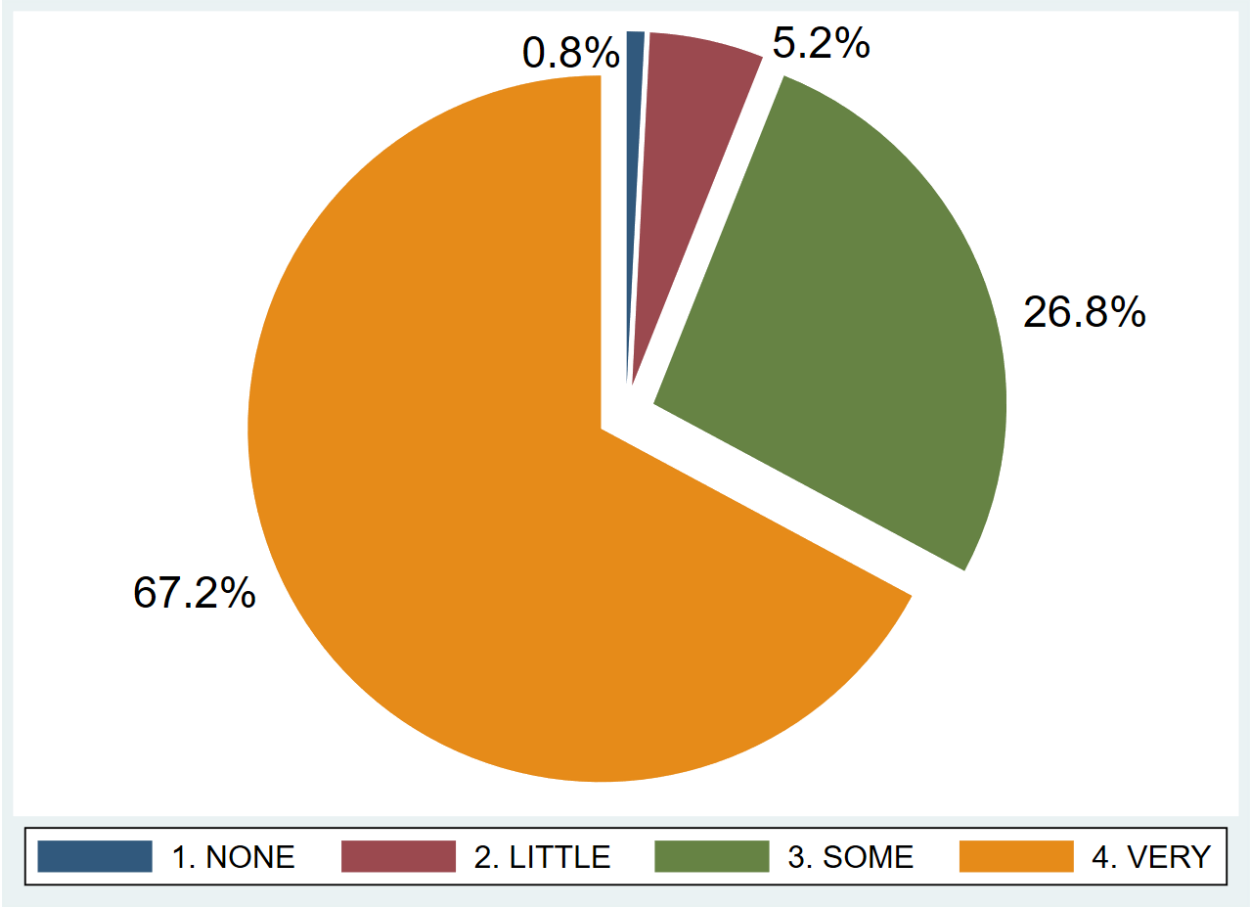


Figure 3: Perception of how contagious the COVID-19 disease is

On the other hand, different information about the pandemic has been provided by the Mexican authorities and by international agencies such as the World Health Organization (WHO). This information has been reproduced on a constant basis by the mass media, social networks, among others. It is therefore expected that participating SMEs were relatively well

informed about the risks and dangers of the disease. Figure 4 shows which sectors of the population are considered high risk in the event of catching the disease. The results are in line with that reported by official agencies. This supports the idea that the survey was answered by participants with certain minimum required knowledge of the current health situation.

