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Impact of the coronavirus disease crisis on Tunisian firms: Constraints and opportunities

Subregional Office for North Africa

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Foreword

Even though the coronavirus disease (COVID-19) health crisis is partially behind us, its economic and social consequences will continue to be felt in the rest of 2022 and beyond, among the effects of other crises (e.g. the conflict in Ukraine, climate change). With climate change and the loss of biodiversity exacerbating the spread of communicable diseases, researchers predict that other pandemics will occur.[1] The future will thus be marked by a greater probability of the occurrence of multidimensional crises, which underscores the importance for countries to build resilience. It is therefore essential to capitalize on the lessons learned from the experience gained during the COVID-19 crisis to be better prepared for future crises.

The present report contains the main findings of a survey conducted among 1,000 Tunisian companies between November and December 2020. The analysis of the findings highlights some of the key effects that the COVID-19 pandemic has had in Tunisia, such as financial constraints, and the asymmetry of the shock, with the services sector being the most affected. As a direct consequence of the pandemic and the measures taken to contain the spread of COVID-19, some 68.4 per cent of the companies surveyed across all sectors experienced temporary periods of interruption to their business (downtime), totalling 11.1 weeks on average. At the end of 2020, a quarter of firms were still operating only partially. Business disruptions had a direct impact on turnover, with turnover falling by 9.5 per cent in agriculture, 13.2 per cent in industry and 34.1 per cent in the services sector. Employment fell by 2.7 per cent in agriculture, 4.2 per cent in industry and 34.9 per cent in services. The drop- in employment was most significant in the hotel and restaurant industry (−51.3 per cent) and in construction and civil engineering (−53.7 per cent). Employment in wholesale and retail trade fell by 19.7 per cent, while turnover rose by a modest 0.1 per cent. In industry, the largest decrease in employment was in textiles (−12.9 per cent), followed by the mechanical and electrical industries (−2.7 per cent). In the food industry, 89 per cent of companies recorded an increase in turnover and stable employment, while 68 per cent of pharmaceutical and chemical companies also recorded an increase in turnover. In the construction and civil engineering sector, by contrast, 90 per cent of companies recorded a decrease in both turnover and employment.

The pandemic had a strong impact on investment, which appears to have fallen sharply in the construction and civil engineering sector (−22 per cent) and the hotel and catering sector (−22.8 per cent). Companies that experienced periods of downtime recorded a larger drop in investment, whereas those that resumed normal operations more quickly at the end of 2020 recorded a much smaller drop.

The crisis affected access to financing for companies. Some 75.2 per cent of companies in 2019 and 95.5 per cent in 2020 identified access to financing as a constraint. Microenterprises reported being more financially constrained, with 86 per cent of them perceiving a constraint in both 2019 and 2020. Turnover decreased by 29.5 per cent among companies that indicated they had faced financial constraints in 2019 and 2020, but by only 10 per cent among those that indicated they had not faced financial constraints during the two-year period. Moreover, the most financially constrained firms are more likely to have experienced a decline in both employment and turnover.

The report also sheds light on the role of public policies in mitigating the effects of the crisis and supporting the recovery from COVID-19. Like many other countries, Tunisia implemented policy measures to support businesses, such as rescheduling payments of tax arrears and the temporary suspension of some penalties. It also targeted some sectors that were particularly

1 Over the past 100 years, the world has experienced 4 influenza pandemics, with an occurrence every 15 to 30 years and with an annual probability of between 3 and 7 (Horizon, December 2021).

affected by the pandemic, such as tourism, by subsidizing interest rates on investment loans, among other specific short-term measures. In the survey, most of the firms benefited only from the deferral of tax returns and from bank credit or leasing payments. In addition to policies to help companies in the short run, policymakers should also consider tackling the asymmetric effects of the pandemic by considering the long-term challenges that sectors face. For the tourism sector's medium-term recovery, for example, public policies must consider the transformations that this sector will undergo owing to changing preferences and climate change. It is likely that mass tourism will no longer be a sustainable option, that tourists will give greater weight to safety, that the transport sector, including but not limited to aviation, will have to invest major efforts in reducing its CO_2 emissions, and that water stress will become a greater constraint. Businesses operating in the tourism sector will need to be made ready for the profound transformations that the sector will undergo.

Tunisia is currently experiencing a crisis, the duration and scope of which are unprecedented in the country. The rebound of the Tunisian economy is therefore constrained by many factors that have considerably weakened public finances and that hinder the country's short- and medium-term financing options, both socially and economically. The survey shows clearly that access to financing has been an aggravating factor in the crisis. Ambitious reforms are therefore needed in this area, especially for small and medium-sized enterprises. Various measures can be taken by Government to facilitate access to financing for businesses, especially small and medium-sized enterprises, including financial training for the private sector, capacity-building for the banking sector to better meet the needs of small and medium-sized enterprises, reforms to strengthen financial infrastructure, measures to promote competition in the financial sector (the top three banks in Tunisia owned 90 per cent of banking assets in 2019), and measures to promote the development of digital finance.

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1. Introduction

The Tunisian economy has been hit hard by the crisis generated by the coronavirus disease (COVID-19) pandemic. It was already fragile before the pandemic, mainly owing to the political instability that had affected the country since 2011.

As of September 2021, the country had recorded 24,794 deaths from COVID-19, representing a mortality rate of 2.12 deaths per 1,000, which was among the 20 highest mortality rates in the world and the highest in North Africa.[2] Moreover, unemployment remained high in 2021[3] (16.8 per cent against 16.6 per cent in 2020), and the proportion of those living in poverty is estimated to have increased from 2.9 per cent of the population before COVID-19 to 7.4 per cent in 2020, according to the World Bank.[4]

In 2020, gross domestic product (GDP) decreased by 8.8 per cent,[5] having grown by only 0.9 per cent the previous year. The fall in turnover is a result of the containment measures adopted by the Tunisian authorities at the start of the pandemic and followed both an additional wave of cases in the spring and a decrease in domestic and external demand, especially from Europe, which the main export sectors rely on. According to the National Institute of Statistics of Tunisia, GDP fell by 2.8 per cent in the first quarter of 2020 owing to the measures taken by the authorities to stop the spread of the virus, and then by a further 19.6 per cent in the second quarter, owing to the impact of the lockdown on supply and demand. After a rebound in the third quarter (+19.4 per cent), the second wave negatively affected GDP growth in the final quarter. As shown in table 1, all sectors except the agriculture, forestry and fisheries sector recorded negative growth in 2020. The manufacturing industries contracted by 9.3 per cent, except agrifood, which grew by 1.7 per cent. Market services fell by 13.3 per cent, with the largest declines recorded in the hospitality (43.6 per cent) and transport and storage (28 per cent) sectors.

Against this background, the Subregional Office for North Africa conducted a survey of 1,000 companies towards the end of 2020 to understand which challenges they faced, how they coped with and adapted to the crisis, and which constraints they faced. Unlike in other

Table 1: Growth rates by sector (Percentage)

Sector	2019	2020
Agriculture, forestry and fisheries	0.4	4.4
Food industry	1.4	1.7
Textiles	−4.1	−15.4
Other industries	−1.3	−12.5
Pharmaceutical and chemical industries	2	−3.5
Mechanical and electrical industries	−1.5	−13.2
Construction and civil engineering	−0.5	−14.1
Wholesale and retail trade	1.1	−4.7
Hospitality	6.5	−43.6
Transport and storage	−2.7	−28
Postal and telecommunications services	4.4	2
Financial services	6.7	−0.3
Other marketable services	3	−11.3
Gross domestic product	0.9	−8.8

Source: National Institute of Statistics of Tunisia.

2 As of July 2022, the country had recorded 29,041 deaths from COVID-19, representing a mortality rate of 2.4 deaths per 1,000, which was among the 40 highest mortality rates in the world and also the highest in North Africa.

3 https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=TN, accessed on August 19, 2022.

4 Kokas, Deeksha, and others, "Impacts of COVID-19 on household welfare in Tunisia", Policy Research Working Paper, No. 9503 (Washington, D.C., World Bank, 2021).

5 National Institute of Statistics of Tunisia.

surveys, companies were asked not only about their output, job losses and work practices during the pandemic, but also about the obstacles they faced, their policies, their prospects for recovery, and how they had adapted to the pandemic. The companies selected were representative in terms of their sector and size. Information was collected on the characteristics of each company (age, sector, etc.). Furthermore, the questionnaire was divided into three modules: the change in turnover, employment and output; companies' perceptions of their prospects for change in their activity[6], production, employment and the use of information and communications technology; and their perceptions of the effectiveness of public policies implemented by the Government and those they perceived as the most important.

Numerous surveys have been conducted around the world to determine and quantify the impact of COVID-19 on businesses. One survey covered more than 100,000 companies in 51 countries; in respect of Tunisia, it was discovered that the crisis had had a major impact on all sectors of the economy, and that turnover had been affected more than employment.[7] In another survey that covered 38 countries around the world, including eight in sub-Saharan Africa, it was found that the impact of the pandemic had been much greater in sub-Saharan African economies, mainly owing to differences in the level of development rather than differences in the sectoral structure or the characteristics of businesses.[8]

In Tunisia, the International Finance Corporation (IFC) conducted a survey in several phases in 2020 that showed that 74.7 per cent of businesses reopened after an interruption in the third quarter of the year.[9] The Economic Research Forum (2021)[10] published the results of surveys on the impact of COVID-19 on micro, small and medium-sized enterprises in four countries of the Middle East and North Africa, including Tunisia. The surveys focused on the impact of the pandemic on business operations and support received from the Government.

The Economic Commission for Africa (ECA), for its part, conducted a survey during the final quarter of 2020. The survey is distinguished by the fact that it combined questions on a variety of dimensions (e.g. the impact on company operations, sales, employment and investment; changes in perceived constraints due to the crisis; business prospects; the importance of digitalization). The survey was conducted in November and December 2020 and therefore allows us to measure the impact of the pandemic at the height of the crisis.

The survey showed that only 29 per cent of companies operated normally during the crisis in 2020.[11],[12] The percentage of companies that were permanently closed was 5.4 per cent according to the IFC survey and slightly lower, at 4 per cent, according to ECA. Interestingly, the IFC survey shows that almost 60 per cent of companies reported difficulties accessing financial services in the third quarter. Although pre-COVID-19 data are not available on companies, the ECA survey provides more detailed information on access to financing by identifying companies that had access-to-finance difficulties before

6 In the questionnaire, to catch the prospects for change of activity, the answers available to companies were as follows:

- By switching to different products in the same area
- By producing different goods in another sector
- By increasing automation
- By developing online commerce

7 Apedo-Amah, Marie Christine, and others, "Unmasking the impact of COVID-19 on businesses: firm level evidence from across the world", Policy Research Working Paper, No. 9434 (Washington, D.C., World Bank, 2020).

8 Gemechu, Aga, and Hibret Maemir, "COVID-19 and African firms: impact and coping strategies", Policy Research Working Paper, No. 9642 (Washington, D.C., World Bank, 2021).

9 International Finance Corporation, "Impact of the COVID-19 crisis on the private sector in Tunisia" (Washington, D.C., 2020).

10 Economic Research Forum (2021), "The impact of COVID-19 on Middle Eastern and North African labor markets: A focus on micro, small, and medium Enterprises" (Cairo, 2021).

11United Nations, Economic Commission for Africa, Quality of Institutions and Structural Transformation: Distortions and Resource Allocation in North Africa (Addis Ababa, 2019).

12 Normal functioning means that a company did not temporarily close or scale down its operations.

and during the pandemic and those that faced the most difficulties during the pandemic. In particular, the food industry had the highest proportion of companies reporting difficulties in gaining access to financing during the pandemic (66.6 per cent), yet these companies had fewer difficulties before the pandemic. Moreover, the ECA survey shows that financial constraints increased, with 95 per cent of surveyed companies reporting difficulties with access to financing in 2020, compared with 75 per cent in 2019. This shows that the perceived lack of financing was exacerbated by the pandemic.

In a survey conducted at the very beginning of the crisis, in March 2020, by the Arab Institute of Entrepreneurs, three quarters of business managers reported that their activity had been affected by the pandemic, with turnover down. In all sectors, almost 80 per cent of entrepreneurs expected demand to drop further. Financing difficulties were reported by two thirds of the companies surveyed.[13]

In the present report, the survey and sampling methodology are presented, then the impact of the pandemic on business activity is analysed, and, lastly, the authors examine the companies' own perspectives on their prospects for recovering from the crisis. Policy recommendations are discussed in the conclusion.

