

THE IMPACT OF COVID-19 ON BULGARIAN BUSINESSES BY FIRM SIZE

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Abstract: *The study examines the impact of the COVID-19 pandemic related economic crisis on Bulgarian enterprises by firm size across sectors and regions in 2020, using data from the National statistical institute. The analysis shows that micro and large enterprises performed better during the crisis, whereas enterprises of medium size were less successful.*

Keywords: economic crises, firm size, adaptivity.

Introduction

Firms face a dynamic environment and constantly adapt to changes. Each crisis poses to them a test of its own while they go through a period that exhausts their resources, challenges their organizational structure, puts the personnel under additional pressure and questions the firm's relations with suppliers and customers. Not all enterprises are equally apt at navigating through times of difficulty. Success depends on tacit characteristics such as entrepreneurial talent and corporate culture, but also on structural ones like size, sector of operation and spatial location. The crisis of 2020 was no exception to this.

The COVID-19 pandemic and the Bulgarian economy

The COVID-19 pandemic and the measures to contain it caused a worldwide economic crisis, which was different in its origins and development from most other economic crises after the start of the Industrial revolution. The raw facts from the Bulgarian National statistical institute, concerning the pandemic's direct and indirect effect on the Bulgarian economy, show that in 2020 GDP fell by 0,36% (measured in current prices), and the fall in real terms (using constant prices from 2015) was even bigger at 4,38%. The employment rate also plummeted from 54,2% to 52,7%, following a succession of growth years. The numbers could have

been worse, but the Bulgarian government abandoned its relatively conservative fiscal policy from the last decade and run a record budget deficit with the gross government debt increasing from 20.2% to 25.0% of GDP.

There are two basic ways through which the pandemic exerts its effects on the economy. The first is the direct incapacitation of participants in the labour force who have contracted the virus. The second is indirect and is the result of additional administrative and health measures, directed at social and economic activities, with the goal to limit the transmission of the virus. One could argue that the latter matters more than the former, as the victims of COVID-19 are more likely to be people beyond working age. In any case, supply is constrained. While economic insecurity about the future and loss of income can hamper effective demand, this is typical of all or most crises. The idiosyncratic nature of COVID-19's economic consequence is expressed through the behavioural changes elicited on the supply side. These are mostly external or self-imposed limitations on business interactions with high chance of contracting or spreading the virus, but there is another factor at work, making its way roundabout, as activity is stalled not because of direct health concerns for the personnel or the clients, but by the disruption of the supply chains. Distance learning and stay-at-home policies for pupils cause additional burden for working

parents even if their business remains otherwise unaffected.

In Bulgaria the government introduced lockdown measures in March 2020, though some lighter ones had already been in force in February. Following that, different measures were tightened or loosened, depending on the development of the pandemic situation, including school and workplace closings, stay-at-home requirements, restrictions on gatherings and public events, and restrictions on internal or cross-border movement. While tracking all these changes will be too cumbersome, for the purposes at hand it is enough to report that the average monthly values for the composite stringency measures index were 48 (out of the maximum 100) in March, peaked in April at 72, dropped to 61 in May, then flattened at about 37-38 before reaching 50 in November and December (Hale et al., 2020).

Firm adaptivity

The question arises how firms reacted to these restrictions, as well as to the disruption of the supply chains, and the fall in demand. The aggregate data conceals the possibility of heterogenous impact on businesses depending on their size, sector and location of operation, and it is obvious that not all companies were equally affected, and of those affected, some did better than others. The issue of firm adaptivity is a concern of general importance, as the business environment in a market economy is not static, but dynamic. In the model of firm adaptivity, conceptually presented in Penchev (2011) and further empirically tested (Penchev & Petkov, 2014), adaptivity is synonymous with flexibility and is characterized by the ability to respond to anticipated and unanticipated changes and to use the changes as opportunities. Adaptivity is a function of size and structure, strategic and operative decision-making, and of micro-management.

While these factors would matter in any case, one should distinguish between coping with the non-ergodic nature of the self-organizing market system in continual incremental steps and the reaction to a single black-swan-type of event that hits the economy exogenously. If the former,

flexibility might give companies a competitive edge, but when it comes to one-time shocks that are expected to be temporary, resilience could be just as important as flexibility, because a resilient company can go through the difficult times without substantial changes in its building blocks and then proceed to business as usual when things return to normal. Changing the building blocks is costly and we would expect to see different coping mechanism from companies based on their size. Small-size companies should be more flexible, because it is easier to implement structural adaptations when the structure is simple and light. Large companies would favour resilience to flexibility, as the weight of their structure makes them less susceptible to changes and changes carry inertia with them. To the advantage of these companies, they usually have a large capacity for resource build-up, which, if used appropriately, can provide the companies with the buffer stock to sustain the consequences of the external shock.

