THE POTENTIAL OF EXPORT-ORIENTED COMPANIES TO CONTRIBUTE TO POST-COVID-19 ECONOMIC RECOVERY IN NORTH MACEDONIA

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The potential of export-oriented companies to contribute to post-COVID-19 economic recovery in North Macedonia

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1. Introduction

COVID-19 crisis hit North Macedonia after years of unprecedented export growth, and deteriorated the expectations that both net export and FDIs would continue to bring positive and increasing contribution to the growth of economic activity in the near to long term (Ministry of Finance, 2019). In 2019, exports of goods and services from North Macedonia grew by 9.6%, continuing the increasing trend of the past 10 years, and reaching 56% of GDP. In the past ten years, FDI inflows in North Macedonia averaged 3% of GDP annually, providing direct benefits to the economy by contributing to sectoral and export diversification, import coverage and job creation.[1]

The crisis has already halted global investments and exacerbated global demand. Latest forecasts suggest that FDIs will fall by 40% globally in 2020, while developing countries will be hit even harder (OECD, 2020). In the medium to long term, it is expected FDIs to geographically shift their foreign operations aiming to reduce costs and diversify location-specific shocks. Before the crisis, the government forecasted FDIs to reach yet modest 1.5% of GDP for 2020 (Ministry of Finance, 2020). After the start of the COVID-19 crisis, the export reduction and demand contraction aggravated risks of investments outflows and closing (parts of) production operations of the Multinational Corporations (MNCs).

The early evidence shows a significant disruption of global trade as a result of COVID-19 pandemic. The negative effects spill over from one country to another and from one sector to another through the ***supply chain networks*** as governments' measures to mitigate the spread of COVID-19 tighten.[2] The extent of companies' interconnectedness inflates the significance of indirect shocks over the direct loss caused by the pandemic. To mitigate the effects of supply chain disruptions, companies rely on debt markets to support their ***liquidity*** positions.

[1] FISCAST (2016) find a positive net benefit of FDIs for the economy. Additionally, export-oriented companies employ a significant number of workers. According to the data supplied by the Directorate for Technological Industrial Development Zones (DTIDZ), FDIs in the country created over 25.000 jobs, mainly in manufacturing during the period 2007-2020.

[2] The pandemic instigated supply chain disruptions mostly affecting globally-oriented and heavily interconnected sectors and firms (e.g. Aral et al. 2020; Balla-Elliot et al. 2020; Barrot et al. 2020; Bonadio et al. 2020; Buccheim et al. 2020; Carletti et al. 2020; Davis et al. 2020; Ding et al. 2020; Hyun et al. 2020; Inoue and Todo 2020; Meier and Pinto 2020; Navaretti et al. 2020; Pichler et al. 2020; Ramelli and Wagner 2020; Sforza and Steininger 2020).

The small and financially constrained companies face greater challenges as the COVID-19 pandemic evolves.[3] Additionally, the COVID-19 impact is a combination of supply and demand shocks reflecting the heterogenous sectoral effects across the countries. To one side, the lockdowns and the spread of infections restrict labor supply and limit ***workforce*** management mostly affecting upstream companies' capacities to produce and deliver their goods and services.[4] On the other side, the closure of non-essential sectors and the increase in layoffs create ***demand*** shocks imposing pressure on downstream companies' revenues.[5] Finally, the COVID-19 pandemic precipitates long-term effects with respect to companies' ***competitiveness***. The market share losses, profitability drops, and insolvencies become apparent for the companies as the pandemic unfolds.[6]

While these risks are increasingly looming, the crisis may unveil opportunities for exporters and MNCs operating in developing economies such as North Macedonia. Potentials may be identified in reorientation and adaptation of production and in acquiring new markets and relocating operations away from distant markets (e.g. those in Asia), if the presence on those markets becomes costlier. Therefore, the COVID-19 pandemic may create opportunities for the current export-oriented companies, including MNCs operating in the Technological Industrial Development Zones (TIDZs) in North Macedonia, highlighting their importance in driving the post-COVID-19 economic recovery.

In this study, we analyze the findings from a comprehensive survey, focused on the obstacles and potentials of export-oriented companies before, during and after the COVID-19 pandemic in North Macedonia.

[3] The greater access to finance and accumulation of liquidity helped firms to better weather the initial shock caused by COVID-19 (e.g. Acharya and Steffen 2020; Aral et al. 2020; Beck et al. 2020; Carletti et al. 2020; Ding et al. 2020; Fahlenbrach et al. 2020; Ramelli and Wagner 2020; Schivardi and Romano 2020)

[4] The labor-intensive sectors and firms with lower capacity to allow workers to work from home (WFH) experienced significant supply-side disruptions during the pandemic (e.g. Alstadsæter et al., 2020; Gottlieb et al. 2020a; Hatayama et al. 2020; Koren and Peto 2020; Papanikolau and Schmidt 2020; Gottlieb et al. 2020b)

[5] The COVID-19 caused direct shocks to the aggregate consumption through the changes in households' behavior and indirect demand shocks through the closures of non-essential sectors (e.g. Aral et al. 2020; Barrot et al. 2020; Beck et al. 2020; Bodenstein et al. 2020; Gourinchas et al. 2020).

[6] The pandemics/epidemics affect companies' competitiveness through increasing the trade costs and depressing the market share, investments and profitability (e.g. Altig et al. 2020; Beck et al. 2020; Carletti et al. 2020; Fernandes and Tang 2020; Sforza and Steininger 2020)

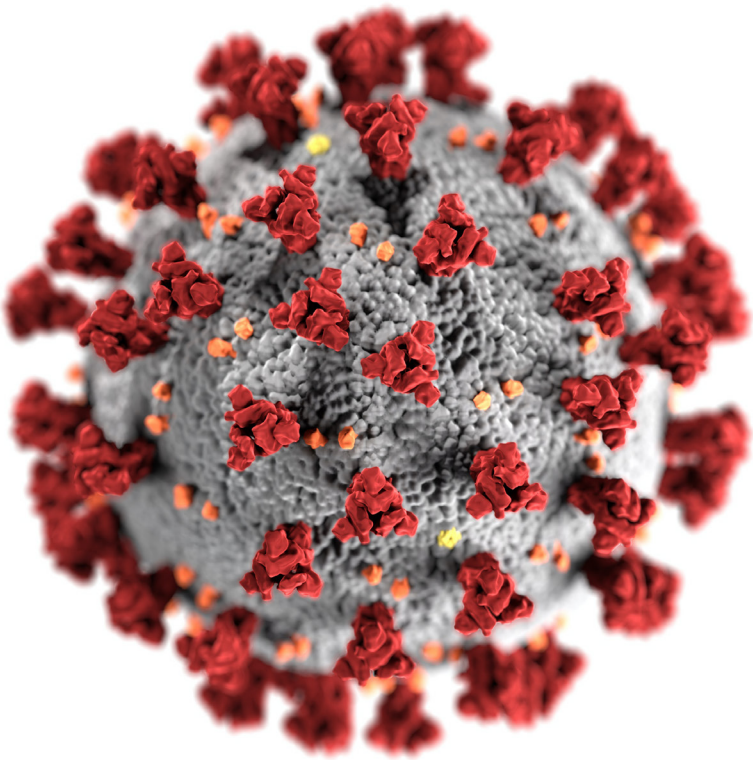
The survey was conducted with export-oriented companies residing in North Macedonia, through a computer-assisted and telephone-assisted interview between October 1st and October 23rd, 2020. We structured the survey to target five companies' segments heavily affected by the COVID-19 pandemic: *liquidity*, *supply chain*, *competitiveness*, *demand* and *workforce*. Within each of these segments, we explore the relative importance of each segment, the COVID-19 impact, the constraints, the businesses' responses to the impact and the potentials to overcome the problems and constraints, and to drive the economic recovery. The survey targets the largest export-oriented companies in North Macedonia. While no survey sample is fully representative, due to the selection bias created by the limited survey coverage and limited response rate by the companies, we find that our respondents broadly match the characteristics of export-oriented companies in North Macedonia by leveraging an alternative survey data from the Enterprise Survey 2019 conducted by the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) and World Bank Group (WBG). Such survey structure allows us to implement the ES2019 weights constructed for making inferences on the population level. The survey data was supplemented with financial statement data used as an input in the descriptive and regression analysis.

The results show that the COVID-19 crisis has caused systematic deceleration of revenue, profit, investment, capital, employment and salaries growth among exporters in North Macedonia. While largely negative, the effect was heterogenous among sectors, where the Automotive and Computer and electronic equipment sectors experienced the hardest hit. Certain company characteristics such as the limited access to finance, import exposure to EU markets, high labor-intensity, export exposure to non-EU markets and lower competitiveness make exporters less resilient to the pandemic shocks representing the main obstacles exporters are / will be facing in the recovery stage. Despite the identified constraints, exporters show considerable potential in improving their liquidity positions through internal funds and debt, re-structuring their supply-chains through relocations and rooting in the domestic economy, reviving their demand through re-adaptation and capturing new markets, and investing in technology.

The study bridges the constraints and potentials of export-oriented companies in North Macedonia and provides policy implications within each of the defined aspects. Regarding supply-chain perspective, we identify policy measures which would attract additional MNCs' capacities towards North Macedonia, reduce dependence on distant markets and reduce input costs. With respect to the demand perspective, we suggest interventions to stimulate concurring new and more diverse markets

and overcoming the constraints for agile re-adaptation. Concerning the financing perspective, we propose measures for increasing access to favorable-terms finance which would incentivize adoption of new and advanced technology. Finally, the long-standing problem of skills shortage on the labor market necessitates long-term solutions to support generation of demanded skills. The proposed set of measures would reflect on exporters' competitiveness driving the economic recovery.

The study is structured as follows: In Section 2, we review the most recent literature on COVID-19 impact on companies and map companies' segments mostly affected during the pandemic; in Section 3, we present the survey summary and describe data and methods used; in Section 4, we assess the COVID-19 impact on exporters; in Section 5, we identify the exporters' obstacles during and after the pandemic; in Section 6, we highlight the potentials and policy areas for providing stimulus to exporters to overcome the obstacles and exploit their potentials driving the post-COVID-19 economic recovery.