13 Institut arabe des chefs d'entreprises, "Impact du covid-19 sur les entreprises tunisiennes" (Tunis, 2020).

2. Presentation of the survey

The survey was conducted by a research company among 1,000 firms, by telephone,[14] between 1 November and 15 December 2020. The sample was selected using a stratified random sample from a panel of companies from the latest annual survey data collected by the National Institute of Statistics of Tunisia among companies in the formal sector. The stratification variables were the company's main branch of economic activity, corporate form, company size (number of employees) and geographic location, thus ensuring that the main branches of economic activity were well represented, including, if necessary, at the governorate level.

Table 2 presents the sample by company size (number of jobs), company age, level of education, and gender of the main manager. Only 5 per cent of the firms surveyed were headed by women.[15] In terms of education, 88 per cent of main managers held a university degree and 10 per cent a vocational training diploma.

Most companies were between 5 and 25 years old. Some 32 per cent of companies were exporters, of which 88 per cent were in the industrial sector and 5.6 per cent in services. Appendix 0 presents a breakdown of the companies by sector, region and size.

Table A.1 (see annex) shows a breakdown of the companies among 14 sectors; Table A.14 (see annex) shows a breakdown by sector and governorate.

3. Main findings from the survey

In this section, the main findings of the survey concerning the impact of the COVID-19 crisis on employment and turnover are presented. The section begins with an analysis of key descriptive statistics on turnover and employment by sector, age, size and export status, followed by an assessment of the magnitude of each of the channels through which the crisis has had an impact (in terms of company closure versus reduced operations, access to financing, constraints faced), controlling for company characteristics.

Given the nature of the crisis, the services sector has been affected the most, in particular the hospitality sector, followed by construction and civil engineering. Specifically, employment plummeted by 34.9 per cent in the services sector, but fell by a more modest 2.7 per cent in agriculture and 4.2 per cent in industry. Turnover fell by 9.5 per cent in agriculture, forestry and fisheries, 13.2 per cent in industry and 34.1 per cent in services. In agriculture, forestry and fisheries and in industry, the downward trend

Table 2: Description of the sample

Number of employees	Percentage	Education level	Percentage
1-9	19	Vocational	10
10-49	53	High school	1
50-249	26	Tertiary	88
More than 249	3	Gender	Percentage
		Women	5
		Men	95

Export status	Percentage	Company age	Percentage
Do not export	68	Less than 5 years	5
Export	32	5 to 25 years	72
		More than 25 years	23

14 The survey was conducted by telephone because of the health situation.

15 This is close to the estimated proportion for all companies in Tunisia.

was therefore sharper for employment than for turnover, but in the services sector, employment fell almost as sharply as turnover. Table 3 shows that the decline in employment was greatest for construction and civil engineering (−53.7 per cent) and hospitality (−51.3 per cent). In wholesale and retail trade, employment fell by 19.7 per cent and turnover by a modest 0.1 per cent, reflecting the sector's greater reliance on online trade. Even without the pandemic, digital technology was expected to play a greater role in this sector, given its pre-existing online trade and preparedness; social distancing measures accelerated the existing trend.

When companies were asked how big an impact (on a scale of 1 to 5) they thought the pandemic could have on increasing the importance of information and communications technology, 60.5 per cent of companies in wholesale and retail trade answered "very large", which was the highest percentage for any sector. Moreover, since electronic commerce has developed relatively well in Tunisia,[16] the use of electronic

Table 3: Change in employment and turnover between 2019 and 2020 (Percentage change)

Sector	Turnover	Employment
Agriculture, forestry and fisheries	−9.5	−2.7
Food industry	+10.0	–
Textiles	−35.2	−12.9
Mechanical and electrical industries	−32.0	−2.7
Pharmaceutical and chemical industries	+10.2	–
Construction and civil engineering	−54.3	−53.7
Wholesale and retail trade	+0.1	−19.5
Hospitality	−56.4	−51.3
Transport and storage	−44.8	–
Information and communications technology	+1.0	–
Financial activities and insurance	+2.4	−3.7
Real estate activities	−16.0	−18.8

Table 4: Distribution of companies by sector according to the change in their turnover and employment (Percentage of companies)

Sector	Employment stable; turnover stable	Employment stable; turnover higher	Employment stable; turnover lower	Employment lower; turnover lower	Employment lower; turnover higher
Agriculture, forestry and fisheries	14	20	57	6	4
Food industry	10	89	1	–	–
Textiles	–	–	57	43	–
Mechanical and electrical industries	1	–	89	10	–
Pharmaceutical and chemical industries	26	68	6	–	–
Construction and civil engineering	–	–	10	90	–
Wholesale and retail trade	2	44	10	41	2
Hospitality	–	–	30	70	–
Transport and storage	–	–	100	–	–
Information and communications technology	26	38	36	–	–
Financial activities and insurance	–	61	33	–	6
Real estate activities	–	–	60	40	–

16 In the 2019 edition of the Business-to-Consumer E-commerce Index by the United Nations Conference on Trade and Development, Tunisia was the highest ranked country in North Africa, at 79th out of 147 countries.

commerce can explain the slight increase in turnover, despite a 20 per cent drop in employment.

In industry, textiles recorded the largest change in employment, with a 12.9 per cent drop, followed by the mechanical and electrical industries, with a 2.7 per cent drop.

Table 4 shows the distribution of companies according to the change in their turnover and employment.

The food industry and the pharmaceutical and chemical industries stand out, with 89 per cent of companies in the sector having increased their turnover and maintained their employment levels.[17] In the pharmaceutical and chemical industry, 68 per cent of companies were in the same situation. In the construction and civil engineering sector, 90 per cent of companies recorded a decrease in both turnover and employment. Given that the crisis was related to health, turnover in the pharmaceutical and chemical industries did not decrease and employment remained stable. The increase in turnover in the food industry can be explained by a 3 per cent increase in olive oil production in 2020.

Table 5 shows that turnover and employment affected smaller companies the most. For the change in turnover, the difference between small and medium-sized companies was not statistically significant, but the loss for microenterprises was significantly larger, at 28 per cent. In large companies, turnover increased by almost 3 per cent. This is explained by the fact that 44.1 per cent of large firms were in the food industry and 29.4 per cent in the pharmaceutical and chemical industries. This also partly explains why employment fell by only 1 per cent in large companies but by around 14 per cent in small and medium-sized enterprises.

The decline in employment for microenterprises was significantly greater than for small and medium-sized enterprises, at 31.1 per cent.

Between young and old firms, there was a positive, statistically significant correlation coefficient between the change in turnover and the age of a company. This suggests that the crisis may have had a greater impact on young firms, though the variance is small, so the link between the two is not certain. There are several reasons why younger companies might have been affected more. For example, younger firms are believed to face more constraints in obtaining access to credit, but in the survey, there was no statistical difference in the response to the question regarding financing constraints between younger and older firms. There is also no correlation between company age and change in employment.

Exporting firms lost more in terms of turnover than non-exporting firms in agriculture and industry. It is the reverse situation in services, where exporting firms recorded a 10 per cent decrease in turnover (Table 6), as compared with 35.3 per cent for non-exporting firms. As for employment, it fell by an average of 20 per cent for non-exporting companies and only 4.9 per cent for exporting companies.18 Employment in companies that export industrial goods fell by 3.9 per cent, while the decline was 15.3 per cent for companies that export services, since services were affected by the lockdown

Table 5: Change in turnover and employment, by company size (Percentage change)

Company size	Turnover	Employment
Micro	−28	−31.1
Small	−21.5	−14.9
Medium-sized	−19.5	−11.3
Large	+2.9	−1

17 This in line with the 1.7 per cent increase in value added of the food industry in 2020, as reported by the National Institute of Statistics of Tunisia.

18 Most exporting firms are in the industrial sector, and industry was less affected than services.

Table 6: Change in turnover by sector and export status (Percentage change)

	Agriculture	Industry	Services
Non-exporting	-5.8	-9.9	-35.3
Exporting	-15.3	-16.5	-10.6

measures more than industry. Call centres, for instance, were directly affected by lockdowns.

The pandemic affected turnover through three key channels: the disruption of business operations due to lockdown, restrictions on movement, and social distancing.

The main characteristic of the current economic crisis is a halt or reduction in activity due to social distancing, whether voluntary or imposed by the authorities (lockdown, movement restrictions, etc.). These measures have affected companies differently, depending on their type of activity (for example, whether face-to-face interaction with customers was needed), their market (local or international) and the extent to which their operations had been digitalized.

Companies were asked about the nature and duration of the business disruptions they had experienced in 2020 and at the time of the survey. They had experienced an average of 11.1 weeks of downtime. shows the distribution of firms by type of business disruption in the early months of the pandemic and at the time of the survey (November and December 2020). Only 29 per cent of firms experienced normal business activity in March 2020 and 68.5 per cent experienced temporary downtime. By the end of 2020, some 71.2 per cent had resumed normal activity and 4 per cent had ceased operating.

Business downtime lasted longest in the service sector, at 13.2 weeks, and industry, at 10.0 weeks. In agriculture, forestry and fisheries, downtime was only 4.7 weeks and 80 per cent of companies operated normally from March to

Table 7: Business disruption (Percentage of companies)

Extent of disruption	March 2020	December 2020
None (i.e. normal operations)	28.8	71.17
Temporary downtime	68.5	4.00
Partial operations	2.7	24.82

Table 8: Number of weeks of downtime and percentage of companies operating normally by December 2020

Sector	Weeks of downtime	Percentage of companies operating normally by December 2020
Agriculture, forestry and fisheries	4.7	90.2
Food industry	3.0	100.0
Textiles	17.9	71.9
Mechanical and electrical industries	15.3	92.1
Pharmaceutical and chemical industries	1.4	100
Construction and civil engineering	17.8	7.5
Wholesale and retail trade	9.0	55.5
Hospitality	14.6	29.6
Transport and storage	11.3	100.0
Information and communications technology	5.8	100.0
Financial activities and insurance	2.7	100.0
Real estate activities	22.0	100.0

the end of 2020, compared with 37.7 per cent in industry and only 10 per cent in services. By contrast, 84.6 per cent of service firms experienced downtime, compared with 61 per cent in industry and 19.6 per cent in agriculture.

The sectors with the shortest periods of downtime (Table 8) were the pharmaceutical and chemical industries (1.4 weeks) and the food industry (3 weeks). The real estate sector (22 weeks) and textiles (17.9 weeks) recorded the longest periods of downtime.

In December 2020, 71.2 per cent of the companies surveyed were operating normally, though this figure varied significantly by sector. Construction and civil engineering was the sector most affected, with only 7.5 per cent of companies reporting normal operations. This may be explained by the fact that it is one of the sectors most sensitive to economic cycles and has the strongest spill-over effect during a recovery.

Companies that experienced periods of downtime are more likely to have experienced a decrease in turnover and employment; companies that returned to normal operations at the end of 2020 are more likely to have maintained their total turnover and employment.

Finally, exporting firms, on average, were inactive for 1.4 weeks fewer than non-exporting firms, and those with the smallest decline in exports in 2020 also experienced shorter downtime.

The crisis had an immediate impact on business activity, as well as a longer-term impact through the decline in investment. Understanding the impact on investment is useful for many reasons. It sheds light on companies' expectations and, above all, the impact of the crisis in the medium and long term through its effect on capital accumulation. Despite this, since companies' responses regarding the change in their investments between 2019 and 2020 may be biased, the question cannot be answered accurately using the data obtained. One reason for possible bias in the data is the poor response rate, with only 44.6 per cent of firms having answered the question. To determine whether non-responses were random or were correlated with factors that might have influenced responses to the survey, a multivariate analysis was performed to explain the non-responses.

Table A.5 (see annex) shows that the response to the question concerning the change in investment is partly explained by several variables, including the sector, change in employment and cumulative length of downtime. For example, the greater the variation in employment or turnover, the more likely a company was to answer the corresponding question. The same applies to the question on downtime: companies that experienced longer downtime were more likely to answer the question on downtime. This means that the decline in investment tends to be overestimated. The table also shows differences in response rates by sector. For example, companies in the food industry responded less than textile companies. The textile sector was more affected by the crisis than the agrifood sector, which tends to underestimate the decline in investment.

Since the change in investment inferred from the 446 responses is subject to bias, it is not possible to draw aggregate conclusions. However, the six sectors with a sufficiently high response rate – information and communications technology, financial activities and insurance, transport and storage, hospitality, construction and civil engineering, and pharmaceuticals and chemicals – provide useful data. Table 9 shows the change in investment for these sectors and the response rate. The pharmaceutical and chemical industries have been retained, despite the 48 per cent response rate, because it seems reasonable to assume that the health crisis led to an increase in investment in this strategic sector, or at least that it was not heavily affected by the change in investment. The suggested 4.4 per cent change in investment cannot be assumed to be accurate, but it does reflect the fact that investment in the sector did not fall. The information and communications technology sector has a response rate of almost 60 per cent, which, given the possibility of bias mentioned above, is not necessarily high enough to give a figure that accurately reflects the change in investment in this sector. However, the change in investment

in this sector probably is positive, given that information and communications technology played an important role in companies' responses to the constraints and challenges generated by the crisis (teleworking and online commerce, for example).