Previous research

There is growing research about the effects of the COVID-19 pandemic on companies in other countries. Not surprisingly, as the virus spread from China, some of the earliest publications are about Chinese enterprises. Xiong et al. (2020) used cumulative abnormal return of Chinese firms, listed on the stock exchange, to examine the effect of firm-specific characteristic on reactions to the pandemic and the pandemic measures. They found that firms within the transportation, food and beverage retail, hotel and tourism, real estate and construction industries were more vulnerable to the COVID-19 outbreak. Firms with larger scale, higher combined leverage and less fixed assets experienced less adverse impact across industries. Zou, Huo & Li (2020) used survey data from 524 firms in 15 cities in the Guangdong Province to establish that 48,7% remained stable and 35,1% of them experienced a halt in operation or faced closure. Firms reacted by postponing the launch of new products, sought loans from banks and funding from shareholders, and moved operations online.

Bartik et al. (2020) conducted a survey among 5800 small businesses in the USA. Of them, 43% had to close temporarily, with the median firm in the sample having less than one month of cash on hand, thus making it financially fragile. The pandemic's impact varied across industries and geographical regions. Bloom et al. (2021) surveyed a panel of 2500 US firms about the effects of the COVID-19 economic crisis. Approximately 40% of the firms reported zero or minimal impact, whereas a quarter reported losses of more than 50%. The impact was bigger on offline firms, compared to those, which conducted their business online. In terms of size (number of employees), it was worse for smaller firms, while sales dropped less in percentage terms, the larger the company size got. An examination of Canadian firms confirmed that small firms did worse than large firms (Gu, 2020), with real output falling in the first quarter of 2020 by 2,1% and 1,5% respectively, but medium sized firms did better than both (a fall of 1,5%). A cross-country examination on the pandemic's effect on firm performance found, that changes in the return on assets were negatively related to the firms' size (measured by the book value of total assets)

during the first three quarters of 2020 (Hu & Zhang, 2021).

The impact of the pandemic on Bulgarian businesses

The current article is an addition to the already existing research on COVID-19 in Bulgaria, which includes studies about the pandemic's effects on organizational change (Ruskova, 2021); the effects on the labour market in selected sectors (Stojanov, 2020); the heterogenous influence on the labour market across age groups, sex, place of residence, kind of ownership, and type of contract (Kosuliev, 2021); the effects on labour productivity (Gospodinova, 2021). The present study focuses on the impact of the pandemic on firms by class size, using as indicators of their performance annual data from the National statistical institute (NSI Bulgaria, 2022a; NSI Bulgaria, 2022b) about the number of enterprises, revenues, employment, and tangible fixed assets. Both sectional (NACE v2) and regional (NUTS2) dimensions are analysed. Due to data availability issues at the time of writing, the analysis is limited only to the first year of the pandemic, i.e. 2020.



Figure 1. Annual percentage change in selected indicators of Bulgarian enterprises by size of the enterprise for 2009-2020.

As seen from Figure 1, in 2020 there was a fall in the number of enterprises, their annual revenues, the persons employed, and the tangible fixed assets for all sizes (the size being determined by the number of people employed), with the exception of micro (0 to 9 employees) and small (10 to 49 employees) enterprises, where revenues actually increased in relative terms in nominal values. This suggests that micro and small enterprises were either less affected or showed more flexibility during the first year of the pandemic. We have a confirmation for this from exhibit A), where the time series show only a slight drop in the number of micro firms. Micro and large firms lost a smaller share of their employees (exhibit

C)). The change in tangible fixed assets (exhibit D)) is indicative of better performance for micro and small enterprises. We can speculate that medium and especially large enterprises lost more assets, because of higher volumes of depreciation and of the postponement of new investments during the crisis, as they needed more operational funds. Changes in employment seem to have affected small and medium enterprises. Comparing this crisis with the one in 2009-2010, in 2020 the companies as a whole performed better in terms of changes in revenues and worse in terms of changes in assets, while in the numbers of enterprises and the persons employed the evidence is mixed.