2. The COVID-19 Impact on Companies (Related Literature)

The literature concerned with COVID-19 consequences on businesses is rapidly growing. Researchers uncovered that the extent of *companies' international orientation*, *financial flexibility*, *labor-intensity and customers' behavior* are determining factors of companies' susceptibility to increasing losses due to COVID-19. The short-term COVID-19 shocks may easily translate to mid- to long-term deterioration of *companies' competitiveness*. While many companies would suffer from the pandemic shocks, some may face novel opportunities for expansion and development as the pandemic subsides.

The pandemic has induced broad trade disruptions as the negative shocks diffuse not only across countries, but also across sectors within a country. The evidence of cross-country transmission of COVID-19 shocks mainly relates to the developed countries. Bonadio et al. (2020) show that the reopening of large economies (such as China and USA) would have a significant impact on GDPs of other countries. Similarly, Sforza and Steininger (2020) argue that higher degree of integration in global production network of one country means higher susceptibility to transmission shocks caused by the pandemic. The empirical evidence shows that companies more exposed through their international supply chains suffer larger stock price declines compared to less exposed companies (Ding et al. 2020). For instance, US companies and sectors with higher degree of Chinese imports experienced significant losses (Meier and Pinto, 2020; Ramelli and Wagner, 2020) and even lost part of their Chinese suppliers at the beginning of the pandemic (Aral et al. 2020).[7] On contrary, Hyun et al. (2020) find that market power supports globally-oriented companies to withstand the pandemic shocks. While the COVID-19 shocks may diffuse across countries, researchers argue that the diffusion effects arise across sectors within a country. Inoue and Todo (2020) show that one-day lockdown in Tokyo causes significant production loss outside of Tokyo. Navaretti et al. (2020) identify the central sectors in the national production network of Italy and argue that the activation of the central sectors would significantly increase value of production during the lockdown. Finally, Balla-Elliot et al. (2020) find that the company's decision to re-open after a lockdown depends on the activation of its suppliers.

[7] Similar evidence exists during the SARS epidemic in China by the end of 2005 when Chinese exporters permanently lost part of their customers from abroad (Fernandes and Tang, 2020).

The heterogenous impact of COVID-19 on companies does not arise only from their supply chain exposures, but also from their differential access to finance. Ramelli and Wagner (2020) and Ding et al. (2020) find that stock markets punished companies with limited cash reserves and higher degree of leverage during the initial shocks of COVID-19. Generally, greater financial constraints relate to the small and medium enterprises (SMEs) which are more likely to rely on state liquidity support programs (Cororaton and Rosen, 2020). However, Paaso et al. (2020) attribute the low take-up rates on state loan programs to the debt aversion of small entrepreneurs. Alekseev et al. (2020) find that SMEs tend to primarily use their personal savings and informal sources of financing to fight the pandemic shocks. On the other side, Fahlenbrach et al. (2020) find that highly financially flexible companies suffered less during the pandemic.[8] The good capitalization and better access to finance enable companies to avoid debt overhang which may deter future investments (Aral et al. 2020; Carletti et al. 2020).

The financially weaker companies have a tendency to downsize during the pandemic (Alstadsæter et al. 2020). Barrero et al. (2020) find that COVID-19 caused a significant labor reallocation shock as the negatively affected sectors relied on layoffs, while positively affected recruited new workers. However, the state support through labor subsidies significantly alleviates the job losses (Bennedsen et al. 2020). Additionally, the sectors and companies which have higher capacity to allow their workers to work from home (WFH) reduced their workforce by less compared to the sectors and companies with lower WFH capacity (Alekseev et al. 2020; Papanikolau and Schmidt, 2020). While workers in developed countries have higher WFH ability (Gottlieb et al. 2020a; Hatayama et al. 2020), Gottlieb et al. (2020b) find that workers in North Macedonia fare better with respect to the WFH ability compared to its peers in the developing world. While WFH capacity supports jobs retention, it has ambiguous effects on workers' productivity (Bartik et al. 2020; Koren and Peto, 2020; Morikawa 2020). Finally, the investments in automation may reduce susceptibility to labor supply shocks caused by the pandemic (Caselli et al. 2020; Chernoff and Warman, 2020).

The slump in employment translates in anemic aggregate consumption (Bodenstein et al 2020). Balleer et al. (2020) find that COVID-19 demand effects dominate on the short-run causing drop in inflation. Additionally, the sectors and companies located downstream in the supply chains and deemed as non-essential suffer the most due to administrative closings.

[8] Fahlenbrach et al. (2020) relate financial flexibility to greater cash reserves, less debt and lower long-term debt over assets ratio.

For instance, companies with high exposure to travel and leisure received the hardest hit, while telecommunication and technical services experienced minor negative and even positive effects (Balla-Elliot et al. 2020; Barrot et al. 2020; Davis et al. 2020; Gourinchas et al. 2020). Evidently, the drop in consumption could be significant during the pandemic, however businesses could be less exposed to the demand shocks depending on their market power (Hyun et al. 2020), substitutability of their products (Fernandes and Tang, 2020), flexible relationships with their customers and employees (Beck et al. 2020) and investments in corporate social responsibility (CSR) activities (Ding et al. 2020).

The immediate COVID-19 shocks may translate to mid- to long-term effects on companies' competitiveness through their decisions for current and future investment activities. Beck et al. (2020) find that businesses prefer to reduce their investments rather than to execute layoffs in order to fight the economic consequences of the pandemic. Moreover, Carletti et al. (2020) argue that company indebtedness would deter investments in future. Another channel could be the rise of trade costs, especially on imported intermediate inputs. Sforza and Steininger (2020) claim that trade barriers would exacerbate the income losses in addition to those generated by COVID-19.[9] Finally, Fernandes and Tang (2020) show that companies with capital-intensive, skill-intensive and differentiated products could better withstand export disruptions and drive the economic recovery, while companies with mass-produced and low-tech products could be easily replaced during temporary trade disruptions.

While export-oriented companies would be most likely affected through the trade disruptions, the effects on their liquidity, workforce, demand, and competitiveness may be more relevant for some companies given the heterogenous impact of COVID-19. Our attempt is to first uncover the relative importance of these segments for the companies. Not all companies are equally affected within each of these segments. We aim to quantify the size of the COVID-19 impact. Some companies are well-prepared to respond to the initial shocks and drive the economic recovery, while others may be more-constrained to react during the pandemic. We identify the main obstacles and responses of export-oriented companies in each segment. Finally, we measure the potentials of export-oriented companies to boost the economic activity during and after COVID-19 and discuss possible policy actions to support their potentials.

[9] Trade liberalization and tariff reductions on imported inputs bring significant benefits in terms of higher degree of factor productivity, innovation, employment and investments to the importing firms (e.g. Amiti and Konings 2007; Bustos 2011; Fernandes 2007; Goldberg et al. 2010; Topalova and Khandelwal 2010; Wang et al. 2018).

3. Data and Methodology

The Finance Think – Export-oriented Business Climate Survey on COVID-19 Impact (FT – XBCS – COVID19) was fielded in a computer-assisted and telephone-assisted form between October 1st and October 23rd, 2020. Initially, we sent the survey to 390 companies in North Macedonia allowing them to self-select as an export-oriented business at the beginning of the survey, otherwise they exit the survey. The initial response was supplemented with telephone interviews targeting the largest exporters in North Macedonia. Our attempt was to capture the largest possible exporters' share of the value-added to the Macedonian GDP. The survey was voluntary, without financial compensation, while participants were informed that their responses were confidential and only aggregated results would be published.

The survey was completed by 73 export-oriented companies resulting in 19% response rate. The sample is biased towards larger exporters which constitute 63% of the sample. To check the representativeness of our sample, in absence of data on the structure of the population of export-oriented companies in North Macedonia, we leverage the sample statistics of the Enterprise Survey 2019 (ES2019) conducted by the European Bank for Reconstruction and Development (EBRD), the European Investment Bank (EIB) and World Bank Group (WBG). [10] We extract a sub-sample of the ES2019 taking the companies which reported positive (direct) export share and classify our and ES2019 sample according to the ES2019 criteria. Table 1 shows that our sample has similar characteristics as the ES2019 sample. In our sample, small exporters and exporters providing other services are under-represented at the expense of larger and manufacturing exporters, with 11% and 9.6% comparing to the ES2019 numbers 23.7% and 28.9%, respectively. Our survey's regional dispersion almost replicates the ES2019's one. Drawing from the ES2019 (stratified) sampling design, we apply the ES2019 weights (under the median assumption)[11] to make inferences about the whole population.[12]

[10] The ES2019 was conducted to improve the understanding of private sector experiences and perceptions in North Macedonia. The data was collected between December 2018 and October 2019 and the sample was selected using stratified sampling methodology ensuring unbiased selection of firms with respect to the industry, establishment-size and region. For more information, see link.

[11] The weights were designed based on assumptions on the number of eligible establishments in each stratum. Based on the median assumption, the eligible establishments are those for which it is directly possible to determine eligibility and those that rejected to answer.

[12] The application of weights corrects the importance of the individual observations by the inverse of their probability of selection. We apply the svy command in Stata to calculate the weighted statistics.

Table 1: Survey characteristics

Survey	Size			Sector			Region		
	Small	Medium	Large	Manufact.	Retail	Other services	Skopje	East	West
ES2019	23.71%	27.84%	48.45%	57.73%	13.40%	28.87%	35.05%	40.21%	24.74%
FT-XBCS-COVID19	10.96%	26.03%	63.01%	78.08%	12.33%	9.59%	38.89%	36.11%	25.00%

We augment the survey data with 2019 financial statements data. We report descriptive statistics of selected variables in Table 2. The exporters in the sample on average exist over 20 years and employ 448 workers per company, with dominantly export-oriented business (over 70% of their revenue). A 51% of the companies are greenfield, brownfield and joint venture types of investment, while the rest is completely domestic. The revenue growth rate in the past 5 years averages 22.4%, while profitability, investment and capital growth approximate 15%.