The four sectors for which a more reliable change in investment can be indicated are construction and civil engineering (91 per cent response rate), financial activities and insurance (89 per cent), transport and storage (81 per cent), and hospitality (78 per cent). Investment is estimated to have fallen sharply in the two sectors most affected by the pandemic: hospitality, by 22.8 per cent, and construction and civil engineering, by 22 per cent. The next largest reduction in investment was in transport and storage. The drop in investment in the construction and civil engineering sector can be explained by the lockdowns that affected the sector, the reduction in orders, and, like in many countries, uncertainty over the recovery. By contrast, investment in the pharmaceutical and chemical industries and the information and communications technology sector increased.

The drop in investment was larger for firms that experienced longer periods of downtime. Indeed, a longer period of downtime resulted in a larger decrease in turnover, and therefore a larger decrease in retained earnings for investment. This effect was exacerbated by financial constraints, as it was harder for firms to obtain external financing for investment. In companies where the return to normal was expected to take longer, investment had fallen more compared with 2019 levels. Lastly, companies that indicated that they were not considering implementing any changes in their activity[19] experienced a larger decrease in investment. This is because companies that were considering changes in their activity may have already implemented the changes and because they may have been more proactive in the face of the crisis, meaning that they would have made investments or would not have reduced planned investments as much as companies that were not contemplating changes (see Table A.5 in the annex).

In the food industry, 89 per cent of companies recorded an increase in turnover and maintained their employment levels. Not only was the food industry less affected by reduced demand than other sectors, but it also appears to have been less financially constrained. In fact, most food industry companies did not indicate that access to financing was a constraint in 2019, but they did in 2020. Given the percentages of firms in other sectors that cite finance as a constraint, the figures for the food industry are a strong indication that financial constraints were larger in 2020 for all types of firms. Financial

Table 9: Change in investment in sectors with a sufficiently high response rate

Sector	Change in investment (percentage)	Response rate (percentage)
Pharmaceutical and chemical industries	4.4	48
Construction and civil engineering	−22.0	91
Hospitality	−22.8	78
Transport and storage	−17.1	81
Information and communications technology	9.1	59
Financial activities and insurance	1.5	89

19 Companies could indicate that they were considering changing their activity through one of the following actions:

- By switching to different products in the same area
- By producing different goods in another sector
- By increasing automation
- By developing e-commerce

constraints seem to have played an important role in the impact of the pandemic on business activity. Turnover decreased by 29.5 per cent for firms that indicated that they faced financial constraints in 2019 and 2020, and by 10 per cent for those indicating that they did not. While the turnover of firms in the agrifood sector increased in 2020, their growth could have been greater. Firms in the pharmaceutical and chemical industries have also increased their turnover while maintaining employment levels. Financial constraints seem to have been greater in that sector than in the food industry, with 82 per cent of companies indicating that they experienced such constraints in both 2019 and 2020. Once again, therefore, the growth of these companies in such a critical sector was probably stymied by the constraint of access to financing. Equity financing, especially own funding, was by far the main financing method in all sectors. Only 1.1 per cent of companies did not use self-financing, 85.4 per cent relied entirely on self-financing, and 13.5 per cent partially used self-financing. The companies that did not use self-financing used either bank loans or loans from close friends or family members. In total, only 2.2 per cent of the firms surveyed used bank loans, while 11.8 per cent used loans from family members. Table 10 shows the top financing methods during the pandemic in 2020 for each sector. Self-financing is highest in transport and storage, information and communications technology, financial activities and insurance, and real estate activities.

These findings are in line with other studies that have documented the severity of difficulties that companies encounter in obtaining access to financing in Tunisia. In one survey from 2016, it was found that 37 per cent of Tunisian firms reported being disconnected from the banking system, meaning that they had to rely on their own financial resources.[20] Indeed, such firms strongly resemble credit-constrained firms in that they are missing out on important investment and growth opportunities.[21]

In the survey, access to financing was the main constraint perceived by companies, especially in 2020 (95.5 per cent of companies, compared with 75.2 per cent in 2019). In that regard, there is no significant difference among companies in the agriculture, forestry and fisheries sector, the industry sector and the services sector.

Table 11 presents the changes in turnover and employment for companies that perceived no financial constraints, companies that

Table 10: Main funding sources during the pandemic in 2020 (Percentage)

Sector	Self-financing	Bank loans	Loans from close friends or family members
Agriculture, forestry and fisheries	72.5	–	25.5
Food industry	93.3	0.5	4.3
Textiles	81.0	2.6	16.3
Mechanical and electrical industries	72.9	7.1	20.0
Pharmaceutical and chemical industries	92.0	8.0	–
Construction and civil engineering	82.2	1.4	16.4
Wholesale and retail trade	86.4	–	13.6
Hospitality	90.1	–	9.9
Transport and storage	100.0	–	–
Information and communications technology	100.0	–	–
Financial activities and insurance	100.0	–	–
Real estate activities	100.0	–	–

20 Frewer, Geoff, "Neigbhourhood SME financing: synthesis report" (Kirchberg, Luxembourg, European Investment Bank).

21European Bank for Reconstruction and Development, European Investment Bank and World Bank, What's Holding Back the Private Sector in MENA?: Lessons from the Enterprise Survey (London, Luxembourg and Washington, DC, 2016). Available at https://www.eib.org/attachments/efs/econ_mena_enterprise_survey_en.pdf.

Table 11: Change in turnover and employment as a function of financial constraints (Percentage change)

Extent of constraints	Change in employment	Change in turnover
No constraints	−3.2	−10.2
Constraints in 2019 and 2020	−20.4	−29.5
Constraints in 2020 only	−3.9	+7.2

Table 12: Financial constraints and changes in employment and turnover (Percentage of companies)

Extent of constraints	Employment stable; turnover stable	Employment stable; turnover higher	Employment stable; turnover lower	Employment lower; turnover lower	Employment lower; turnover higher
Not constrained	2.4	47.6	40.5	7.1	2.4
Constrained in 2019 and 2020	4.8	14.6	42.2	38.1	0.4
Constrained in 2019 only	–	66.7	–	33.3	–
Constrained in 2020 only	8.5	79.9	2.5	8.5	0.5

perceived constraints in both 2019 and 2020, and companies that perceived constraints in 2020 only.[22] The table shows that the firms most constrained by access to financing (i.e. those that perceived constraints in both years) experienced the largest decrease in turnover and employment. It should be noted that 80 per cent of the companies that perceived financial constraints only in 2020 operated in the food industry.

The survey shows a clear link between access to financing and business disruption. Indeed, companies that reported being financially constrained in 2019 and 2020 were inactive for a longer period – almost 6 weeks longer on average (see also section 15.2). Companies that had a bank loan experienced less downtime – 4 weeks less on average; while those that received loans from friends or family members had more than 3 weeks more downtime. Companies that reported being financially constrained and that received loans from family members had an average of 10 weeks more downtime. It is likely that the latter were the most financially distressed.

Companies that perceived larger financial constraints suffered the most from the crisis. Table 12 shows that the most financially constrained firms are more likely to have experienced a decrease in both employment and turnover.

By combining various factors, it is possible to obtain a comprehensive understanding of the impact of the crisis on the activity of companies in Tunisia. Companies that perceive themselves as financially constrained are also those that lost the most turnover. Companies that were financially constrained were less likely to have stable turnover and employment (see Table A.7 in the annex). Estimates suggest that financial constraints had a significant negative effect on turnover, resulting in an additional 11 per cent decline (see Table A.11 in the annex). Companies that experienced downtime recorded greater losses in turnover – an additional 20 per cent on average. Companies that resumed normal operations at the end of 2020 recorded a smaller drop in turnover than other companies. Lastly, companies that indicated that they were considering some changes in their activity recorded a larger drop in turnover, which may explain why they wished to make changes to their activity. The above results also apply to employment trends, as shown in Table A.13 (see annex).

22 Companies that did not perceive financial constraints until 2019 were not included because their workforce was too small.

Table 13: Perceived financial constraints by size

	Micro	Small	Medium-size	Large	Total
Not constrained	5.6	3.8	3.5	8.8	4.2
Constrained in 2019 and 2020	86.0	75.6	70.2	55.9	75.4
Constrained in 2020 only	8.4	20.4	25.9	32.4	20.0

Table 14 below shows financial constraints perception by firm size. Micro enterprises perceive themselves particularly more constrained than other firms, with 86% of them saying they were financially constrained both in 2019 and 2020.

Table 14 presents the change in the constraints perceived by firms between 2019 and 2020. The top constraints cited by companies differed slightly between 2019 and 2020. In 2019, the top six constraints were financing (75.9 per cent of companies), labour laws (67.6 per cent), crime (41.6 per cent), macroeconomic instability (33.5 per cent), corruption (22.5 per cent) and political instability (21.5 per cent).

Four of the top six constraints cited by companies for 2019 were also cited for 2020: access to financing (95.5 per cent), labour laws (67.5 per cent), macroeconomic instability (43.2 per cent), and crime (28.5 per cent). The two new constraints among the top six cited for 2020 were customs and foreign trade regulations (25.1 per cent) and unfair competition from the informal sector (14.1 per cent). Further investigation is needed to understand precisely what constraints customs and foreign trade regulations posed. As for unfair competition from the informal sector, it is possible that formal companies faced legal constraints that informal businesses were able to avoid. With only 4.7 per cent of companies citing corruption as a constraint in 2020, it was less of a concern than it had been in 2019. Crime remained a concern for 28.5 per cent of companies in 2020, down from 41.6 per cent in 2019. These changes might have been the result of priorities being revised during the health crisis. The increase in concern over foreign trade could have been due to strong disruptions to supply chains and the fall in external demand caused by the crisis. Table A.9 and A.10 (see annex) provide a breakdown by sector of the constraints that companies cited.

Table 15 shows the main constraints perceived by firms in each sector in 2019 and 2020.

Access to financing and labour laws were the top two constraints perceived by firms in both 2019 and 2020. Most sectors cited the same constraints in 2019 and 2020, but companies in the food industry, the pharmaceutical and chemical industries, transport and storage and

Table 14: Constraints perceived by companies in 2019 and 2020 (Percentage of companies)

Constraints	2019	2020
Access to financing	75.9	95.5
Access to land	1.0	6.8
Business start-up formalities	0.1	0.2
Corruption	22.2	4.7
Crime (theft, vandalism)	41.6	28.5
Customs and foreign trade regulations	5.7	25.1
Electricity connection	2.4	1.0
Training and skills of staff recruited	1.8	5.4
Labour laws	67.6	67.5
Macroeconomic instability	33.5	43.2
Political instability	21.5	6.3
Unfair competition from the informal sector	17.3	14.8

Table 15: Main constraints perceived in 2019 and 2020, by sector

Sector	2019	2020
Agriculture, forestry and fisheries	Access to financing	Access to financing
Food industry	Macroeconomic instability	Access to financing, labour laws
Textiles	Access to financing, labour laws	Access to financing, labour laws
Mechanical and electrical industries	Access to financing, labour laws	Access to financing, labour laws
Financial activities and insurance	Macroeconomic instability, political instability	Macroeconomic instability, crime
Hospitality	Access to financing, labour laws	Access to financing, labour laws
Construction and civil engineering	Access to financing, labour laws	Access to financing, labour laws
Wholesale and retail trade	Macroeconomic instability, labour laws, crime, access to financing	Macroeconomic instability, labour laws, access to financing
Pharmaceutical and chemical industries	Access to financing, macroeconomic instability	Access to financing, unfair competition from the informal sector
Transport and storage	Crime, access to financing	Access to financing, unfair competition from the informal sector, labour laws
Information and communications technology	Access to financing, macroeconomic instability	Access to financing, unfair competition from the informal sector
All sectors	Access to financing, labour laws, crime	Access to financing, labour laws, macroeconomic instability

information and communications technology cited different constraints each year. As a result, the third most common constraint was crime in 2019 and macroeconomic instability in 2020. In terms of the various sectors, for the financial activities and insurance sector, crime became the second most frequently perceived constraint in 2020, whereas for the other three sectors that changed their perceptions between 2019 and 2020, unfair competition from the informal sector emerged as one of the top conceived constraints.