Figure 2. Annual percentage change in selected indicators of Bulgarian enterprises by size of the enterprise across NUTS2 regions in 2020.

Regional dimension of the impact

Adding a regional dimension to the analysis, Figure 2 shows that the number of enterprises (exhibit A) and the people employed (exhibit C) decreased across all types of firms and NUTS2 regions. There is a trend that as size increased from micro to small and to medium the fall got bigger, but the trend breaks reaching large (250+ employees) enterprises. They seem to be less affected by the crisis together with micro enterprises. This observation

suggests that probably the two possible mechanisms at work for coping with the pandemic passed by the small and medium enterprises – they were not flexible enough as the micro, and not as resilient as the large enterprises. However, we can't discount another possible explanation – that the distribution of the companies was not even among sectors and small and medium enterprises were overrepresented in the sectors, most exposed to the pandemic. This is hinted by the relatively poor performance across

all indicators of the Yugoiztochen region, which relies a lot on tourism. The revenues (exhibit B) of micro enterprises are positive across all regions (with the exception again of Yugoiztochen) which further confirms the hypothesis about their better adaptability. Small and large enterprises experience at least slight positive changes in three of the regions and negative in the other three, whereas the revenues of medium enterprises drop everywhere. The one indicator where large firms definitely performed worse than the rest is shown in exhibit D), as tangible fixed assets decreased faster compared to firms of different sizes. The exception was the Yugozapaden region. Medium sized firms also experienced a fall in the tangible fixed assets in every region, although to a smaller extent.

Sectoral dimension of the impact



Figure 3. Annual percentage change in selected indicators of Bulgarian enterprises across economic sectors in 2020.

The sectoral dimension shows higher variability in the revenues and the tangible fixed assets, compared to changes in the other two indicators (Figure 3). The change in the number of enterprises in 2020 went below negative 3% only in C (Manufacturing), H (Transportation and storage) and I (Accommodation and food services)¹. The biggest fall was in R (Arts, entertainment and recreation), while D (Electricity, gas, steam and air conditioning supply) was an outlier with an increase of 17,4% (only micro enterprises contributed to this number). Employment fell the most in C, R, and I, and in general these appear to have been the hardest hit sectors across all indicators. We observe asymmetrical impact on D, where, despite the large increase in the number of enterprises, tangible fixed assets took a similar move but in the opposite direction. While it lost in numbers, employment and revenues, H (Transport) was the best performer in tangible fixed assets, being one of just three sectors with positive change in this respect (the others were L (Real estate) and Q (Human health)). The mirror opposite of H was J (Information services), which got positive changes in all but the tangible fixed assets. Together with Q, B (Mining and quarrying), and F (Construction), they were the only sectors with growth in revenues, the latter two doing significantly better. We can assume that the 32,4% hike (the pinnacle of a four-year trend) in the revenues of the best performer (F) were the result of Bulgarian investors' view of property as a place of retreat in times of economic insecurity, combined with the relative unattractiveness of low interest rates on bank deposits, and an investment culture that generally shuns other financial instruments.

¹ See the full list of sector classifications according to NACE v2 here: <https://ec.europa.eu/eurostat/web/nace-rev2>