Table 2: Descriptive statistics of the variables

Variable	Obs	Mean	St. dev.	Min	Max
Age	73	20.97	20.61	2	138
No. of workers	73	447.47	886.24	5	6180
Share of foreign capital in total capital (%)	73	46.16	48.12	0	100
Share of exports in total revenue (%)	73	73.28	27.60	5	100
Share of imports in total procurement (%)	73	49.16	30.29	0	100
Revenue over 10 million euro (binary)	73	0.50	0.50	0	1
Greenfield investment in the TIDZ (binary)	73	0.11	0.31	0	1
Greenfield investment outside of the TIDZ (binary)	73	0.14	0.34	0	1
Brownfield investment in existing capacities (binary)	73	0.11	0.31	0	1
Joint venture (foreign and domestic capital) (binary)	73	0.15	0.36	0	1
Revenue growth (%)	68	22.42	50.76	-30	336.5
Profitability growth (%)	70	14.89	33.66	-56.27	258
Investment growth (%)	70	15.49	20.42	-17.36	100
Capital growth (%)	70	15.81	26.63	0	150
Debt growth (%)	64	9.89	32.18	-49	190
Employment growth (%)	71	17.61	38.84	-2.76	220
Salary growth (%)	63	9.17	8.17	-3.27	30

Source: FT-XBCS-COVID19

The FT-XBCS-COVID19 contains 39 questions classified into four sections. In Section 1, we ask for general company information related to its size, industry, region, export and import share, ownership, investment type, age and other, and for company's uncertainty perceptions with respect to its revenue, profitability, investment, capital, debt, employment and salary growth before and during COVID-19, as well as its expectations in the following period. Section 2 comprises questions related to the constraints faced by export-oriented companies structured according to the affected segments of their businesses: liquidity, supply chain, human capital, demand and competitiveness. Section 3 encompasses questions about potentials of the companies in their capacities to re-adapt, introduce novel production line, augment their production potential, increase their automation level, and target new markets. Finally, Section 4 covers questions related to potential policy actions to support companies' growth and competitiveness through cheaper imports, improved human capital capacity and technological advancements.

4. The COVID-19 Impact on Export-oriented Companies in North Macedonia

4.1. A 'demography' of the impact

As the literature suggests, the propagation effects of COVID-19 are heterogenous and widespread across many sectors and countries. Our initial attempt is to provide descriptive analysis of the impact with respect to some company characteristics which make companies prone to significant growth losses during COVID-19 and which support strong recovery after the pandemic ends. We classify exporters according to the turnover, size, ownership, age, export share, labor intensity and sector essentiality during lockdowns. We analyze the impact across the following dimensions: revenue, profitability, investment, capital, debt, employment and salary growth. Additionally, we scrutinize the sectoral effects on the same dimensions before, during and after COVID-19.

To assess the impact of COVID-19, we have asked the exporters the following set of questions: 1) What is the 5-year average annual growth before the start of the pandemic?; 2) What is the growth in the first 3 trimesters of 2020 comparing to the same period last year?; What annual growth do you expect for the next calendar year? Table 3 presents the difference in growth rates across the dimensions 'before-during' and 'during-after' COVID-19.

COVID-19 caused significant deceleration in revenue, profitability, investments, capital, employment and salary growth. The revenue, profit and investment growths slowed down by 8.9, 6.6 and 9.6 percentage points comparing to their historical growths, respectively. Such declines are clearly related to the dwindling demand and the lockdown during the spring of 2020, while the decline in investment growth is a reflection of the 'wait and see' position that companies attained amid the negative shock. We observe the greatest decline in capital growth, while no acceleration in debt growth. This evidence suggests that exporters rationalized through cutting their long-term investments slowing down the capital growth to weather the pandemic shock and maintained their debt growth rates at their historical levels. This is in line with Beck et al. (2020) who find that companies primarily reduce their investment spending and much less rely on downsizing. Also, this observation may be yet reflecting the initial response of exporters to the crisis, whereby own reserves sufficed to weather the crisis effect; however, it may signify that further intensification of the crisis may have a drag on debt, particularly if production stops because of lockdowns at home or at product's destination.

Since exporters were extensive employers in the labor market in the past, averaging 17.6% annual employment growth, the pandemic severely affected employment and salaries growth, however the rates never reached negative growth. Exporters expect significant rebound in revenue, profitability, investment and capital growth rates in the following year, while debt, employment and salaries growth rates are likely to stay on their pandemic levels. However, the expected rebound in revenue, investment and capital is not full, i.e. is not expected to reach the pre-pandemic level, which is an articulation of the high uncertainty companies were operating in during the surveying. The COVID-19-induced uncertainty affects both, companies and consumers, impeding investments, hiring and expenditures on durables (Altig et al. 2020). Such hesitation is further reflected into the expectation of no-growth jobs and salaries over 2021. This may also signify that aid for jobs and salaries has been of lower importance for exporters – as opposed for the government – during the crisis, and/or that the labor market during the crisis had been affected in the manner that the pre-pandemic pressure onto wages and jobs is forgone. Therefore, for exporters, while job-retention measures of the kind of "14.500 MKD per worker" which the government pursued both in the spring and autumn of 2020 may not be the key to alleviate crisis effects, it is crucial that any other government measures targeted specifically and explicitly at exporters must incorporate a job-retention component.

The recent empirical evidence shows that smaller companies would be the most severely hit by the pandemic (e.g. Ding et al. 2020; Ramelli and Wagner, 2020). However, our results show that both SME and large exporters, regardless of their turnover levels, similarly suffered during the pandemic with respect to their revenue, investment, capital, employment and salaries growth rates. The notable exception is the greater drop in investment, capital and salaries growth among the SME exporters compared to the drop in rates of large exporters, which may imply that SME exporters are yet more vulnerable which imposes more difficulties in their coping with the crisis. This is likewise reflected in the differences between SME and large exporters in the post-COVID-19 period: large exporters expect significant rise in post-COVID-19 revenue, profit, investment and employment growth rates, while SME exporters would keep their pandemic rates. All exporters are confident regarding their re-capitalization capacities and would not search for additional liquidity on debt markets. Finally, large exporters expect significant acceleration of employment growth, while those with less than 10-million-euro turnover expect a slight acceleration of salaries growth. The former may suggest that job dynamics in large exporters is more succinctly determined by the

demand and should the demand pick up, they could easily restore their employment levels. It could also be the case that large employers have contingents of employees with definite-term contracts, which secured easier way for them to handle the pressure the crisis exerted on the labor market. While this may be an advantage from the company's point of view, the government must consider the potential association between any aid allocated to such companies and the duration of employment contracts (i.e. escape the trap that companies conclude contracts whose duration overlaps the duration of the government aid). However, the change in these growth rates is modest and would not return the growth to its pre-pandemic levels.

The foreign and domestic-owned exporters experience similar declines in investment and employment growth rates during COVID-19. However, foreign exporters' revenue and capital growth declines are significantly larger compared to the domestic exporters' ones. The drop in revenue growth is 14 percentage points, while the drop in capital growth is 16.7 percentage points for foreign exporters. They likewise experienced deeper decline in jobs, but shallower decline in salaries. This may suggest that foreign-owned exporters were less reluctant to fund revenue declines and salaries maintenance from own reserves, likely in an expectation of quicker rebound. Indeed, after COVID-19 period, foreign exporters expect rebound in their revenue, profitability and capital dimensions, and not in investment, while domestic would increase capital and investment growth rates. The expectation of quick rebound by foreign-owned exporters may be advantageous, but their expected lingering hesitancy to invest on the Macedonian market post-COVID-19 may provide some space for a policy intervention whereby such investment to complement the quick activity rebound are encouraged. Such policy intervention may be equally, if not more beneficial for the domestic exporters which reveal lower risk of investment despite the sluggish expected recovery.

Additionally, the period of existence on the Macedonian market plays a significant role in explaining the resilience to the COVID-19 impact. Exporters present on the market more than 20 years suffer less during the pandemic comparing to the 'younger' counterparts. The insignificant drop in revenue and profit growth rates suggest that 'older' exporters have stable (and potentially more diverse) demand. Finally, exporters aged 10 years and more would regain their pre-pandemic capital and investment growth rates during the following year.

Lastly, exporters' extent of exposure to foreign markets, labor intensity and essentiality of their activities during lockdowns[13] are important determinants of their resilience during COVID-19. Exporters with moderate and high percentage of exports in their revenues experienced significant deceleration in revenue, profit and investment growth rates, while those more domestically-oriented curtailed only their investment efforts without significant reductions on their revenues and profitability. Nevertheless, the post-COVID-19 boost on revenue, profit, capital and investment growth is expected for those more exposed to foreign markets, which may signify that for those less-exposed the negative shock has been slow or extended. Namely, the 'low-export-share' exporters would experience a slowdown in their revenue growth compared to the during-COVID-19 growth rates.

While this result seems surprising, the division of exporters on essential and non-essential provides reasonable explanation. Obviously, more of the domestically-oriented companies come from the essential sectors, such as manufacturing and retail of food, drinks, tobacco and pharmaceuticals, which had steady growth rates during COVID-19 facing an abnormal demand for their products.[14] As expected, the non-essential sectors suffered the most during the pandemic, although they expect to recover with respect to their revenue, profit and capital growth rates in the following period.

[13] The Macedonian government provided strong recommendations and protocols for individual behavior, as well as decided the temporary suspension (lockdown) of almost all economic sectors. Industries were suspended with the exception of those considered "essential activities" necessary to either survival of the population or to the full operation of the healthcare sector.

[14] Balla-Elliot et al. (2020) find that businesses deemed essential are less likely to be temporarily closed.