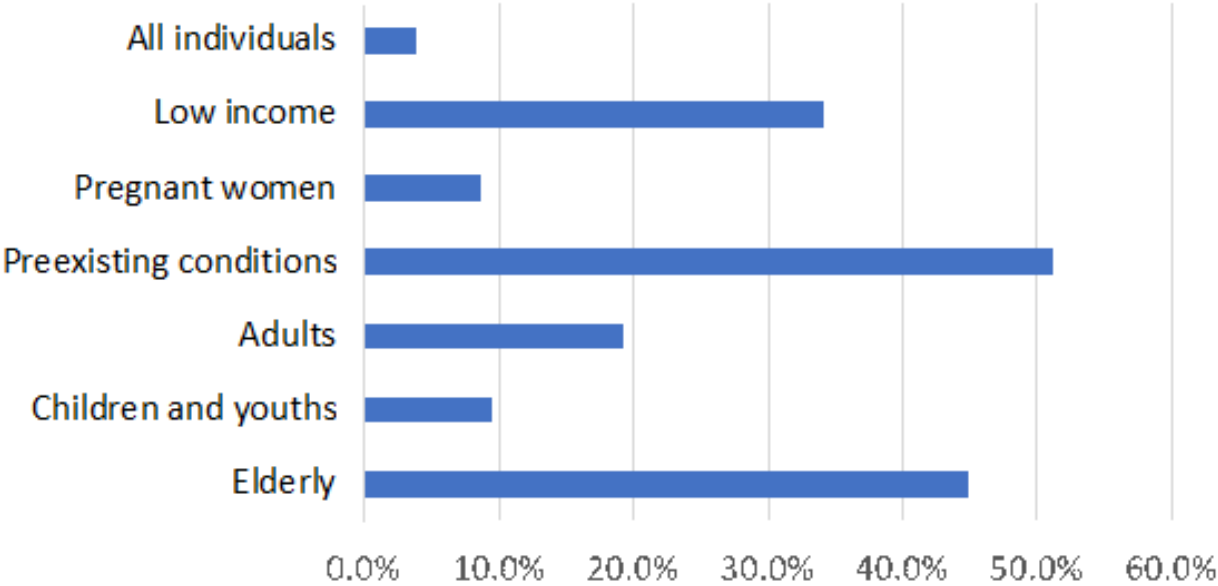


Figure 4: Groups of people for whom COVID-19 is considered to be dangerous

C Electricity tariffs of SMEs in the AMA

There are different tariff categories that were contracted by the firms in our sample. Specifically, tariffs GDMTH and GDMTO correspond to large demand in medium voltage with and without peak-load pricing, respectively, and GDBT correspond to large demand in low voltage. These three categories were group together under the name “High-demand”. Then the category PDBT corresponds to low demand in low voltage, and finally, residential tariffs are 01 and DAC.²¹

Table 14: Electricity consumption and spending of SMEs in the AMA

From March 2019 to March 2020					
Tariff category	# firms	Consumption		Spending	
Residential	75	541.5	(595.3)	2,165.5	(3,185.5)
Low-demand	616	1,306.8	(1,841.8)	5,899.5	(7,690.9)
High-demand	108	9,567.5	(13,581.9)	29,774.0	(39,468.3)
From April 2020 to September 2020					
Tariff category	# firms	Consumption		Spending	
Residential	75	464.6	(551.9)	1,728.7	(2,937.3)
Low-demand	616	826.3	(3,021.0)	4,541.4	(6,219.1)
High-demand	108	7,737.3	(9,217.9)	23,531.3	(26,230.7)

Source: CFE billing data.

Standard deviations are shown in parenthesis.

²¹For a precise definition and a complete analysis of residential tariffs in Mexico see [Hancevic et al. \[2022\]](#)

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