Different sectors also had different outlooks for the post-crisis era, as shown in table 16. Except in the food industry and in trade, a large majority of firms (over 95 per cent) indicated that they did not envisage any changes in their activity. It is not surprising that 57 per cent of companies in the trade sector indicated that they would like to increase their online business. In the food industry, 43 per cent indicated that they were considering expanding their online business, whereas only 4 per cent indicated that they would increase automation, and 16 per cent indicated that they were considering either producing new goods in the same sector or diversifying into other sectors.

It is difficult to interpret these data without further information. Perhaps the reason why firms are not considering any change in their activity is because of the difficulties they face in reallocating factors of production in the Tunisian economy, in particular owing to financial constraints, but perhaps also to other distortions. Given the nature of the COVID-19 crisis, with a persistent macroeconomic shock that is asymmetric at the sectoral level, some changes in activity would be expected. It is also possible that the survey was conducted too early for companies to fully realize that they had an opportunity to introduce changes in their activity. These changes may only become apparent in the medium term, especially given the uncertainty linked to the persistence of the crisis and the fact that, because the reallocation of production factors is slow and costly, companies are not yet in a position to fully grasp the changes that need to be made. The most obvious changes (e.g. online commerce) in the most exposed sectors, such as trade, were captured by the questionnaire through a

Table 16: Companies envisaging a change of activity, by sector (Percentage of companies)

Sector	Production of different goods in the same sector	Production of different goods in another sector	Increased automation	Development of online commerce	No change
Agriculture, forestry and fisheries	3.9	–	–	–	96.1
Food industry	10.1	5.8	3.9	42.8	37.5
Textiles	–	–	1.3	3.3	95.4
Mechanical and electrical industries	1.4	–	–	3.6	95.0
Pharmaceutical and chemical industries	–	–	–	6.0	94.0
Construction and civil engineering	0.7	–	–	–	99.3
Wholesale and retail trade	–	1.2	–	56.8	42.0
Hospitality	1.3	–	–	–	98.7
Transport and storage	–	–	–	4.8	95.2
Information and communications technology	–	2.6	–	97.4	–
Financial activities and insurance	–	–	–	–	100.0

Table 17: Response to the question "How big an impact could the COVID-19 pandemic have on increasing the importance of digital technologies for your business?", by sector (Percentage of companies)

Sector	Very small	Quite small	Medium	Large	Very large
Agriculture, forestry and fisheries	–	90.2	–	3.9	5.9
Food industry	–	3.9	12.0	12.0	72.1
Textiles	–	–	–	2.6	97.4
Mechanical and electrical industries	–	1.4	1.4	2.1	95.0
Pharmaceutical and chemical industries	–	12.0	16.0	6.0	66.0
Construction and civil engineering	1.4	93.2	1.4	–	4.1
Wholesale and retail trade	–	22.2	9.9	7.4	60.5
Hospitality	–	43.2	3.7	–	53.1
Transport and storage	19.1	81.0	–	–	–
Information and communications technology	–	–	–	–	100.0
Financial activities and insurance	–	–	–	–	100.0

specific question about the importance of digital technologies in the business context.

Table 17 shows that financial activities and insurance (100 per cent), textiles (100 per cent), the mechanical and electrical industries (97 per cent) and the food industry (94 per cent) are the sectors in which most companies believed that COVID-19 would have a very large impact on increasing the importance of information and communications technology. Comparing these responses with those concerning a change of activity suggests that the use of information and communications technology in the textiles sector and the mechanical and electrical industries is not related to automation. In the food industry,

the use of information and communications technology seems to be connected to the development of e-commerce.

The low appetite of the transport and storage sector for digitalization is quite striking. Digital technologies should be perceived as very important in this sector, since optimization, speed and timing are factors that are increasingly giving companies in the sector a competitive advantage. There might therefore be room for public policy interventions to promote digitalization in this field. In information and communications technology and financial activities, 100 per cent of the firms surveyed perceived digitalization as very important. Digitalization was also perceived as very important by the vast majority of companies in the textiles sector (97.4 per cent) and the mechanical and electrical industries (95 per cent). Only 60.5 per cent of firms in wholesale and retail trade indicated that digitalization was very important.

Table 18 shows the average time (in months) that turnover and employment were expected to take to return to normal (i.e. 2019 levels). The slowest recovery was expected in the hospitality sector: 21 months for turnover and 21.5 months for employment. The second slowest recovery was expected in construction and civil engineering: 13 months for turnover and 15 months for employment.

Table A.8 (see annex) shows that firms that experienced downturns in 2020 were expected to take longer to recover their turnover levels. However, this had no influence on the return of employment to normal levels. The table also shows that firms that resumed normal operations more quickly, before the end of 2020, were expected to recover normal turnover and employment levels more quickly. Finally, exporting firms were taking longer to resume normal operations.

Table 19 shows that companies identified health, education and information and communications technology as the main priority areas for public

Table 18: Expected number of months to return to pre-COVID-19 levels

Sector	Turnover	Employment
Agriculture, forestry and fisheries	–	–
Food industry	0.1	–
Textiles	6.5	8.3
Mechanical and electrical industries	1.8	0.7
Pharmaceutical and chemical industries	2.8	–
Construction and civil engineering	13.1	15.1
Wholesale and retail trade	4.3	4.3
Hospitality	20.8	21.5
Transport and storage	12.0	–
Information and communications technology	0.1	–
Financial activities and insurance	0.1	–
Real estate activities	14.4	7.0

Table 19: Priority areas for public spending (Percentage of companies)

Priority area	Companies
Transport and logistics	2
Energy	7
Environment	2
Education	2
Health	20
Information and communications technology	67

Table 20: Companies identifying health and information and communications technology as priority areas, by sector (Percentage)

Sector	Health	Information and communications technology
Agriculture, forestry and fisheries	51	6
Food industry	9	79
Textiles	1	99
Mechanical and electrical industries	–	97
Pharmaceutical and chemical industries	–	100
Construction and civil engineering	61	5
Wholesale and retail trade	37	63
Hospitality	35	51
Transport and storage	–	5
Information and communications technology	–	100
Financial activities and insurance	–	100
Real estate activities	80	20

investment. Two-thirds of firms indicated that information and communications technology was the priority area in which the Government should invest in the coming years, followed by health (20 per cent). The result for information and communications technology is in line with the percentage of firms that perceived information and communications technology as very important during the post-COVID-19 era. Table 19 shows the percentage of companies in each sector that cited information and communications technology and health as priority areas.

Excluding the information and communications technology sector itself, the four sectors for which public investment in information and communications technology seems to have been the highest priority are food (79 per cent), textiles (99 per cent), the mechanical and electrical industries (97 per cent), financial activities and insurance (100 per cent) and the pharmaceutical and chemical industries (100 per cent).

4. Conclusion

Several qualitative and quantitative lessons can be drawn from the impact of the COVID-19 pandemic on companies in Tunisia in 2020. Certain features of the pandemic's impact in Tunisia, such as its asymmetry, in particular in the services sector, are consistent with trends observed in other countries around the world. Moreover, the lessons learned from the COVID-19 experience are important for building resilience in the face of a paradigm change in economic development options. Indeed, with the onset of climate change, whose effects have been particularly strong in 2022, the entire world is entering in an era of multiple crises with cascading effects. Building resilience is key to integrating new economic development models in Tunisia and all other developing countries.

In terms of social development, the COVID-19 crisis has highlighted the dichotomy that prevailed in many developing countries between growth and social justice. Since the crisis originated primarily as a health crisis, it puts into perspective the importance of health and, more generally, a fairer and more efficient social system for long-term growth.

At the societal level, the pandemic and the measures adopted to curb it have led to changes in consumer behaviour, such as the growth of online shopping and the search for security in consumption patterns. This has had a profound impact on many businesses and sectors, in particular tourism, on which Tunisia is highly dependent.

At the economic level, the acceleration of digitalization, the reorganization of global value chains, the transformation of the labour market and the reorganization of companies will result

in a significant shift in the international division of labour, the investment choices of companies and their location. Given the lasting impact on some sectors, such as tourism, the capacity of economies to remove barriers to the reallocation of resources among sectors, among activities and, ultimately, among companies will be tested. Barriers to the reallocation of resources have been documented to be strong in North Africa (United Nations, Economic Commission for Africa, 2019). The impact also raises the question of the extent to which training systems enable the unemployed and underemployed to acquire new skills to find employment in other sectors.

In this context, Governments cannot address the recovery without taking these changes into account, along with the effects of climate change. Like many other countries, Tunisia has put in place policy measures to support businesses, such as rescheduled payments of tax arrears and the temporary suspension of some penalties. It has also targeted certain sectors specifically affected by the pandemic, such as tourism, by subsidizing interest rates on investment loans. In the survey, most of the firms benefited only from the deferral of tax payments and the deferral of bank credit or leasing payments.

In addition to policies to support firms in absorbing the shock from the crisis in the short term, the Government should also consider policies that address the asymmetric effects of the pandemic by taking into account the long-term challenges that sectors face.

We can take two examples. The first one is the hotel, tourism and restaurant sector, which benefited from specific measures including: (i) the rescheduling of the principal debt relating to social security contributions; (ii) exemption from penalties for delays in completing repayments of the principal debt; (iii) extension of the deadline for filing corporate tax returns for fiscal years 2019 and 2020 until 31 December 2021, with payments rescheduled from January 2022 for tourist and handicraft establishments. For recovery in the medium-term, policymakers must take into account the transformation that this sector will undergo in response to changing preferences and climate change. It is likely that mass tourism will no longer be a sustainable option; tourists will place greater emphasis on safety; the transport sector, including but not limited to air transport, will have to make major efforts to reduce its CO_2 emissions; and water stress will become a greater constraint. The tourism sector will therefore undergo a transformation, and economic operators in the sector will need to be prepared for those changes.

The second example is the construction sector, whose revitalization must also take into account the changes brought about by COVID-19 and climate change. To a lesser degree than in advanced countries, the health crisis will lead to a reorganization of cities with the development of telecommuting. Global warming and extreme events have already made it necessary to strengthen the resilience of public infrastructure, and to adapt homes and other buildings, notably to improve energy efficiency. It is in this sense that public policies in favor of the construction and civil engineering sector must be considered. Policies could be put in place to promote a vast programme of infrastructure adaption, within the framework of public-private partnerships; to provide support and incentives for both companies and households to build new housing; and to support research and development efforts in the sector.

In building resilience and transforming the economy, financing will be critical. The survey shows that access to financing has been the main constraint perceived by companies, especially in 2020. The most financially constrained firms[23] had the largest declines in turnover and employment. Many factors explain the financing constraints faced by firms in Tunisia, including: the unfavourable characteristics of micro, small and medium-sized enterprises, such as a lack of transparency, the unavailability of an accessible credit history, the blurred lines between the business's finances and those of the owner, and administrative costs; bank practices in relation to

23 This result applies even when taking into account other variables that may determine losses.

the micro, small and medium-sized enterprises sector, such as high collateral requirements; weak financial infrastructure, including weak creditor rights and collateral infrastructure; the nature of the banking sector, with limited competition and high concentration (90 per cent of banking assets were concentrated in the top three banks in 2019); and underdeveloped equity markets and alternative financing sources. Easing access to financing may become essential to mitigating the effects of high levels of uncertainty. Adjusting to new market conditions requires the capacity to invest and innovate. Public policies to facilitate access to financing for businesses, in particular small and medium-sized enterprises, are many and diverse. They include capacity-building in financial skills for the private sector; capacity-building to equip the banking sector to better address the financing needs and specificities of small and medium-sized enterprises; and reforms to strengthen financial infrastructure, promote competition in the financial sector, and promote the development of digital finance.

Emphasis should be put on microenterprises, which saw their turnover fall by 28 per cent more on average, as compared with a decrease of 19.5 per cent for medium-sized firms. Microenterprises also seem to be more financially constrained, with 86 per cent of them having reported experiencing financial constraints both before and during the pandemic. Microenterprises were more likely to have faced unfair competition from the informal sector in 2020, with 30.7 per cent of them having cited that as a constraint, compared with only 11.3 per cent of larger firms. That constraint might be linked to the other constraint cited more often by small firms – labour-market laws – since small formal companies have faced competition from informal businesses that are not subject to the same laws. The differences in the public support received by workers in small, formal companies and workers in small, informal businesses need to be understood. However, the informal economy has posed a particular policy challenge during the crisis, given the difficulty of reaching those who are most vulnerable, who tend to engage in informal income-generating activities. Public policies should address small businesses and microenterprises separately, given that, for the latter, the lines between business and household income are often blurred. Close coordination should exist between policymakers who develop policies for businesses and those who develop policies for households.