Table 3: Demography of the changes in key company variables during COVID-19

		Change in revenue growth (p.p)		Change in profitability growth (p.p)		Change in investment growth (p.p)		Change in capital growth (p.p)		Change in debt growth (p.p)		Change in employment growth (p.p)		Change in salary growth (p.p)	
		Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19
	Sample average	**-8.89*** **	**5.26***	**-6.60***	**7.54***	**-9.59*** **	**5.71***	**-13.23*** **	**7.49*** **	1.02	0.93	**-9.42*** **	2.33	**-5.51*** **	1.37
Turnover	Less than 10 mil.	**-7.34***	4.01	-5.86	2.90	**-8.59** **	6.22	**-13.74*** **	**9.30** **	**-3.24†**	3.41	**-9.71** **	2.31	**-5.69*** **	**2.36***
	More than 10 mil.	**-10.43** **	**6.50†**	-7.63	**12.93***	**-10.51***	5.14	**-12.48*** **	**5.49†**	5.13	-1.27	**-9.11** **	2.39	**-5.40*** **	0.54
Size	SMEs	**-9.00†**	3.52	-7.01	4.27	**-11.84** **	3.95	**-17.56*** **	**8.23***	-3.48	2.41	**-8.28†**	1.36	**-7.40*** **	1.20
	Large	**-8.78*** **	**6.22***	-6.40	**9.66***	**-8.21***	**6.59†**	**-10.61*** **	**7.00** **	3.47	0.24	**-10.08*** **	2.99*	**-4.55*** **	1.50
Ownership	Domestic	-4.54	1.71	-4.47	1.59	**-10.22*** **	**7.22***	**-10.32** **	**5.40***	0.42	0.82	**-8.72** **	2.69	**-7.09*** **	1.26
	Foreign	**-14.00*** **	**9.38** **	-9.22	**14.88** **	**-8.84†**	3.88	**-16.67*** **	**9.98** **	1.92	0.89	**-10.30** **	1.94	**-3.63** **	1.53
Age	up to 10 years	**-12.41***	5.86	-3.01	11.14	0.12	-6.93	**-19.54** **	4.63	2.77	-0.50	**-14.57***	-0.08	-1.57	1.70
	10 to 20 years	**-11.72** **	4.62	**-15.44** **	**12.83***	**-16.75*** **	**13.87** **	**-16.64*** **	**9.41***	2.28	1.63	**-13.72** **	3.11	**-7.62*** **	2.24
	over 20 years	-5.26	5.52	-0.11	0.59	**-8.39** **	**5.22†**	**-6.47** **	**6.97** **	-1.15	1.23	**-3.02†**	3.01†	**-5.88*** **	0.29
Export share	Low	0.35	**-10.18** **	-4.60	-0.56	**-8.28***	3.28	**-13.51** **	4.88	3.18	0.29	**-12.01†**	3.49	**-4.64***	-1.46
	Moderate	**-12.68** **	**8.82†**	**-8.22†**	6.17	**-11.32*** **	**7.29** **	**-8.78** **	**7.62** **	-0.48	-1.11	**-3.43†**	2.35	**-7.50*** **	**4.08** **
	High	**-11.79** **	**13.27*** **	-6.13	**15.86***	-8.71	5.64	**-18.24*** **	**9.28***	1.27	3.63	**-10.40** **	1.46	**-3.87***	0.32
Labor intensity	Low	**-10.69** **	5.42	-2.99	5.12	**-7.47***	**7.95†**	**-11.66*** **	**6.52***	1.72	1.70	**-11.75** **	**4.47***	**-4.38** **	1.22
	High	**-6.70†**	5.05	**-11.13** **	**10.53** **	**-12.16** **	2.82	**-15.03*** **	**8.55** **	0.23	-0.15	**-6.48***	-0.40	**-6.89*** **	1.60
Sector	Non-essential	**-11.51*** **	**8.43** **	**-9.51***	**11.45** **	**-10.76*** **	6.10	**-16.53*** **	**8.22** **	-0.03	1.94	**-12.95*** **	2.30	**-5.41*** **	0.42
	Essential	-3.94	-0.95	-1.24	-1.39	-6.49	4.40	**-6.32***	**6.26***	3.72	-2.12	-1.41	2.32	**-5.94*** **	**3.44***

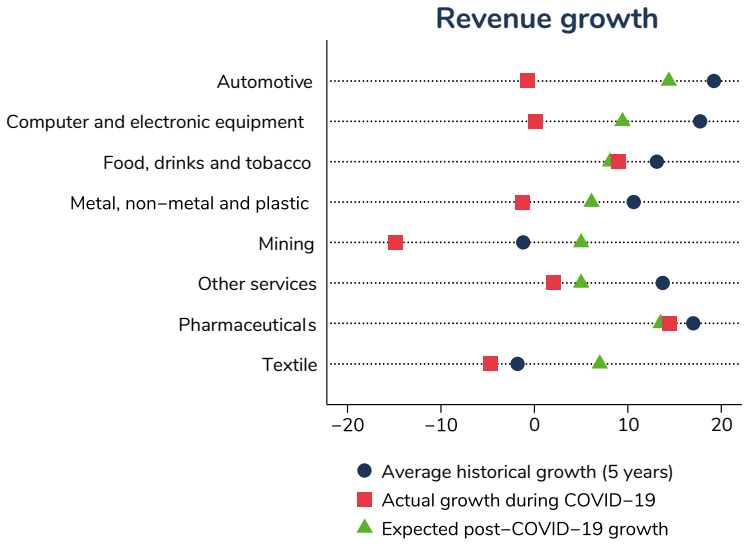
Notes: The groups are formed using the following classifications: Turnover – whether the company reported more or less than 10 million euro turnover; Size – whether the company reported more (Large) or less (SME) than 100 employees; Ownership – whether the company has more (Foreign) or less (Domestic) than 50% of foreign capital in total capital; Age – whether the company exists up to 10 years, 10 to 20 years or over 20 years; Export-share – whether the company reported up to 50% (Low), 50% to 90% (Moderate), or more than 90% (High) share of exports in total revenue; Labor intensity – whether the company reported that the employees' salary costs to total costs are more (High) or less (Low) than 15%; Sector – whether the company belongs to the following sectors: Manufacturing and retail of food, drinks, tobacco and pharmaceutical products is deemed as an essential during COVID-19. If outliers identified, the data was winsorized at the 1st and/or 99th percentiles. ***, **, * and † denote significance at 1%, 5%, 10% and 15%, respectively.

Finally, exporters with high labor intensity received stronger hit in their revenue, profitability, investment and capital growth rates, while milder hit in their employment growth rates compared to their counterparts with low labor intensity. This could be also a result of the interference of the government job-retention measure "14.500 MKD per worker". In absence of such measures, the demise of labor-intensive sectors would translate in augmented disruptions in domestic demand (Carletti et al. 2020). However, the expected slower rebound among labor intensive exporters may signify that policy interventions exclusively focused on jobs and wages may keep employment up only artificially (i.e. implicitly entice their plummeting once such aid is over), which then gears the need towards a government support addressing company's fundamentals (how to spur investment and revenues). Subsequently, exporters' attempt to retain their employees put pressure on their capital and profit positions. In the following period, those with higher level of technological development (low labor intensity) would drive the recovery in the capital, investments and employment. This suggests that policy measures directed towards incentivizing automation of production processes would prepare companies to soundly withstand similar labor shocks albeit high-skilled labor market tightness constraining the adoption of high-tech solutions.

4.2. Sectoral disaggregation of the impact

In the next step, we disaggregate the data on sectoral level to provide more granular analysis of the impact. Figure 1 shows the reported revenue growth before, during and after COVID-19 by sectors. The distance between the historical growth rate and COVID-19 growth rate is greatest for the automotive, computer and electronic equipment manufacturers highlighting the most severe impact among the sectors. Their revenue growth rates entered negative territory during COVID-19 and largely rebound after COVID-19 comparing to the other sectors' growth rates, however they could not reach the pre-pandemic levels. The patterns are similar for the metal, non-metal and plastic industries. The mining sector is severely affected by the crisis reaching -15% revenue growth with modest expected post-COVID-19 growth of 5%. The sectors deemed essential (Food, drinks and tobacco, and Pharmaceuticals) retain their revenue growth rates before, during and after the pandemic. While positive, the revenue growth rates of services exporters dropped compared to their pre-pandemic levels. Finally, the textile industry shows optimistic patterns exiting the negative pre-COVID-19 and COVID-19 growth territory in the following period.