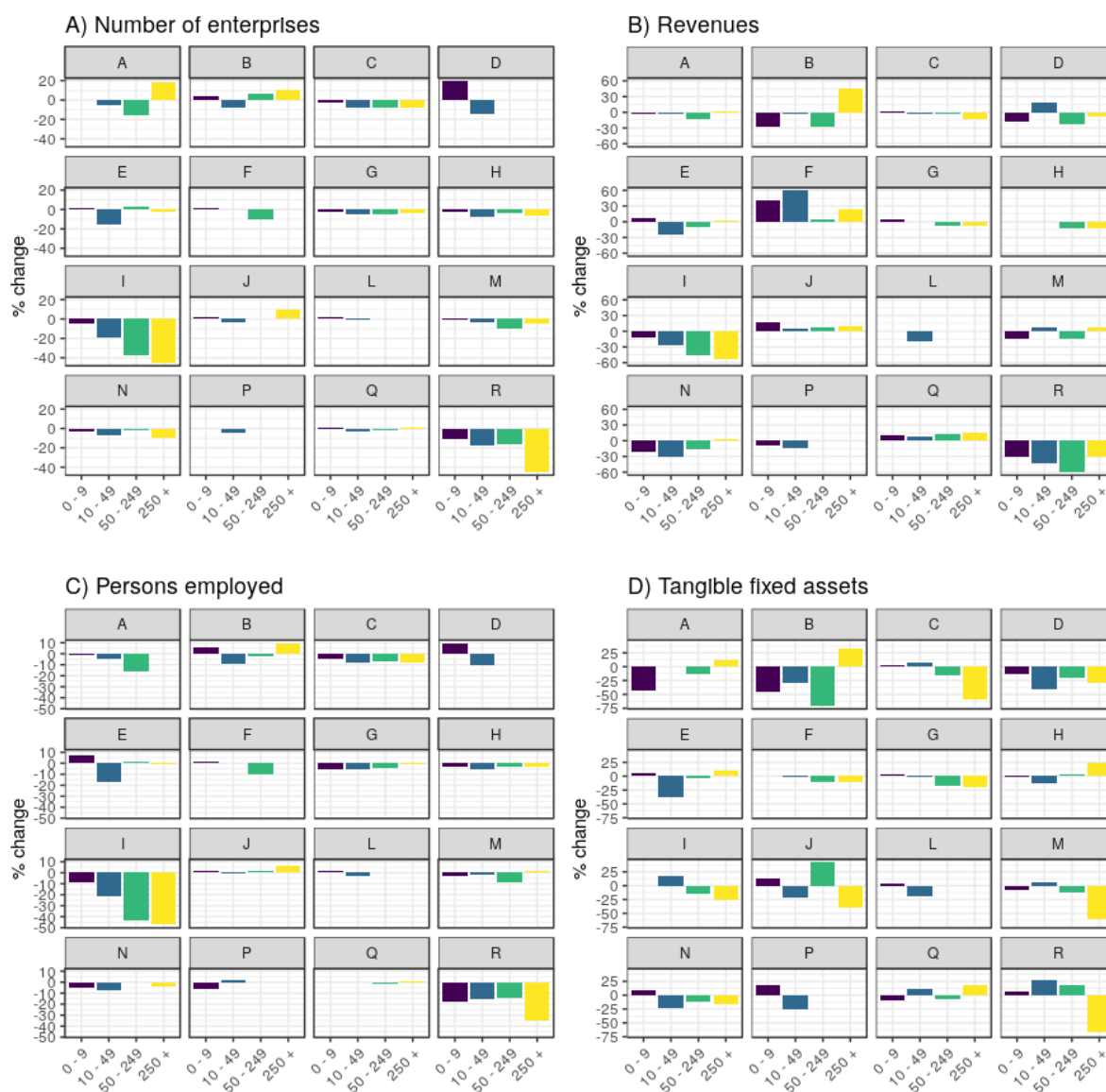


Figure 4. Annual percentage change in selected indicators of Bulgarian enterprises by size of the enterprise across economic sectors in 2020.

Combining sectors and firm size (Figure 4), the sector with the most damage (I) went from bad to worse for all indicators as size increased, with the slight exception of change in the tangible fixed assets. Likewise, 2020 was a difficult time for all firms in sector R, but the large ones suffered more (excluding revenues). Manufacturing's (C) decline in indicators was balanced among firms of all size groups, however the increase in size was associated with bigger losses in tangible fixed assets. The fall in values was balanced also for the transport sector (H), the increase in the tangible fixed assets being the exception. As seen from exhibit D), the exception was entirely the contribution of large firms. Across all pairs

of sector and firm size groups, for each indicator there were more negative observations for small and medium enterprises than for micro and large enterprises. In general, large firms did slightly better than micro in this respect, except for the change in the tangible fixed assets.

Conclusion

The COVID-19 crisis did not affect all Bulgarian enterprises equally. The observation that the effect depended on sector and location seems intuitive, and based on the analysis of the data we can highlight another trend, related to the size of the enterprises. The pattern may lead to only tentative conclusions, but it

emerges both across sectoral and spatial dimensions. Overall, judging by the changes in a number of indicators, the shock on the performance of micro and large enterprises was smaller compared to the small and especially medium ones. This is in contrast to the conclusions of

some studies from North America, where mid-sized firms did better. It seems that in the Bulgarian market environment the flexibility of the micro firms and the resilience and stability of the big firms mattered most.

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