Finally, the COVID-19 crisis has shown the importance of having a more digitalized economy in the face of a pandemic. Contrary to other countries in the subregion, firms surveyed in Tunisia expressed that digitalization would be of great importance in the post-COVID-19 period. When it comes to digitalization, Tunisia is among the best performers in North Africa.[24] However, as compared with other emerging economies, there is room for improvement in respect of networked readiness and Internet development,[25] which require greater public investment in digital infrastructure. Another important dimension is digital skills, whose development is key to taking advantage of the economic opportunities offered by digital technologies. The adoption of digital technologies has the potential to help build skills among workers, including those with lower levels of education, and hence boost productivity across sectors and the labour force overall. In Tunisia, there is a divide in the diffusion of digital skills, with those who are already more skilled seeing greater benefit.[26] Moreover, there is some concern over the role of digital technologies in the Tunisian economy, as they seem to contribute less to productivity than in other countries.[27] Accelerating the diffusion and more efficient adoption of digital technologies is key for Tunisia. To realize this potential, there is a need for policies that support competition and increase the access of firms to capital. To

24 United Nations, Economic Commission for Africa, "North Africa and the challenges of the COVID-19 era" (Addis Ababa, 2020). Available at https://www.uneca.org/?q=events/macroeconomics-and-governance-north-africa/ north-africa-facing-challenges-post-covid-19-era.

25There is still a divide between poor and non-poor areas and between men and women (in 2019, 72.5 per cent of men had access to the Internet, against 61.1 percent of women).

26 Aissaoui, N. and Ben Hassen, L. "Skill-biased technological change, e-skills and wage inequality: Evidence from Tunisia". Journal of Economics Studies and Research, vol. 2016, No. 2016, pp. 1-16 (2015).

27 Dahmani, M., Mabrouki, M., Youssef, A.B. (2022), "The Information and Communication Technologies-Economic Growth Nexus in Tunisia: A Cross-Section Dynamic Panel Approach", Montenegrin Journal of Economics, Vol. 18, No. 2, pp. 155-168.

ensure that workers possess a basic education and foundational skills, it will be necessary both to train students using an education curriculum that focuses on digital skills, and to provide continuous training to young people who drop out of school and on-the-job training for workers.

5. Annex

5.1 Survey

5.2 Econometric analysis

Table A.3 shows an econometric estimate of the effects of several variables on the number of weeks of downtime. The financial constraint variable is an indicator that has a value of 1 if the company indicated that access to financing was a constraint for them in both 2019 and 2020, and a value of 0 otherwise. The variables "bank loan" and "loan from friends or family" indicate firms that had a loan in 2020, either from a bank or from friends or family members, respectively. Export status indicates whether the firm exported or not. Estimates are controlled for sector, ownership structure and the company's age, size, legal form and other characteristics.

Table A.1: Distribution of the sample, by sector (Percentage of companies)

Sector	Companies
Financial activities and insurance	2
Real estate activities	1
Other specialized, scientific and technical activities	–
Agriculture, forestry and fisheries	5
Construction and civil engineering	15
Wholesale and retail trade	8
Hospitality	8
Food industry	21
Textiles	15
Extractive industries	–
Mechanical and electrical industries	14
Pharmaceutical and chemical industries	5
Information and communications technology	4
Transport and storage	2
Total	100

Table A.2: Change in employment, by main sector and export status (Percentage of companies)

Main sector	Non-exporting	Exporting
Agriculture	−4	–
Industry	−5	−4
Services	−36	−15

Table A.3: Effects of company characteristic variables on downtime in 2020

	Weeks of downtime			
	Regression 1		Regression 2	
Financial constraint	5.82[c]	(0.68)	1.45b	(0.70)
Bank loan	−4.35[c]	(1.63)	−10.07[c]	(1.80)
Loan from friends or family	3.44c	(0.69)	1.33a	(0.68)
Export status	0.18	(0.86)	−1.91[c]	(0.68)
Agriculture, forestry and fisheries	−10.15[c]	(1.13)		
Industry	−2.74[c]	(0.59)		
Mainly foreign capital	3.48c	(0.94)	−0.11	(0.88)
Mainly public capital	−4.05[c]	(0.92)	−0.93	(0.78)
Company age	−0.06[c]	(0.02)	−0.02	(0.01)
Company size	0.88[a]	(0.45)	0.19	(0.38)
Public limited company	−0.11	(0.57)	−0.11	(0.48)
Gender of main manager	−0.88	(1.09)	0.25	(1.07)
University graduate	−2.17[c]	(0.68)	−0.26	(0.63)
Number of jobs at end-2019	0.00	0.00	0.00	0.00
Considering changing activity	5.34c	(0.62)	1.72[c]	(0.64)
Respondent: finance department	−1.09	(0.78)	−3.12[c]	(0.75)
Respondent: management	−1.00	(0.80)	−3.27[c]	(0.77)
Textiles, clothing, leather and footwear			13.52[c]	(0.96)
Mechanical and electrical industries			10.46[c]	(0.77)
Construction and civil engineering			11.37[c]	(0.73)
Hospitality sector			7.74[c]	(0.76)
Transport and storage			3.64[c]	(1.11)
Real estate activities			15.88[c]	(1.11)
Constant	7.21[c]	(1.66)	6.17[c]	(1.61)
Observations	990		990	
R^2	0.4533		0.5917	

Note: Ordinary least squares regression with clustered standard errors shown in round brackets.

a p < 0.05.
b p < 0.01.
c p < 0.001.

Table A.4 presents logistic regressions for the work regime of the firm. It shows that financially constrained firms were more likely to experience downtime.

Table A.5 shows the results of econometric regressions where the dependent variable is the change in investment between 2019 and 2020. The first column of figures includes the following explanatory factors: whether the company had downtime in 2020, whether the company had resumed normal operations by the end of 2020, whether the company exported, how many months it was expected to take for a return to normal turnover, and whether the company had considered a change in activity (a dichotomous variable, with the value 1 if the firm had indicated that it planned to make changes in its activity, and 0 otherwise). Nearly 75 of the variance is explained. The same variables are used in the second column of figures, but several control variables are added, including the company's sector, size and age. The signs are the same and the coefficients have the same significance.

Table A.4: Company operations during the crisis in 2020

	Operating normally at end-2020		Downtime at end-2020	
Financial constraint	0.49	(0.40)	1.74[c]	(0.24)
Loan from friends or family	−0.90[b]	(0.39)	0.24	(0.44)
Bank loan	−2.00[b]	(0.94)	−1.83	(1.34)
Export status	1.17[c]	(0.37)	−0.97[c]	(0.31)
Agriculture, forestry and fisheries	0.04	(0.57)	−2.68[c]	(0.44)
Hospitality sector	−3.17[c]	(0.45)		
Textiles	−3.35[c]	(0.54)	3.89[c]	(0.80)
Mechanical and electrical industries	−0.26	(0.44)	6.21[c]	(1.85)
Construction and civil engineering	−5.33[c]	(0.60)	3.41[c]	(0.56)
Mainly foreign capital	1.66c	(0.57)	−0.50	(0.68)
Company age	−0.02[c]	(0.01)	−0.01	(0.01)
Company size	0.44b	(0.21)	−0.19	(0.20)
Public limited company	0.10	(0.26)	0.13	(0.28)
Gender of main manager	−0.24	(0.69)	−0.35	(0.69)
University graduate	−1.74[c]	(0.49)	0.26	(0.49)
Number of jobs at end-2019	0.00	0.00	0.00	0.00
Considering changing activity	−1.04[c]	(0.39)	1.02[c]	(0.24)
Respondent: finance department	0.42	(0.37)	−1.14[c]	(0.31)
Respondent: management	0.65[a]	(0.39)	−1.19[c]	(0.31)
Constant	3.79[c]	(0.89)	0.07	(0.94)
Observations	989		990	
Pseudo R2	0.5077		0.4921	

Note: Logistic regression with clustered standard errors shown in round brackets.

[a] ***p < 0.05.***
[b] ***p < 0.01.***
[c] ***p < 0.001.***

Table A.5: Explanation of the change in investment between 2019 and 2020 for companies in sectors with a sufficient response rate[1]

	Change in investment			
	Without control variables		With control variables	
Some downtime in 2020	−0.19[c]	(0.02)	−0.13[c]	(0.03)
Normal operations at end-2020	0.04[c]	(0.01)	0.04[c]	(0.01)
Export status	0.01	(0.02)	0.00	(0.02)
Months until resumption of normal turnover	−0.00[c]	0.00	−0.00[b]	0.00
Considering changing activity	−0.19[c]	(0.02)	−0.20[c]	(0.02)
Pharmaceutical and chemical industries			0.06[a]	(0.03)
Construction and civil engineering			0.00	(0.01)
Corruption			0.04[a]	(0.03)
Crime			0.02	(0.01)
Customs and foreign trade regulations			0.05[c]	(0.01)
Labour laws			0.02	(0.01)
Political instability			0.02	(0.02)
Macroeconomic instability			0.04[b]	(0.01)
Informal sector competition			0.04[b]	(0.02)

1No dummy variable was introduced for the more financially constrained companies (those citing the financing constraint in 2019 and 2020) because it was not a significant factor. In fact, 91 per cent of the firms that answered the question on investment were in the constrained category.

	Change in investment			
	Without control variables		With control variables	
Mainly public capital			0.05	(0.03)
Mainly foreign capital			−0.03	(0.03)
Company age			0.00	0.00
Company size			0.01	(0.01)
Gender of main manager			−0.01	(0.02)
University graduate			−0.02	(0.01)
Public limited company			0.01	(0.02)
Private limited company			0.02	(0.01)
Respondent: finance department			0.01	(0.01)
Respondent: management			0.01	(0.01)
Constant	0.18[c]	(0.03)	0.05	(0.05)
Observations	325		322	
R2	0.7466		0.7934	

Note: Ordinary least squares regression with clustered standard errors shown in round brackets.
a $p < 0.05$.
b $p < 0.01$.
c $p < 0.001$.

Table A.6: Explanation of non-response to the question regarding change in investment between 2019 and 2020

	Response on investment							
	Regression 1		Regression 2		Regression 3		Regression 4	
Change in employment	−4.49[c]	(0.35)						
Change in turnover			−2.86[c]	(0.28)				
Agriculture, forestry and fisheries					−1.83[c]	−0.69		
Services					1.40[c]	−0.21		
Export status					−0.69[c]	−0.25	−0.75[c]	−0.29
Experienced normal operations					0.44	−0.5	4.11[c]	−1.46
Experienced downtime					0.15	−0.45	3.12[b]	−1.42
Normal operations at end-2020					−1.45[c]	−0.23	−1.35[c]	−0.28
On temporary downtime at end-2020					0.26	−0.42	−0.01	−0.42
Company age					−0.01	−0.01	−0.01	−0.01
Company size					0.02	−0.14	−0.07	−0.16
Gender of main manager					0.17	−0.37	0.43	−0.44
University graduate					−0.06	−0.24	0.18	−0.31
Public limited company					0.65[b]	−0.32	0.69[a]	−0.38
Private limited company					−0.17	−0.25	0.00	−0.3
Respondent: finance department					0.53[b]	−0.26	0.23	−0.29
Respondent: management					0.99[c]	−0.27	0.75[b]	−0.29
Mainly foreign capital					−0.32	−0.31	−1.08[b]	−0.46
Agriculture, forestry and fisheries							−2.31[c]	−0.73
Food industry							−0.74[b]	−0.37

	Response on investment							
	Regression 1		Regression 2		Regression 3		Regression 4	
Textiles							1.26[c]	−0.35
Pharmaceutical and chemical industries							0.56	−0.42
Construction and civil engineering							2.46[c]	−0.4
Transport and storage							3.00[c]	−0.63
Hospitality sector							1.59[c]	−0.3
Information and communications technology							1.63[c]	−0.45
Financial activities and insurance							6.32[c]	−2.26
Constant	−0.85[c] (0.08)		−0.86[c] (0.11)		−0.31	−0.7	−3.64[b]	−1.54
Observations	1 000		1 000		991		991	
Pseudo R2	0.1746		0.1095		0.2559		0.3267	

Note: Logistic regression with clustered standard errors shown in round brackets. The dependent variable is 1 if the firm answered the question and 0 otherwise.

a $p < 0.05$.
b $p < 0.01$.
c $p < 0.001$.

Table A.7 shows the results of econometric estimates with two dependent variables. In the "Turnover and employment" column, the indicator is 1 if the company's turnover and employment were stable or increased. In the "Employment" column, the indicator is 1 if the company's employment was stable.