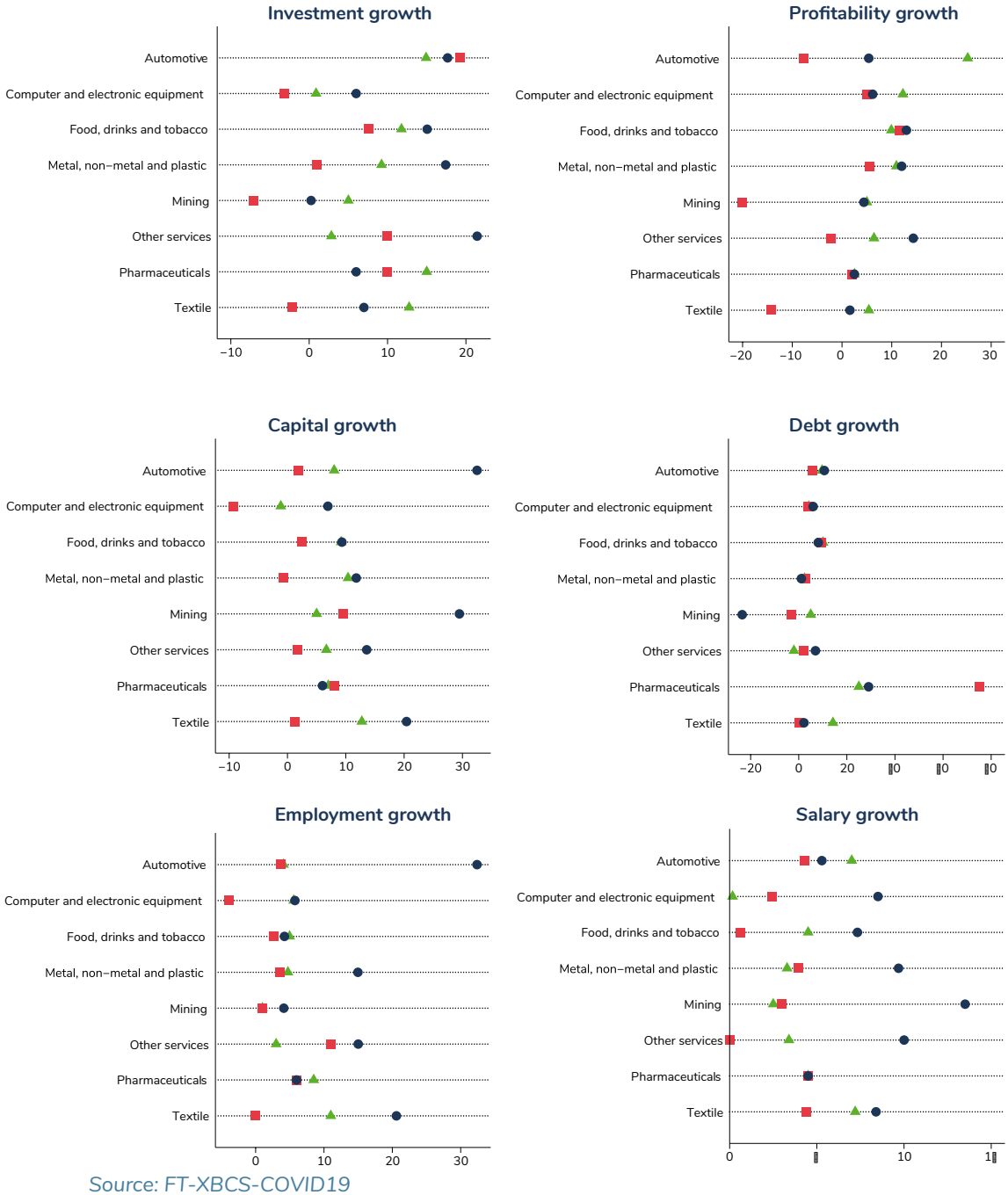
Figure 1: Changes in company revenues during COVID-19 by sector



Source: FT-XBCS-COVID19

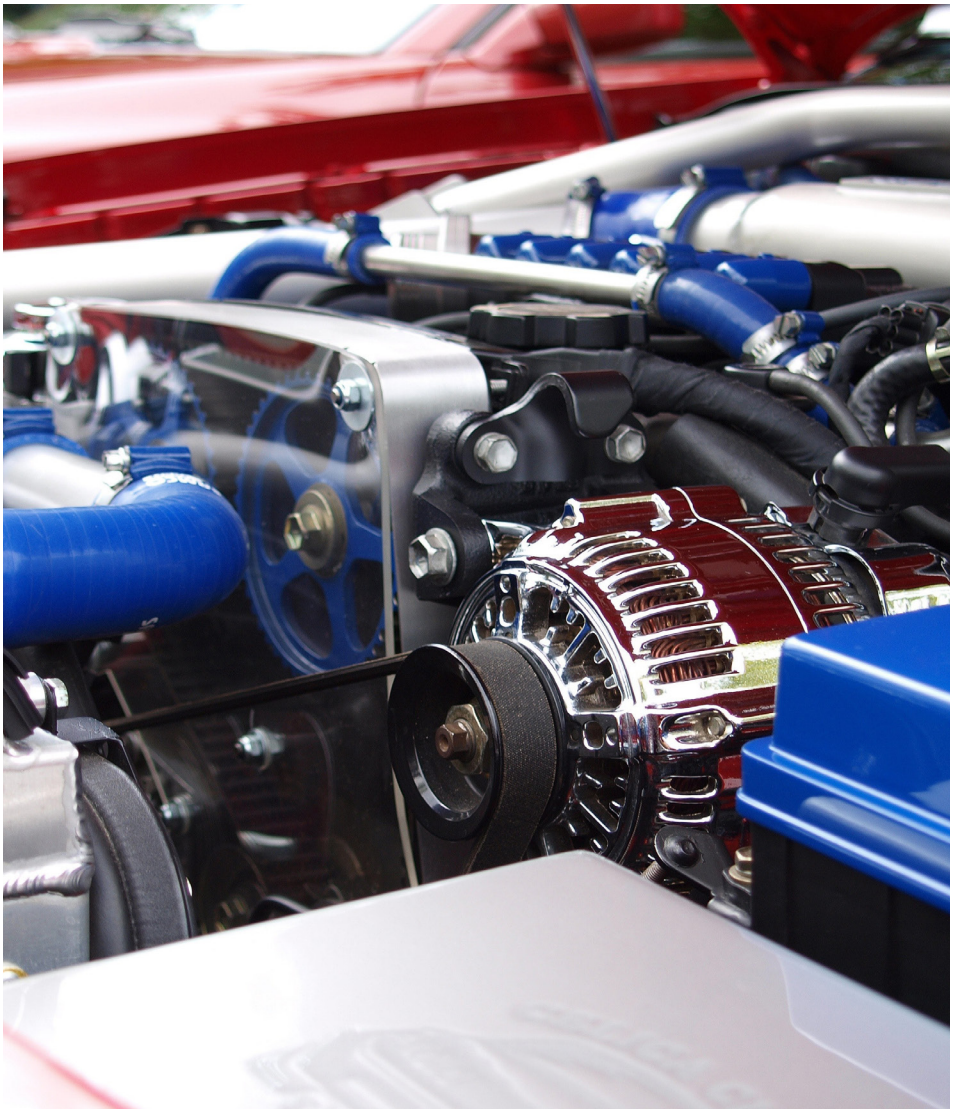
We graph the cross-sectoral patterns for the other dimensions in Figure 2. Automotive sector together with the essential sectors retain its pre-pandemic investment activity besides the significant deceleration of revenue growth. There are two possible reasons. Firstly, this could be potentially related with the swift revival of China's market, where the automotive sector mainly imports from, which mitigates the supply-chain shocks and retains the investment sentiment despite the sluggish demand. Secondly, the inertia of the investment growth as companies that initiated investments in the previous years continue up to their completion in the upcoming period. The textile sector expects improving investment activity after-COVID-19 period. Automotive, mining and textile sectors are the most severely hit by the crisis in terms of their profit growth. The capital and debt growth patterns are similar across the sectors, except for the pharmaceutical sector where the capital growth is steady and modestly positive, while debt significantly increases during COVID-19, apparently to meet the increasing demand. The employment growth during COVID-19 approaches zero for almost all sectors, while only textile and pharmaceutical sectors show tendencies for improvement in employment after COVID-19. Finally, the salaries growth decelerates for almost all sectors, but remains positive during and after the pandemic.

Figure 2: Changes in key company variables during COVID-19 by sector



Source: *FT-XBCS-COVID19*

The general conclusion is that most of the sectors **would not recover to the pre-pandemic levels next year**. However, the hardest-hit and most-export-oriented sectors, namely: automotive; electronic and computer equipment; metal, nonmetal and plastic sectors tend to bounce back faster in terms of revenue growth. While, mining and textile sectors are likely to maintain their levels during the crisis setting a stepping stone for the post-COVID-19 period. The leading role in investments will rest in pharmaceutical and automotive sectors. Profitability is geared positively for those export-led sectors positioned to take advantage of the post-COVID-19 global boost, such as: other services; pharmaceuticals; metal, nonmetal and plastic; and food, drinks and tobacco sectors.



5. Patterns of spillover of COVID-19 crisis on export-oriented companies

5.1. The role of underlying channels

In this section, we aim to disentangle the relative importance of the various channels through which the pandemic of COVID-19 affected export-oriented companies. Hence, we first define these channels as follows:

- Liquidity channel;
- Supply-chain channel;
- Demand channel;
- Human capital channel.

To measure the various channels, we use several variables available in our survey, given in Table 4.

We start the analysis by providing estimates of the Kaiser-Meyer-Olkin (KMO) test and the Bartlett's test of sphericity (Hill, 2011). Both tests are important to determine if data is good to be grouped in several underlying factors; in particular, the KMO test indicates if data factors well. Table 5 provides a KMO value of 0.538, which is above the threshold of 0.5 (Kaiser, 1974) suggesting that we could proceed with factor analysis in this case. Similarly, the Bartlett's test rejects the null hypothesis that variables are not correlated, providing grounds for conducting a factor analysis.

Next, we proceed with the factor analysis. As usual in the literature, we consider only the factors whose estimated eigenvalue is higher than 1 (Kaiser, 1960), and retain only factor loadings whose absolute value exceeds 0.4[15]. Based on this, we obtain the following output. Table 6 presents the identified factors (25, equal to the number of used variables); only the first six factors have an eigenvalue greater than 1, so that we continue with these factors. In addition, they explain the ~86% of the variance in our data, supporting the notion that six concepts (factors) are sufficient to explain our data.

[15] Tabachnick and Fidell (2014) recommend ignoring factor loadings with an absolute value less than 0.32; Field (2013) recommends doing so when factor loadings are lower than 0.3. We would like to be a step more cautious here, given the sample of companies is less than 100, and decide to drop factor loadings lower than 0.4. You may check the discussion in Stevens (2012) on the potential relation between the sample size and acceptable factor loadings.