Table A.7: Changes in employment and turnover

	Turnover and employment		Employment	
Financial constraint	−2.28[c]	(0.43)	−1.19[c]	(0.41)
Experienced downtime in 2020	−3.24[c]	(0.31)	−1.37[c]	(0.40)
Normal operations at end-2020	5.01[c]	(1.09)	6.03[c]	(0.44)
Export share in 2019	−2.22[c]	(0.37)	2.61[c]	(0.69)
Considering changing activity	−1.64[c]	(0.31)	0.01	(0.57)
Company age	−0.01	(0.01)	0.00	(0.01)
Company size	0.61[c]	(0.23)	−0.45[b]	(0.22)
Gender of main manager	0.47	(0.41)	0.76[a]	(0.45)
University graduate	1.10[c]	(0.40)	−0.31	(0.38)
Public limited company	−0.31	(0.62)	0.11	(0.51)
Private limited company	0.72	(0.46)	0.31	(0.36)
Respondent: finance department	−0.42	(0.41)	−0.25	(0.41)
Respondent: management	−0.27	(0.42)	−0.59	(0.41)
Corruption	1.19[b]	(0.52)	1.36[b]	(0.60)
Crime	0.56	(0.46)	1.03[a]	(0.57)
Customs and foreign trade regulations	2.39[c]	(0.44)	0.66	(0.54)
Labour laws	0.05	(0.43)	0.56	(0.38)
Political instability	−1.79[b]	(0.83)	−0.28	(0.60)
Macroeconomic instability	0.73	(0.48)	0.47	(0.51)
Unfair competition from the informal sector	1.12[b]	(0.46)	0.24	(0.50)
Mainly public capital			−0.95	(1.27)
Mainly foreign capital			−2.88[c]	(0.68)

	Turnover and employment		Employment	
Constant	−3.73[c]	(1.24)	−1.56	(1.18)
Observations	989		989	
Pseudo R2	0.6930		0. 020	

Note: Logistic regression with clustered standard errors shown in round brackets.
a p < 0.05.
b p < 0.01.
c p < 0.001.

Table A.8 shows an econometric analysis in which the dependent variables are the expected number of months for a return to normal turnover and employment.

Table A.8: Number of months before a return to normal turnover and employment

	Turnover		Employment	
Financial constraint	−0.49	(0.39)	−0.10	(0.34)
Experienced downtime in 2020	1.24[c]	(0.39)	0.06	(0.28)
Normal operations at end-2020	−6.97[c]	(0.64)	−9.83[c]	(0.80)
Export share in 2019	2.27[c]	(0.61)	0.93[a]	(0.50)
Considering changing activity	−1.16[c]	(0.41)	−0.52	(0.36)
Agriculture, forestry and fisheries	−1.62[b]	(0.64)	−1.00[a]	(0.57)
Food industry	−1.02[b]	(0.50)	0.20	(0.40)
Textiles, clothing, leather and footwear	2.33[c]	(0.49)	3.68[c]	(0.59)
Pharmaceutical and chemical industries	1.71[a]	(0.93)	0.27	(0.48)
Construction and civil engineering	5.22[c]	(0.61)	6.23[c]	(0.72)
Transport and storage	10.41[c]	(1.02)	0.88	(0.74)
Hospitality sector	15.18[c]	(1.20)	15.57[c]	(1.50)
Information and communications technology	−3.09[c]	(0.91)	−0.24	(0.89)
Financial activities and insurance	0.24	(1.43)	−0.96	(1.49)
Corruption	1.52	(0.93)	−2.36[c]	(0.70)
Crime	−0.08	(0.53)	−0.34	(0.49)
Customs and foreign trade regulations	−0.85[b]	(0.43)	−0.80[b]	(0.40)
Labour laws	−0.76[b]	(0.36)	−0.98[c]	(0.35)
Political instability	−0.67	(1.21)	−0.54	(1.36)
Macroeconomic instability	−0.38	(0.41)	−0.11	(0.38)
Unfair competition from the informal sector	−0.15	(0.70)	−0.54	(0.67)
Mainly public capital	−1.24[b]	(0.50)	−0.26	(0.38)
Mainly foreign capital	−1.02	(0.66)	1.52[b]	(0.63)
Company age	−0.01	(0.01)	−0.01	(0.01)
Company size	−0.59[b]	(0.25)	−0.23	(0.26)
Gender of main manager	0.48	(0.40)	−0.63	(0.43)
University graduate	0.96[b]	(0.49)	0.97[a]	(0.52)
Public limited company	−0.57	(0.61)	−0.38	(0.64)
Private limited company	−0.91[a]	(0.50)	−1.18[b]	(0.56)
Respondent: finance department	1.09[b]	(0.49)	1.69[c]	(0.50)
Respondent: management	0.97[a]	(0.53)	1.50[c]	(0.57)
Constant	9.51[c]	(1.21)	11.17[c]	(1.27)
Observations	989		989	
R^2	0.7513		0.7861	

Note: Ordinary least squares regression with clustered standard errors shown in round brackets.
a p < 0.05.
b p < 0.01.
c p < 0.001.

Table A.9: Six largest constraints perceived by companies in 2019 (Percentage of companies)

	Access to financing	Corruption	Crime	Labour laws	Macroeconomic instability	Political instability
Financial and insurance activities	11.8	11.8	58.8	–	100.0	94.1
Real estate activities	100.0	–	–	–	60.0	–
Agriculture, forestry and fisheries	100.0	31.4	31.4	35.3	7.8	–
Construction and civil engineering	98.6	24.0	30.1	85.6	11.0	19.2
Wholesale and retail trade	59.8	–	59.8	59.8	79.3	1.2
Hotels and restaurants	100.0	–	42.0	100.0	29.6	23.5
Food industry	23.1	37.5	50.0	51.4	59.1	41.8
Textiles	95.4	27.5	32.7	94.1	5.2	20.3
Extractive industries	100.0	–	100.0	–	100.0	–
Mechanical and electrical industries	93.6	32.1	33.6	95.0	5.0	19.3
Pharmaceutical and chemical industries	84.0	6.0	56.0	24.0	56.0	8.0
Information and communications technology	87.2	–	53.8	10.3	69.2	5.1
Transport and storage	95.2	–	57.1	14.3	38.1	–
All sectors	75.9	22.2	41.6	67.6	33.5	21.5

Table A.10: The six largest constraints perceived by companies in 2020 (Percentage of companies)

	Access to financing	Crime	Customs and foreign trade regulations	Labour laws	Macroeconomic instability	Unfair competition from the informal sector
Financial and insurance activities	11.8	64.7	–	–	100.0	–
Real estate	100.0	40.0	–	–	70.0	40.0
Agriculture. forestry and fisheries	100.0	33.3	5.9	39.2	33.3	15.7
Construction and civil engineering	98.6	21.9	24.7	79.5	41.1	11.6
Wholesale and retail trade	100.0	1.2	3.7	59.8	97.6	36.6
Hotels and restaurants	100.0	17.3	–	81.5	58.0	1.2
Food industry	98.1	38.9	57.2	90.9	23.6	1.0
Textiles	97.4	28.1	19.0	69.3	47.1	2.6
Extractive industries	100.0	100.0	–	–	100.0	–
Mechanical and electrical industries	94.3	27.1	27.1	74.3	42.1	–
Pharmaceutical and chemical industries	90.0	32.0	32.0	22.0	14.0	52.0
Information and communications technology	84.6	48.7	15.4	7.7	35.9	92.3

	Access to financing	Crime	Customs and foreign trade regulations	Labour laws	Macroeconomic instability	Unfair competition from the informal sector
Transport and storage	95.2	38.1	4.8	52.4	4.8	95.2
All sectors	95.5	28.5	25.1	67.5	43.2	14.8

Table A.11 shows econometric estimates for the effects of several factors (financing constraint, business downtime, resumption of normal operations at the end of 2020, prospect of a change in activity, perceived constraints), which are controlled for several variables (company age and size, gender and education level of the manager, legal form of the business, and the function of the respondent to the questionnaire). In table A.12, the sector has been added as a control variable.

Table A.11: Change in turnover between 2019 and 2020

	Change in turnover					
	Regression 1		Regression 2		Regression 3	
Financial constraint	−0.11[c]	(0.02)	−0.10[c]	(0.02)	−010[c]	(0.02)
Experienced downtime in 2020	−0.20[c]	(0.02)	−0.21[c]	(0.02)	−0.19[b]	(0.02)
Normal operations at end-2020	0.31[c]	(0.02)	0.29[c]	(0.02)	0.30[c]	(0.02)
Share of exports, 2019	−0.5[a]	(0.03)	−0.06[b]	(0.03)	−0.08[c]	(0.03)
Considering changing activity	−0.10[c]	(0.02)	−0.09[b]	(0.02)	−0.09[c]	(0.02)
Mainly public capital	0.04	(0.03)	0.04	(0.03)	0.04	(0.03)
Mainly foreign capital	−0.00	(0.03)	0.02	(0.03)	0.02	(0.03)
Corruption			0.02	(0.04)	0.02	(0.04)
Crime			0.02	(0.02)	0.02	(0.02)
Customs and foreign trade regulations			0.07[c]	(0.02)	0.06[c]	(0.02)
Labour laws			−0.01	(0.01)	−0.02	(0.01)
Political instability			−0.12[c]	(0.03)	−0.10[c]	(0.03)
Macroeconomic instability			0.05[c]	(0.02)	0.05[c]	(0.02)
Unfair competition from the informal sector			0.07[c]	(0.02)	0.07[c]	(0.02)
Company age					0.00	0.00
Size in 2019					0.02[b]	(0.01)
Gender					−0.02	(0.03)
University graduate					0.05[c]	(0.02)
Public limited company					0.03	(0.02)
Private limited company					0.07[c]	(0.02)
Respondent: accountant					−0.01	(0.02)
Respondent: management					−0.03	(0.02)
Constant	−0.13[c]	(0.02)	−0.17[c]	(0.04)	−0.29[c]	(0.06)
Observations	997		997		989	
Pseudo R2	0.6614		0.6873		0.7022	

Note: Ordinary least squares regression with clustered standard errors shown in round brackets.
a $p < 0.05$.
b $p < 0.01$.
c $p < 0.001$.

Table A.12: Explanation of the change in turnover and employment, controlling for the sector of companies

	Change in turnover							
	Regression 1		Regression 2		Regression 3		Regression 4	
Financial constraint	−0.05c	(0.02)	−0.02**	(0.01)	−004[b]	(0.02)	−001	(0.01)
Experienced downtime in 2020	−0.11[c]	(0.02)	−0.01	(0.01)	−0.10[c]	(0.02)	−0.02	(0.01)
Normal operations at end-2020	0.19[c]	(0.02)	0.38[c]	(0.02)	0.20[c]	(0.02)	0.39[c]	(0.02)
Share of exports, 2019	−0.08[c]	(0.03)	0.05[c]	(0.02)	−0.05[b]	(0.02)	0.02	(0.02)
Considering changing activity	−0.07[c]	(0.02)	0.02	(0.01)	−0.06[c]	(0.02)	0.01	(0.01)
Mainly public capital	0.03	(0.02)	−0.05[c]	(0.01)	0.00	(0.02)	−0.03[b]	(0.02)
Mainly foreign capital	0.06[b]	(0.03)	−0.05[c]	(0.02)	0.05[a]	(0.03)	−0.04[b]	(0.02)
Agriculture	0.05	(0.04)	0.02[a]	(0.01)	0.05	(0.04)	0.01	(0.02)
Food industry	0.14[c]	(0.03)	0.00	(0.01)	0.17[c]	(0.03)	−0.02	(0.02)
Textiles	−0.10[c]	(0.02)	−0.00	(0.02)	−0.08[c]	(0.02)	−0.00	(0.02)
Pharmaceutical and chemical industries	0.22[c]	(0.03)	0.01	(0.01)	0.22[c]	(0.03)	−0.04[b]	(0.02)
Construction and civil engineering	−0.17[c]	(0.02)	−0.16[c]	(0.03)	−0.14[c]	(0.02)	−0.15[c]	(0.03)
Transport and storage	−0.26[c]	(0.03)	0.02[a]	(0.01)	−0.31[c]	(0.03)	0.02	(0.02)
Hospitality sector	−0.23	(0.02)	−0.23[c]	(0.03)	−0.19[c]	(0.03)	−0.23[c]	(0.04)
Information and communications technology	0.11[c]	(0.03)	0.03[a]	(0.02)	0.08[b]	(0.04)	0.06[b]	(0.03)
Financial activities and insurance	0.04	(0.04)	−0.01	(0.04)	0.13[b]	(0.06)	0.02	(0.05)
Corruption					−0.03	(0.03)	0.08[c]	(0.02)
Crime					0.01	(0.02)	−0.00	(0.02)
Customs and foreign trade regulations					0.03[a]	(0.02)	0.00	(0.02)
Labour laws					0.01	(0.01)	0.01	(0.01)
Political instability					−0.04	(0.04)	0.00	(0.03)
Macroeconomic instability					0.05[c]	(0.02)	−0.00	(0.01)
Unfair competition from the informal sector					0.10[c]	(0.02)	0.02	(0.02)
Company age					0.00	(0.00)	0.00	(0.00)
Size in 2019					0.00	(0.01)	0.04[c]	(0.01)
Gender of main manager					−0.01	(0.02)	0.02	(0.02)
University graduate					0.02	(0.02)	−0.02	(0.02)
Public limited company					0.03	(0.02)	0.05[b]	(0.02)
Private limited company					0.06[c]	(0.02)	0.07[c]	(0.02)
Respondent: finance department					−0.02	(0.02)	−0.02	(0.02)
Respondent: management					−0.04[b]	(0.02)	−0.03[b]	(0.02)
Constant	−0.16[c]	(0.02)	−0.39[c]	(0.02)	−0.30[c]	(0.06)	−0.52	(0.05)
Observations	997		997		989		989	
Pseudo R^2	0.7455		0.7236		0.7711		0.7457	

Note: Ordinary least squares regression with clustered standard errors shown in round brackets.
[a] $p < 0.05$.
[b] $p < 0.01$.
[c] $p < 0.001$.

Table A.13: Change in employment between 2019 and 2020

	Change in employment					
	Regression 1		Regression 2		Regression 3	
Financial constraint	−0.04[c]	(0.01)	−0.04[c]	(0.01)	−0.03[c]	(0.01)
Experienced downtime in 2020	−0.02[c]	(0.01)	−0.03[c]	(0.01)	−0.02[b]	(0.01)
Normal operations at end-2020	0.48[c]	(0.02)	0.47[c]	(0.02)	0.47[c]	(0.02)
Share of exports, 2019	0.07[c]	(0.02)	0.04[b]	(0.02)	0.02	(0.02)
Considering changing activity	−0.01[c]	(0.01)	0.00	(0.01)	−0.01	(0.01)
Mainly public capital	−0.05[c]	(0.02)	−0.03[a]	(0.02)	−0.03	(0.02)
Mainly foreign capital	−0.04[c]	(0.02)	−0.00	(0.02)	0.01	(0.02)
Corruption			0.11[c]	(0.03)	0.10[c]	(0.03)
Crime			0.01	(0.02)	0.01	(0.02)
Customs and foreign trade regulations			0.01	(0.01)	0.01	(0.01)
Labour laws			−0.00	(0.01)	−0.01	(0.01)
Political instability			−0.08[c]	(0.02)	−0.07[c]	(0.03)
Macroeconomic instability			0.00	(0.01)	0.01	(0.01)
Unfair competition from the informal sector			0.03[b]	(0.01)	0.04[c]	(0.01)
Company age					0.00	0.00
Company size					0.03[c]	(0.01)
Gender of main manager					0.01	(0.02)
University graduate					−0.01	(0.02)
Public limited company					0.05[b]	(0.02)
Private limited company					0.07[c]	(0.02)
Respondent: finance department					−0.02	(0.02)
Respondent: management					−0.04[b]	(0.02)

Note: Ordinary least squares regression with clustered standard errors shown in round brackets.
[a] $p < 0.05$.
[b] $p < 0.01$.
[c] $p < 0.001$.

Table A.14: Stratified random sampling, by sectors and governorate (Number of companies)

Sector	Number	Tunis	Ariana	Ben Arous	Manouba	Nabeul	Bizerte	Jendouba	Sousse	Monastir	Mahdia	Sfax	Kairouan	Kasserine	Sidi Bouzid	Gabès	Médenine	Siliana	Gafsa
Food industry	208	37	15	14	7	16	9	5	16	11	7	20	7	4	4	5	9	14	8
Textiles, clothing, leather and footwear	153	28	11	10	5	12	7	4	11	8	5	15	5	3	3	4	6	7	9
Pharmaceutical and chemical industries	50	9	3	3	2	4	2	1	4	3	2	5	2	1	1	1	2	2	3
Mechanical and electrical industries	140	24	10	10	5	11	6	3	10	7	4	14	5	3	3	4	6	8	7
Building material, construction and civil engineering	146	24	10	10	5	11	7	4	11	8	5	14	5	3	3	4	6	10	6
Extractive industries	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Subtotal, industrial sectors	698	122	49	47	24	54	31	17	52	37	23	68	24	15	14	18	29	41	33
Wholesale and retail trade	81	14	6	5	3	6	4	2	6	4	2	8	3	2	2	2	3	4	5
Transport and storage	21	5	1	1	1	2	1	0	1	1	1	2	1	0	0	1	1	0	2
Hospitality sector	81	14	6	5	3	6	4	2	6	4	2	8	3	2	2	2	3	2	7
Information and communications technology	39	6	3	3	1	3	2	1	3	2	1	4	1	1	1	1	2	0	4
Financial activities and insurance	18	2	1	1	1	2	1	0	1	1	1	2	1	0	0	1	1	1	1
Real estate activities	10	3	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	0	1
Other specialized, scientific and technical activities	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal, market services sectors	251	44	17	16	9	21	12	5	19	13	7	25	9	5	5	7	10	7	20
Subtotal, agriculture, forestry and fisheries	51	8	4	3	2	5	2	1	4	3	2	5	2	1	1	1	2	3	2
Total, companies	1 000	174	70	66	35	80	45	23	75	53	32	98	35	21	20	26	41	51	55

Table A.15: Number of private companies by sector

Sector	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Agriculture, forestry and fisheries	2 574	2 563	2 695	2 915	3 134	3 346	3 586	4 098	4 634	3 283
Subtotal, agriculture, forestry and fisheries	2 574	2 563	2 695	2 915	3 134	3 346	3 586	4 098	4 634	3 283
Extractive industries	1 394	1 305	1 369	1 380	1 420	1 488	1 535	1 597	1 514	1 445
Food industry	11 716	11 700	12 038	12 517	13 038	13 587	14 221	14 920	14 552	13 143
Textiles, clothing and leather	17 776	17 125	17 428	18 348	18 912	19 396	19 839	20 444	19 199	18 719
Miscellaneous industries	9 680	9 742	10 012	10 423	10 769	11 190	11 626	11 993	11 183	10 735
Chemical and pharmaceutical industries	1 762	1 674	1 757	1 875	1 984	2 109	2 210	2 344	2 439	2 017
Manufacture of rubber and plastic products	1 103	1 136	1 244	1 360	1 466	1 555	1 611	1 674	1 671	1 424
Manufacture of other non-metallic mineral products	3 233	3 278	3 379	3 537	3 697	3 854	3 988	4 100	3 888	3 662
Metallurgy sector; manufacture of metallic products other than machinery and equipment	9 739	10 020	10 440	11 090	11 654	12 308	12 915	13 551	13 288	11 667
Manufacture of computer, electrical, electronic and optical products and equipment not elsewhere classified	1 504	1 518	1 622	1 716	1 797	1 867	1 950	2 011	1 996	1 776
Automotive industry and other transport material	469	460	480	494	511	523	528	537	531	504
Furniture manufacturing	6 909	6 718	6 806	6 890	6 965	7 053	7 116	7 212	6 573	6 916
Machinery and equipment repair and installation	3 144	3 123	3 276	3 561	3 779	3 966	4 066	4 220	4 069	3 689
Other manufacturing industries	3 111	3 072	3 110	3 175	3 258	3 399	3 472	3 570	3 380	3 283
Construction sector	26 891	27 713	29 730	32 458	34 771	37 393	39 812	41 880	41 038	34 632
Subtotal, manufacturing and non-manufacturing industries	98 431	98 584	102 691	108 824	114 021	119 688	124 889	130 053	125 321	113 611
Repair of motor vehicles and motorcycles	258 599	256 298	264 634	275 948	285 959	299 959	311 887	324 036	302 913	286 693
Transport and storage	87 699	93 956	99 253	101 590	103 690	105 773	107 753	110 211	103 025	101 439
Hospitality sector	27 579	28 256	29 698	31 493	33 503	35 761	38 031	40 778	40 481	33 953
Information and communications technology	15 691	15 284	15 255	15 482	15 492	15 661	15 796	16 077	14 623	15 485
Financial activities and insurance	1 549	1 616	1 685	1 754	1 825	1 901	1 940	2 012	2 023	1 812
Real estate activities	3 416	3 470	3 670	3 959	4 207	4 465	4 715	4 988	5 003	4 210
Other specialized, scientific and technical activities	32 766	33 885	36 307	39 069	41 364	43 752	46 180	48 769	48 799	41 210
Subtotal, market services	427 299	432 765	450 502	469 295	486 040	507 272	526 302	546 871	516 867	484 801
Total, excluding non-market services	528 304	533 912	555 888	581 034	603 195	630 306	654 777	681 022	646 822	601 696
Administrative and support services	14 288	13 986	14 656	15 547	16 453	17 525	18 662	19 999	19 670	16 754
Education, health and social action	18 714	19 311	20 667	22 448	24 275	25 983	27 811	29 670	31 119	24 444
Repairs of computers and personal and household goods	6 296	6 103	6 147	6 254	6 441	6 663	6 781	7 009	6 470	6 463
Other personal services	22 950	21 981	21 731	21 903	22 149	22 664	23 095	23 791	21 515	22 420
Other activities	7 045	6 929	7 013	7 338	7 728	8 301	8 928	9 541	9 447	8 030
Total, non-market services	69 293	68 310	70 214	73 490	77 046	81 136	85 277	90 010	88 221	78 111
Grand total	597 597	602 222	626 102	654 524	680 241	711 442	740 054	771 032	735 043	679 806