Table 4: COVID-19 channels and their corresponding questions

Liquidity channel		**Supply-chain channel**		**Demand channel**		**Human capital channel**	
Variable	*Question*	*Variable*	*Question*	*Variable*	*Question*	*Variable*	*Question*
Liquidity problem	Select the importance of liquidity constraints that your company faces with in the midst of the COVID-19 crisis? (1 not important; 7 very important)	Supply chain problem	Select the importance of supply chain problems that your company faces with in the midst of the COVID-19 crisis? (1 not important; 7 very important)	Demand problem	Select the importance of demand problems that your company faces with in the midst of the COVID-19 crisis? (1 not important; 7 very important)	Human resources problem	Select the importance of problems with human resources management that your company faces with in the midst of the COVID-19 crisis? (1 not important; 7 very important)
Recapitalization	In what capacity could your company support its liquidity through capital increase (own funds, retained earnings, capital from parent company etc.) (1 low capacity; 7 high capacity):	Material supplier constraint	How difficult is for your company to find raw material supplier in the country or abroad to avoid interruptions in the production process if the existing supplier should be replaced? (1 very easy; 7 very difficult)	Output price change	Have the prices of your products/ services changed after the start of the pandemic? (1 - Yes, increased on average; 2 - No change; 3-Yes, decreased on average)	High skilled layoffs	How many high-skilled layoffs did you make because of COVID-19? (number of layoffs)
Borrow from financial institutions	In what capacity could your company support its liquidity through borrowings from financial institutions (1 low capacity; 7 high capacity):	Machinery supplier constraint	How difficult is for your company to find machinery and equipment supplier in the country or abroad to avoid interruptions in the production process if the existing supplier should be replaced? (1 very easy; 7 very difficult)			Medium skilled layoffs	How many medium-skilled layoffs did you make because of COVID-19?
Borrow from non-financial institutions	In what capacity could your company support its liquidity through borrowings from non-financial institutions (1 low capacity; 7 high capacity):	Service supplier constraint	How difficult is for your company to find service supplier in the country or abroad to avoid interruptions in the production process if the existing supplier should be replaced? (1 very easy; 7 very difficult)			Low skilled layoffs	How many low-skilled layoffs did you make because of COVID-19?

Sale of assets	In what capacity could your company support its liquidity through sale of fixed assets (1 low capacity; 7 high capacity):	Material procurement change	What was the percentage change (increase/decrease from the previous question) in raw materials procurement in the first 3 trimesters of 2020 with respect to the same period last year?		High skilled salary	Did you decrease the high-skilled employees' salaries because of COVID-19? (1 – yes; 0 -no)
Sale of financial assets	In what capacity could your company support its liquidity through sale of financial investments (1 low capacity; 7 high capacity):	Machinery procurement change	What was the percentage change (increase/decrease from the previous question) in machinery and equipment procurement in the first 3 trimesters of 2020 with respect to the same period last year?		Medium skilled salary	Did you decrease the medium-skilled employees' salaries because of COVID-19? (1 – yes; 0 -no)
		Service procurement change	What was the percentage change (increase/decrease from the previous question) in services procurement in the first 3 trimesters of 2020 with respect to the same period last year?		Low skilled salary	Did you decrease the low-skilled employees' salaries because of COVID-19? (1 – yes; 0 -no)
		Input substitution	Do the critical inputs have substitutes on domestic market? (1 - Yes, all of them; 2 - Yes, some; 3- No; 4 - I do not know)		Work from home	What is the percentage of employees in your company who work from home since the start of the pandemic?
		Input price change	Have the prices of inputs changed after the start of the pandemic? (1 - Yes, increased on average; 2 - No change; 3-Yes, decreased on average)			

Source: FT-XBCS-COVID19

Table 5: Tests for data factoring

Test	Value
Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy	0.538
Bartlett's test of sphericity H0: variables are not inter-correlated (p-value)	0.000

Source: Authors' calculations

Table 6 presents the factor loadings on the various variables we use throughout the analysis. The results are quite indicative, as all six identified factors could be clearly connected with the potential channelling of the COVID-19 for the export-oriented companies in North Macedonia.

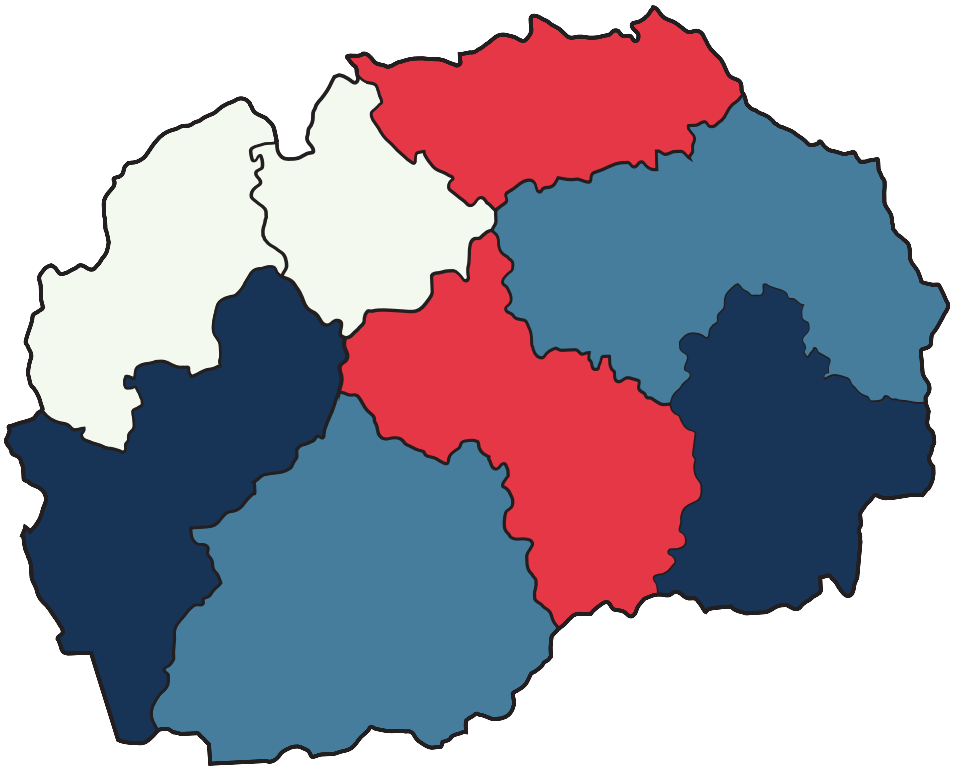


Table 6: Identification of factors

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	4.14988	0.74995	0.2419	0.2419
Factor2	3.39993	1.08315	0.1982	0.4401
Factor3	2.31678	0.27508	0.135	0.5751
Factor4	2.0417	0.33988	0.119	0.6941
Factor5	1.70182	0.56284	0.0992	0.7933
Factor6	1.13898	0.19955	0.0664	0.8597
Factor7	0.93943	0.40865	0.0548	0.9144
Factor8	0.53078	0.05848	0.0309	0.9454
Factor9	0.4723	0.08394	0.0275	0.9729
Factor10	0.38837	0.0638	0.0226	0.9955
Factor11	0.32457	0.06601	0.0189	1.0145
Factor12	0.25856	0.04855	0.0151	1.0295
Factor13	0.21	0.03995	0.0122	1.0418
Factor14	0.17005	0.03772	0.0099	1.0517
Factor15	0.13234	0.10946	0.0077	1.0594
Factor16	0.02287	0.03221	0.0013	1.0607
Factor17	-0.00934	0.0415	-0.0005	1.0602
Factor18	-0.05083	0.00962	-0.003	1.0572
Factor19	-0.06046	0.03211	-0.0035	1.0537
Factor20	-0.09257	0.0261	-0.0054	1.0483
Factor21	-0.11867	0.0214	-0.0069	1.0414
Factor22	-0.14007	0.01731	-0.0082	1.0332
Factor23	-0.15737	0.03593	-0.0092	1.0241
Factor24	-0.1933	0.02604	-0.0113	1.0128
Factor25	-0.21934	.	-0.0128	1

Source: Authors' calculations

The first factor has major importance and explains 24.1% of the total variance. Major part of this factor relates to supply chain channel. The factor depicts the first COVID-19 shock, which was transmitted through imposing difficulties in transportation and movements, as well as reflecting the negative effects from the early lockdown in China, hence affecting a set of multinationals who sourced inputs from there. Macedonian

companies are dependent on the global economy as most of their inputs, especially raw materials, machinery and equipment, are imported. This suggests that should the crisis linger, the supply side will continue exerting important leverage onto exporters, hence impinging on their production, jobs and salaries, even if the demand picks up. The importance of the supply chain factors may suggest two important information for policies: first, if other segments of the supply chain decide to relocate in order to ameliorate such global problem, then domestic policies may be tailored towards attracting such relocations nearby; and second, if at least some of the segments may be replaced by being sourced into the domestic economy (or regionally), then such rooting may be encouraged despite may take time.

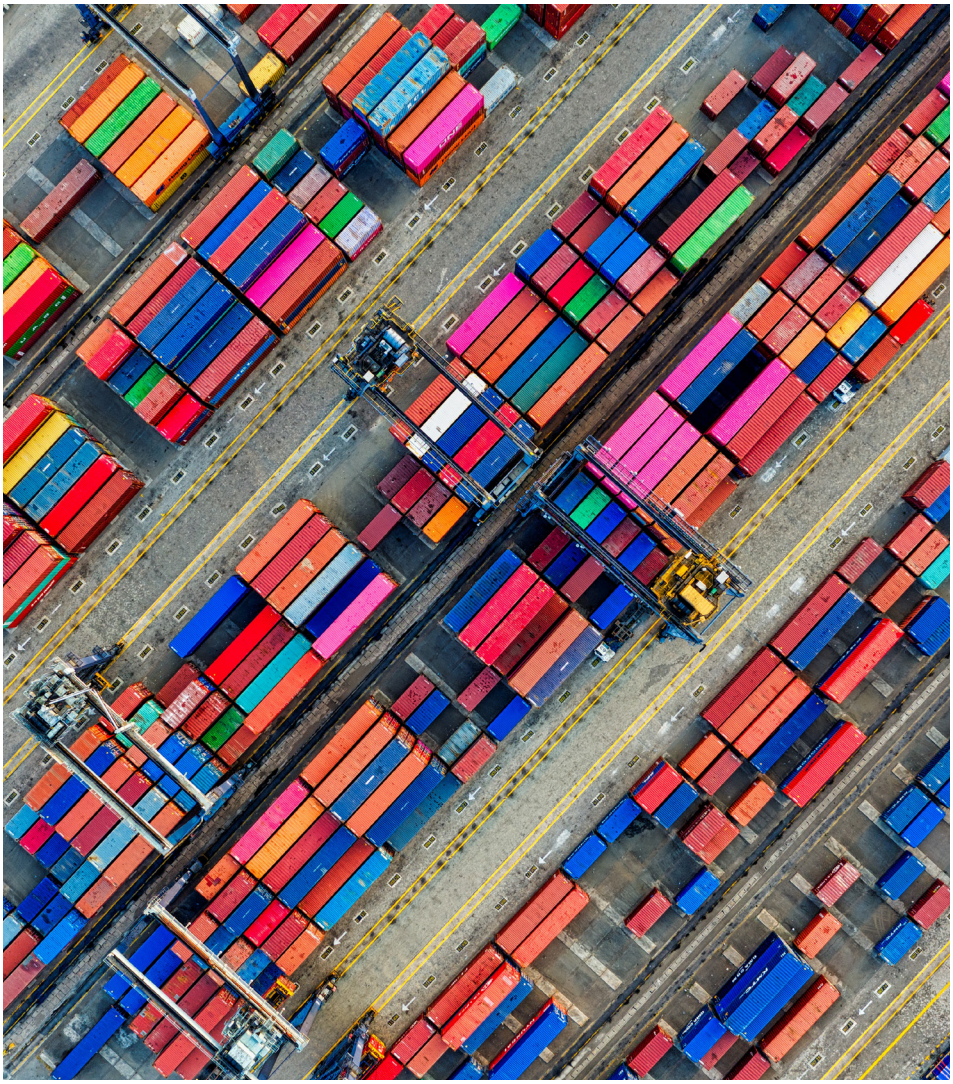


Table 7: Factor loadings

	Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Liquidity channel	Liquidity problem					0.4403	
	Recapitalization						0.495
	Borrow from financial institutions					0.414	0.4685
	Borrow from non-financial institutions						0.8156
	Sale of assets		-0.4278				0.5878
	Sale of financial assets		-0.4069			-0.4906	0.4103
Supply -chain channel	Supply chain problem	0.57				0.5521	
	Material supplier constraint	0.8282					
	Machinery supplier constraint	0.8796					
	Service supplier constraint	0.8471					
	Material procurement change			0.8837			
	Machinery procurement change			0.8063			
	Service procurement change			0.8804			
	Input substitution				0.4903		
	Input price change				0.7117		
Demand channel	Demand problem			-0.4069	0.4447	0.4533	
	Output price change				0.7062		
Human capital channel	Human resources problem					0.533	
	High skilled layoffs	-0.4227				-0.5196	
	Medium skilled layoffs						
	Low skilled layoffs						
	High skilled salary		0.8416				
	Medium skilled salary		0.8723				
	Low skilled salary		0.7677				
	Work from home						

Source: Authors' calculations

The second factor has mixed loadings on variables related to the workforce channel (particularly salaries) and the liquidity channel, suggesting that these have been the second important factor for export-oriented companies. In general, liquidity alone is not the most important factor, albeit the liquidity variables in the second factor primarily explain the (changes in) liquidity management strategy applied by companies due to COVID-19. This may suggest that for exporters, on average, job-

retention measures of the type of "14.500 MKD per worker" may not be crucial for their fairing through the crisis, while for the society they may represent a clear deadweight loss if awarded to companies who continue experiencing problems on another more important fronts (like breaks in the supply chain). The lockdown in April and May, and the reduced production exerted pressure on companies to reduce employees' salaries and seek for additional liquidity, mainly through the sale of fixed and financial assets. The second factor explains additional 19.8% of the total variance in our data.

The third and fourth factors are clearly depicting to demand problems and changed inputs prices. From one side, the sharp contraction in the global economic activity reduced demand. On the other side, the prices of raw materials, machinery, equipment and services changed, while to a large extent companies faced challenges to find input substitutes on the domestic market. These variables describe the third and fourth factors that explain additional 13.5% and 11.9% of the total variance. These factors suggest that should relocation of other chain segments occur, the demand shock may be likewise alleviated to a limited extent.

The fifth factor is a mix of demand, workforce and liquidity channels. This can be explained by the strong correlation (or causality) between reduced demand and the need to secure (additional) liquidity combined with the pressure to lay off workers. It is likely that these variables reflect the COVID-19 shock which strengthened in the later phases of the pandemic. It explains 9.9% of the variance in our data. The sixth factor speaks about the liquidity channel solely and explains a small portion of 6.6% of the variance in our data.

Overall, the factor analysis suggests that in North Macedonia, there are four interlaced themes underlying channels of influence of COVID-19 crisis on export-oriented companies (in order of significance): **supply problems** related to difficulties of the companies to source suppliers in the country or abroad to avoid interruptions in the production process and in the changed prices of inputs; **reduced demand; pressure to decrease employees' salaries** and reduce number of workers; and to manage **liquidity challenges**, mainly due to reduced demand and workforce pressures.

5.2. Companies' characteristics relevant for exporters' resilience

The previous analysis provides insights about the variation generated solely from the FT-XBCS-COVID19 with respect to the pre-defined themes, however it does not delve inside these themes in detail and does not account for the direction of influence of each of the factors. In the next stage, we uncover which company characteristics, with respect to the themes defined, are relevant for the resiliency of exporters to the COVID-19 shock and for their recovery after COVID-19. In addition to the FT-XBCS-COVID19 data, we extract data from the exporters' 2019 financial statements to create continuous variables to explain the variation of our dependent variables to a larger degree. We focus on four output dimensions: revenue, profitability, investment and employment growth. We regress the difference in growth rates before and during COVID-19, as well as the difference in growth rates during and after COVID-19 on various factors within the defined themes (liquidity, supply-chain, human capital, demand and competitiveness), controlling for the age, export share, size and investment type.

Table 8 reports the definitions of the variables and the results of eight regressions on revenue, profitability, investments and employment growth changes during COVID-19.[16] Each dependent variable is regressed on the same groups of factors. To examine the relevance of liquidity constraints on COVID-19 impact, we define three ratios: Capital to Assets, Cash and short-term financial investments to Assets and (Long- and short-term) Debt to Assets ratio. The results show that the **access to finance** plays crucial role in mitigating the COVID-19 impact on revenue, profitability, investment and employment growth. Exporters with high debt to assets ratio suffer less during COVID-19 due to their ability to exploit the access to debt markets in case of liquidity emergency. Similarly, the better capitalized exporters experience lower drops in growth rates, but the greater capital buffer is only relevant to alleviate the drop in investment growth. While we expected exporters with accumulated liquidity (higher cash/assets ratio) to withstand the initial shock on revenue growth, the coefficient is negative and significant at the 10% confidence level. The exporters decided to leverage the enhanced access to debt markets during the crisis rather than to deplete their cash reserves. Acharya and Steffen (2020) argue that companies with higher credit risk increased their cash holdings drawing from credit lines at the beginning of the pandemic to avoid heightened financing constraints later.

[16] We run OLS regressions with robust standard errors without weight corrections. Additionally, we re-run the same regressions applying the ES2019 weights and the results remain qualitatively similar.

Possibly, the exporters with lower cash reserves replenished their liquidity through the debt markets to retain their access to finance, suffering less during the pandemic. The post-COVID-19 results clarify the whole picture with respect to the liquidity constraints. The greater reliance on debt markets would keep the post-COVID-19 revenue, profit and employment growth rates at slower pace, while the liquidity buffer would provide swift response to the post-COVID-19 increasing demand.

The supply chain disruptions reflect on growth rates depending on exporters' procurement constraints and are more pronounced in exporters with lower inventories, lower substitutability of inputs, lower ability to replace imports, more concentrated sectoral and geographical exposures. On the other hand, we find that exporters with high inventory to assets ratio are severely affected during the crisis with respect to their revenue, profit and investments growth rates. This result suggests that demand shock prevails and exporters suffered due to their increasing costs for inventories management during the crisis. Additionally, the exporters more exposed to the manufacturing sector with respect to their procurements, experienced weaker hit on their profit growth rates, while importers from EU countries encountered stronger deceleration of their profit, investment and employment growth rates. Arguably, the importers from non-EU countries, especially China, suffered less due to the quick acceleration of the Chinese economy after the initial impact. This is in line with Bonadio et al. (2020) who show that the reopening of large economies (such as China) would have significant transmission effects on other economies. The exporters with lower flexibility to replace disrupted imports, with higher manufacturing and EU exposure expect lower post-COVID-19 revenue and profit growth rates. The disrupted supply chain undermines exporters' confidence to respond to the post-COVID-19 improving demand. The exporters' inventory capacity and input substitutability help them to overcome supply chain problems and accelerate employment growth. While the EU importers expect slower revenue and profit growth rates, the acceleration is expected with respect to the investments and employment comparing to the non-EU importers.