Table A.16: Distribution of private companies by sector of activity (Percentage)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Agriculture, forestry and fisheries	0.43	0.43	0.43	0.45	0.46	0.47	0.48	0.53	0.63	0.48
Subtotal, agriculture, forestry and fisheries	0.43	0.43	0.43	0.45	0.46	0.47	0.48	0.53	0.63	0.48
Extractive industries	0.23	0.22	0.22	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Food industry	1.96	1.94	1.92	1.91	1.92	1.91	1.92	1.94	1.98	1.93
Textiles, clothing and leather	2.97	2.84	2.78	2.80	2.78	2.73	2.68	2.65	2.61	2.76
Miscellaneous industries	1.62	1.62	1.60	1.59	1.58	1.57	1.57	1.56	1.52	1.58
Chemical and pharmaceutical industries	0.29	0.28	0.28	0.29	0.29	0.30	0.30	0.30	0.33	0.30
Manufacture of rubber and plastic products	0.18	0.19	0.20	0.21	0.22	0.22	0.22	0.22	0.23	0.21
Manufacture of other non-metallic mineral products	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.53	0.53	0.54
Metallurgy sector; manufacture of metallic products other than machinery and equipment	1.63	1.66	1.67	1.69	1.71	1.73	1.75	1.76	1.81	1.71
Manufacture of computer, electrical, electronic and optical products and equipment not elsewhere classified	0.25	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.27	0.26
Automotive industry and other transport material	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07
Furniture manufacturing	1.16	1.12	1.09	1.05	1.02	0.99	0.96	0.94	0.89	1.02
Machinery and equipment repair and installation	0.53	0.52	0.52	0.54	0.56	0.56	0.55	0.55	0.55	0.54
Other manufacturing industries	0.52	0.51	0.50	0.49	0.48	0.48	0.47	0.46	0.46	0.48
Construction sector	4.50	4.60	4.75	4.96	5.11	5.26	5.38	5.43	5.58	5.06
Subtotal, manufacturing and non-manufacturing industries	16.47	16.37	16.40	16.63	16.76	16.82	16.88	16.87	17.05	16.69
Repair of motor vehicles and motorcycles	43.27	42.56	42.27	42.16	42.04	42.16	42.14	42.03	41.21	42.20
Transport and storage	14.68	15.60	15.85	15.52	15.24	14.87	14.56	14.29	14.02	14.96
Hospitality sector	4.61	4.69	4.74	4.81	4.93	5.03	5.14	5.29	5.51	4.97
Information and communications technology	2.63	2.54	2.44	2.37	2.28	2.20	2.13	2.09	1.99	2.29
Financial activities and insurance	0.26	0.27	0.27	0.27	0.27	0.27	0.26	0.26	0.28	0.27
Real estate activities	0.57	0.58	0.59	0.60	0.62	0.63	0.64	0.65	0.68	0.62
Other specialized, scientific and technical activities	5.48	5.63	5.80	5.97	6.08	6.15	6.24	6.33	6.64	6.03
Subtotal, market services	71.50	71.86	71.95	71.70	71.45	71.30	71.12	70.93	70.32	71.35
Administrative and support services	2.39	2.32	2.34	2.38	2.42	2.46	2.52	2.59	2.68	2.46
Education, health and social action	3.13	3.21	3.30	3.43	3.57	3.65	3.76	3.85	4.23	3.57
Repairs of computers and personal and household goods	1.05	1.01	0.98	0.96	0.95	0.94	0.92	0.91	0.88	0.95
Other personal services	3.84	3.65	3.47	3.35	3.26	3.19	3.12	3.09	2.93	3.32
Other activities	1.18	1.15	1.12	1.12	1.14	1.17	1.21	1.24	1.29	1.18
Subtotal, non-market services	11.60	11.34	11.21	11.23	11.33	11.40	11.52	11.67	12.00	11.48
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.17: Distribution of private companies by sector of activity (percentage, excluding non-market services)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Agriculture, forestry and fisheries	0.49	0.48	0.48	0.50	0.52	0.53	0.55	0.60	0.72	0.54
Extractive industries	0.26	0.24	0.25	0.24	0.24	0.24	0.23	0.23	0.23	0.24
Food industry	2.22	2.19	2.17	2.15	2.16	2.16	2.17	2.19	2.25	2.18
Textiles, clothing and leather	3.36	3.21	3.14	3.16	3.14	3.08	3.03	3.00	2.97	3.12
Miscellaneous industries	1.83	1.82	1.80	1.79	1.79	1.78	1.78	1.76	1.73	1.79
Chemical and pharmaceutical industries	0.33	0.31	0.32	0.32	0.33	0.33	0.34	0.34	0.38	0.33
Manufacture of rubber and plastic products	0.21	0.21	0.22	0.23	0.24	0.25	0.25	0.25	0.26	0.24
Manufacture of other non-metallic mineral products	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.60	0.60	0.61
Metallurgy sector; manufacture of metallic products other than machinery and equipment	1.84	1.88	1.88	1.91	1.93	1.95	1.97	1.99	2.05	1.93
Manufacture of computer, electrical, electronic, optical products and equipment not elsewhere classified	0.28	0.28	0.29	0.30	0.30	0.30	0.30	0.30	0.31	0.29
Automotive industry and other transport material	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.08	0.08
Furniture manufacturing	1.31	1.26	1.22	1.19	1.15	1.12	1.09	1.06	1.02	1.16
Machinery and equipment repair and installation	0.60	0.58	0.59	0.61	0.63	0.63	0.62	0.62	0.63	0.61
Other manufacturing industries	0.59	0.58	0.56	0.55	0.54	0.54	0.53	0.52	0.52	0.55
Construction sector	5.09	5.19	5.35	5.59	5.76	5.93	6.08	6.15	6.34	5.72
Subtotal, manufacturing and non-manufacturing industries	18.63	18.46	18.47	18.73	18.90	18.99	19.07	19.10	19.37	18.86
Repair of motor vehicles and motorcycles	48.95	48.00	47.61	47.49	47.41	47.59	47.63	47.58	46.83	47.68
Transport and storage	16.60	17.60	17.85	17.48	17.19	16.78	16.46	16.18	15.93	16.90
Hospitality sector	5.22	5.29	5.34	5.42	5.55	5.67	5.81	5.99	6.26	5.62
Information and communications technology	2.97	2.86	2.74	2.66	2.57	2.48	2.41	2.36	2.26	2.59
Financial activities and insurance	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.31	0.30
Real estate activities	0.65	0.65	0.66	0.68	0.70	0.71	0.72	0.73	0.77	0.70
Other specialized, scientific and technical activities	6.20	6.35	6.53	6.72	6.86	6.94	7.05	7.16	7.54	6.82
Subtotal, market services	80.88	81.06	81.04	80.77	80.58	80.48	80.38	80.30	79.91	80.60
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.18: Distribution of companies by governorate

Governorate	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Tunis	112 129	111 431	115 800	121 703	126 807	132 566	137 914	143 501	132 995	126 094
Ariana	39 202	39 913	42 418	45 037	47 215	49 905	52 957	54 333	52 427	47 045
Ben Arous	39 875	39 572	42 739	45 106	47 532	49 688	47 515	50 281	49 664	45 775
Manouba	21 401	22 323	23 317	24 048	24 907	25 920	27 100	28 201	25 579	24 755
Nabeul	43 429	43 447	45 651	48 264	50 604	53 303	55 939	58 129	55 053	50 424
Zaghouan	7 914	8 060	8 172	8 526	8 272	8 751	8 902	9 442	9 432	8 608
Bizerte	28 809	28 048	29 307	30 697	31 932	33 335	34 967	36 331	33 128	31 839
Béja	14 978	15 267	15 528	15 979	16 310	16 741	17 410	17 874	16 203	16 254
Jendouba	15 900	15 725	16 063	16 302	16 934	17 555	18 356	18 861	17 936	17 070
Kef	11 536	10 823	10 846	11 007	11 219	11 525	11 774	11 982	10 895	11 290
Siliana	8 336	8 146	8 158	8 465	8 789	9 184	9 657	9 751	8 959	8 827
Sousse	39 635	41 722	44 264	46 824	48 715	51 169	53 364	55 784	54 349	48 425
Monastir	28 491	29 585	31 154	32 866	34 096	35 360	37 046	38 850	37 888	33 926
Mahdia	19 478	19 609	19 934	20 893	21 455	22 410	23 507	24 486	22 762	21 615
Sfax	54 565	56 048	58 974	60 454	62 899	65 492	68 535	71 903	71 152	63 336
Kairouan	19 947	20 406	21 087	22 108	22 950	24 068	25 203	26 309	24 034	22 901
Kasserine	13 891	13 872	13 526	13 951	14 104	14 573	15 306	16 049	14 978	14 472
Sidi Bouzid	12 192	12 099	11 995	12 448	13 358	14 512	15 394	16 294	15 531	13 758
Gabès	15 565	15 723	15 732	16 268	16 811	17 417	18 028	18 848	18 276	16 963
Medenine	20 092	20 993	22 385	23 313	23 991	25 265	26 844	28 441	29 997	24 591
Tataouine	5 212	5 244	5 397	5 901	6 306	6 771	7 217	7 582	7 329	6 329
Gafsa	11 972	11 454	10 893	11 115	11 420	11 887	12 516	12 895	12 308	11 829
Tozeur	5 717	5 416	5 358	5 536	5 671	5 810	5 979	6 157	5 725	5 708
Kébili	7 331	7 296	7 404	7 713	7 944	8 235	8 624	8 748	8 443	7 971
Total	597 597	602 222	626 102	654 524	680 241	711 442	740 054	771 032	735 043	679 806

Table A.19: Distribution of companies by governorate (Percentage)

Governorate	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Tunis	18.76	18.50	18.50	18.59	18.64	18.63	18.64	18.61	18.09	18.55
Ariana	6.56	6.63	6.77	6.88	6.94	7.01	7.16	7.05	7.13	6.90
Ben Arous	6.67	6.57	6.83	6.89	6.99	6.98	6.42	6.52	6.76	6.74
Manouba	3.58	3.71	3.72	3.67	3.66	3.64	3.66	3.66	3.48	3.64
Nabeul	7.27	7.21	7.29	7.37	7.44	7.49	7.56	7.54	7.49	7.41
Zaghouan	1.32	1.34	1.31	1.30	1.22	1.23	1.20	1.22	1.28	1.27
Bizerte	4.82	4.66	4.68	4.69	4.69	4.69	4.72	4.71	4.51	4.69
Béja	2.51	2.54	2.48	2.44	2.40	2.35	2.35	2.32	2.20	2.40
Jendouba	2.66	2.61	2.57	2.49	2.49	2.47	2.48	2.45	2.44	2.52
Kef	1.93	1.80	1.73	1.68	1.65	1.62	1.59	1.55	1.48	1.67
Siliana	1.39	1.35	1.30	1.29	1.29	1.29	1.30	1.26	1.22	1.30
Sousse	6.63	6.93	7.07	7.15	7.16	7.19	7.21	7.23	7.39	7.11
Monastir	4.77	4.91	4.98	5.02	5.01	4.97	5.01	5.04	5.15	4.98
Mahdia	3.26	3.26	3.18	3.19	3.15	3.15	3.18	3.18	3.10	3.18
Sfax	9.13	9.31	9.42	9.24	9.25	9.21	9.26	9.33	9.68	9.31
Kairouan	3.34	3.39	3.37	3.38	3.37	3.38	3.41	3.41	3.27	3.37
Kasserine	2.32	2.30	2.16	2.13	2.07	2.05	2.07	2.08	2.04	2.14
Sidi Bouzid	2.04	2.01	1.92	1.90	1.96	2.04	2.08	2.11	2.11	2.02
Gabès	2.60	2.61	2.51	2.49	2.47	2.45	2.44	2.44	2.49	2.50
Medenine	3.36	3.49	3.58	3.56	3.53	3.55	3.63	3.69	4.08	3.61
Tataouine	0.87	0.87	0.86	0.90	0.93	0.95	0.98	0.98	1.00	0.93
Gafsa	2.00	1.90	1.74	1.70	1.68	1.67	1.69	1.67	1.67	1.75
Tozeur	0.96	0.90	0.86	0.85	0.83	0.82	0.81	0.80	0.78	0.84
Kébili	1.23	1.21	1.18	1.18	1.17	1.16	1.17	1.13	1.15	1.17
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.20: Distribution of companies by size (Number of companies)

Company size and type	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Private companies without employees (self-employed)	516 794	523 071	546 539	572 681	596 316	624 027	650 526	676 140	635 571	593 518
Private companies with 1-2 employees	46 294	45 139	45 359	46 818	48 259	50 694	52 180	54 517	56 692	49 550
Private companies with 3-6 employees	15 824	15 661	16 032	16 530	16 854	17 465	17 933	19 692	21 205	17 466
Subtotal, micro enterprises	578 912	583 871	607 930	636 029	661 429	692 186	720 639	750 349	713 468	660 535
Private companies with 7-9 employees	6 646	6 344	6 408	6 682	6 800	7 117	7 244	7 768	8 084	7 010
Private companies with 10-19 employees	5 113	5 064	4 965	4 952	5 107	5 266	5 277	5 692	5 994	5 270
Private companies with 20-50 employees	3 481	3 467	3 459	3 483	3 488	3 515	3 594	3 775	3 962	3 580
Subtotal, small businesses	15 240	14 875	14 832	15 117	15 395	15 898	16 115	17 235	18 040	15 861
Private companies with 51-99 employees	1 642	1 627	1 564	1 590	1 620	1 603	1 590	1 646	1 652	1 615
Private companies with 100-200 employees	977	1 040	998	983	990	951	895	950	977	973
Subtotal, medium-sized enterprises	2 619	2 667	2 562	2 573	2 610	2 554	2 485	2 596	2 629	2 588
Total micro, small and medium-sized enterprises	596 771	601 413	625 324	653 719	679 434	710 638	739 239	770 180	734 137	678 984
Private companies with more than 200 employees	826	809	778	805	807	804	815	852	+906	+822
Grand total	597 597	602 222	626 102	654 524	680 241	711 442	740 054	771 032	735 043	679 806

Table A.21: Distribution of companies by size (Percentage)

Company size and type	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average, 2010-2018
Change in private companies without employees (self-employed)	86.48	86.86	87.29	87.50	87.66	87.71	87.90	87.69	86.47	87.31
Change in private companies with 1-2 employees	7.75	7.50	7.24	7.15	7.09	7.13	7.05	7.07	7.71	7.29
Change in private companies with 3-6 employees	2.65	2.60	2.56	2.53	2.48	2.45	2.42	2.55	2.88	2.57
Subtotal, micro enterprises	96.87	96.95	97.10	97.17	97.23	97.29	97.38	97.32	97.06	97.17
Change in private companies with 7-9 employees	1.11	1.05	1.02	1.02	1.00	1.00	0.98	1.01	1.10	1.03
Change in private companies with 10-19 employees	0.86	0.84	0.79	0.76	0.75	0.74	0.71	0.74	0.82	0.78
Change in private companies with 20-50 employees	0.58	0.58	0.55	0.53	0.51	0.49	0.49	0.49	0.54	0.53
Subtotal, small businesses	2.55	2.47	2.37	2.31	2.26	2.23	2.18	2.24	2.45	2.33
Change in private companies with 51-99 employees	0.27	0.27	0.25	0.24	0.24	0.23	0.21	0.21	0.22	0.24
Change in private companies with 100-200 employees	0.16	0.17	0.16	0.15	0.15	0.13	0.12	0.12	0.13	0.14
Subtotal, medium-sized enterprises	0.44	0.44	0.41	0.39	0.38	0.36	0.34	0.34	0.36	0.38
Total micro, small and medium-sized enterprises	99.86	99.87	99.88	99.88	99.88	99.89	99.89	99.89	99.88	99.88
Change in private companies with more than 200 employees	0.14	0.13	0.12	0.12	0.12	0.11	0.11	0.11	0.12	0.12
Grand total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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