Table 8: Channels of transmission and changes in key company variables during COVID-19

		Change in revenue growth (p.p)		Change in profitability growth (p.p)		Change in investment growth (p.p)		Change in employment growth (p.p)	
	VARIABLES	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19	Before-During COVID-19	During-After COVID-19
Access to finance	Cap./Assets	0.14	-0.09	0.20	-0.13	**0.24†**	0.04	-0.08	0.04
	Cash/Assets	**-0.39***	**0.29***	-0.24	-0.05	-0.28	-0.17	0.08	0.01
	Debt/Assets	**0.51*****	**-0.44*****	**0.53****	**-0.52****	0.22	0.002	0.20†	**-0.11†**
Supply chain	Inventory/ Assets	**-0.39***	0.21	**-0.43***	0.26	**-0.48***	0.22	-0.25	**0.27*****
	Input subs.	1.18	5.81	-5.82	5.20	9.27	2.15	-0.72	**5.61†**
	Import repl.	8.06	**-12.66†**	3.68	-14.61	8.29	-0.48	0.12	0.31
	Input_man.	-3.98	-2.31	**39.59*****	**-32.12†**	20.33	-12.78	13.56	-6.71
	EU-import	5.38	**-10.18†**	**-16.39†**	8.63	**-16.79†**	**20.80***	**-22.72***	**9.18****
Human capital	LS workers	**-18.18***	9.05	-7.94	2.45	-8.42	-19.63	-0.46	-2.91
	MS workers	**14.25†**	-5.77	12.30	-8.93	2.86	10.33	12.34	-4.56
	HS workers	6.87	-6.70	-11.34	12.17	3.11	6.05	-7.22	2.97
	Labor inten.	**-12.37****	5.03	-9.60	6.54	-5.09	**-15.67†**	-0.60	0.79
Demand	Demand shock	**-26.55****	**29.64****	-5.64	2.76	**-20.61****	5.28	-1.46	7.15
	Output man.	8.56	8.67	-14.56	23.91	-17.14	0.77	2.91	4.55
	EU-export	5.95	-2.47	17.09	-8.91	**22.17***	-0.44	-3.43	6.06
Competitive	Output price	2.57	**-14.21****	**17.30****	**-18.39***	-6.46	-6.80	3.41	2.67
	Oper. profit	**0.29****	**-0.29****	0.25	**-0.31***	-0.09	-0.07	**0.30***	**-0.17***
	Constant	14.18	**-49.48***	-40.03	19.28	-40.66	4.31	-33.67	-20.92
	Controls	Included	Included	Included	Included	Included	Included	Included	Included
	Obs.	60	61	60	63	65	62	64	63
	R-sq.	0.52	0.64	0.52	0.44	0.38	0.38	0.44	0.47
	F-stats.	2.43	2.92	2.79	2.07	1.34	1.11	1.74	2.32

Notes:
*Definitions of variables: Cap./Assets=(Assets-Liabilities)/Assets (%); Cash/Assets=(Cash+Short-term financial investments)/Assets (%); Debt/Assets=(Short-term debt+Long-term debt)/Assets (%); Inventory/Assets=Total inventory/Assets (%); Input subs. (binary) – 1 if all or some of the key inputs have substitutes on domestic market, 0 otherwise; Import repl. (binary) – 1 if the company has no possibility to replace disrupted import, 0 otherwise; Input man. (binary) – 1 if the company purchases more than 50% of its procurement from manufacturing sector, 0 otherwise; EU-import (binary) – 1 if the company purchases more than 50% of its procurement from EU; LS workers (binary) – 1 if the company reported that it is difficult to find low-skilled workers on market at level 5,6 and 7 on 7-poing Likert scale; MS workers (binary) – 1 if the company reported that it is difficult to find medium-skilled workers on market at level 5,6 and 7 on 7-poing Likert scale; HS workers (binary) – 1 if the company reported that it is difficult to find high-skilled workers on market at level 5,6 and 7 on 7-poing Likert scale; Labor inten. (binary) – 1 if the company reported that the employees' salary costs to total costs is more than 15%, 0 otherwise; Demand shock (binary) – 1 if the company reported that demand problem is important at level of 5, 6 and 7 on 7-point Likert scale and that it would target new markets due to disrupted demand, 0 otherwise; Output man. (binary) - 1 if the company sells more than 50% of its products/services to manufacturing sector, 0 otherwise; EU-export (binary) - 1 if the company sells more than 50% of its products/services to EU; Output price (binary) – 1 if the company reported that its output prices increased during COVID-19; Oper. profit – (Operating revenues-Operating costs)/Assets (%); Controls: Age (log) – the time of presence on the Macedonian market; Export share – the share of exports in total sales (%); Assets (log) – Total Assets in 2019 (in denars); Greenfield inzone (binary) – 1 if the company is greenfield investment located in TIDZ, 0 otherwise; Greenfield outzone (binary) – 1 if the company is greenfield investment located out of TIDZ, 0 otherwise; Brownfield (binary) – 1 if the company is brownfield investment; Joint venture (binary) – 1 if the company is joint investment of domestic and foreign capital, 0 otherwise (the reference category for the investment type binary variables is the company which is completely domestic investment); If outliers identified, the data was winsorized at the 1st and/or 99th percentiles. ***, **, * and † denote significance at 1%, 5%, 10% and 15%, respectively.*

The primary government and companies' concern during the crisis was job retention. This issue is especially relevant for labor-intensive sectors where COVID-19 downward pressures on revenues depleted companies' profits as employees' costs remained fixed. Moreover, the lack of skilled labor augments the severity of COVID-19 impact. Table 8 shows that labor-intensive exporters suffered considerably experiencing drop in their revenue and profit growth rates. As literature suggests, the automation reduces susceptibility to labor supply shocks caused by the pandemic (Caselli et al. 2020; Chernoff and Warman, 2020). Moreover, the difficulties in finding low-skilled workers induce exporters to refrain from downsizing resulting in decelerated revenue and profit growths. Barrero et al. (2020) argue that COVID-19 instigates job reallocation shocks as the portion of workers who lost their jobs would find alternative jobs in other sectors. Given the difficulty in finding new workers, the exporters tend to retain their workers during the pandemic. The exporters constrained in finding medium-skilled workers were less affected during the crisis. One possible explanation could be the capacity of exporters to allow their workers to work from home (WFH). Those more constrained to find medium-skilled workers may have higher WFH capacity, thus making them less affected during administrative closings (Gottlieb et al. 2020a). The inability to find appropriate skills does not play significant role in the post-COVID-19 period, possibly due to increase in labor supply as many become unemployed and search for a new job. However, the more capital-intensive exporters would significantly accelerate their investments in the post-COVID-19 period.

The pandemic caused a significant slump in consumption largely hurting downstream companies. Customers have changed their behavior during the pandemic which may result in persistent demand sluggishness in the following period. To assess company exposure to demand shocks, we construct variables that measure the company exposure to demand problems, to specific sector (manufacturing) and to specific region (EU). The results show that companies which reported high importance of the demand problem during the pandemic have significant reduction in their revenue and investment growths. However, if the company has directed higher percentage of its sales to the EU region, it better sustained its investment activity during the pandemic comparing to its counterparts which largely sell to non-EU countries. The last evidence highlights the positive external shocks which arise from the differential geographical exposures of exporters. In the post-COVID-19 period, the companies more susceptible to demand shocks expect rebound in demand and improved revenue growth rates, however the improvement in demand would not translate in acceleration of profit, investment and employment rates.

Finally, the literature suggests that competitiveness plays crucial role in ameliorating exporters' capacity to cushion the pandemic shocks, however these shocks may in turn impair their competitiveness in the post-COVID-19 period. We expect exporters which were able to increase their prices during the pandemic and which had higher mark-up (operating profit) would better weather the crisis. Table 8 shows that the more competitive exporters (with higher operating profitability and increased output prices) suffer less with respect to their revenue, profitability and employment growth rates during the pandemic. As Hyun et al. (2020) find that companies with higher mark-up fare better during the pandemic. However, the more competitive exporters expect slower post-COVID-19 revenue, profitability and employment growth. This might be an indication of harmed competitiveness in the following period. Fernandes and Tang (2020) argue that export disruptions during SARS epidemic in China had medium-term impact on export and import growth rates. Regarding the controlling variables, the investment type significantly explains the pre-COVID-19 and post-COVID-19 growth rates, while age and export share only the post-COVID-19 growth rates. The greenfield investments in the TIDZ and brownfield investments experienced severe drops in revenue, profit and investment growth rates, however they expect significant rebound in the post-COVID-19 period in the same dimensions. The older exporters would accelerate their sales, investment and employment growth rates in the following period.

In summary, the movements of COVID-19 and post-COVID-19 revenue, profit, investment and employment growth rates are determined by the differential access to finances, supply-chain considerations, human capital constraints, demand shocks and competitiveness. Firstly, exporters leverage debt markets not only to cover the liquidity gap, but also to improve their cash reserves to alleviate their access to finance later, if the pandemic lingers. The higher indebtedness would limit the post-COVID-19 growth rates. Secondly, the geographical exposure and disruptions of imports significantly explain the growth rates during COVID-19. The EU importers suffered more as the virus spread escalated around Europe, however they expect rebound in their investment activities in the post-COVID-19 period. Thirdly, the labor market constraints and labor intensity aggravate the magnitude of the COVID-19 impact on growth rates. The capital-intensive exporters would drive the post-COVID-19 investment growth. Fourthly, besides the significant demand shocks, the exporters are confident that consumption would accelerate in the following period. The EU region arises as a market with more stable (prospective) demand. Finally, the more profitable exporters weather better the crisis suggesting that the competitiveness helps exporters to cushion the COVID-19 shocks, however the deterioration of competitiveness is possible on the long-run.

6. The Policy Space and Exporters' Potentials

6.1. The key obstacles and constraints defining the policy space

The primary finding that exporters exerted significant declines during COVID-19 yet expect revenue, investment and profit rebound but not jobs and salaries improvement once the health crisis subsides suggests that, while welcome, measures of the type of "14.500 MKD per worker" subsidy may not be the right type for exporters and an alternative palette of government measures is needed. More specifically, the policy space exists in the areas to support revenue generation and investment activity among exporters, particularly among those who reported a swift reverberation of the investment activity in 2021. Yet, there are two important caveats in this regard. First, exporters exemplify diverse demographics, whereby findings suggested that smaller exporters, those with predominantly domestic ownership and the labor-intensive ones have been more vulnerable to the crisis. This suggests that potential measures' design should take into account the distinct needs they may have and include a component tailored towards ameliorating such vulnerabilities. This could be yet achieved by considering any new measures as complement to the existing ones, most notably the job-retention subsidy and the cheap loans through the Development Bank. Still, second, policy measures need to primarily aim at supporting the recovery and hence their main goal should be to support sprouts who may prove key for faster post-COVID-19 growth of the economy.

Supply-side disruptions and bottlenecks have been the primary propagation mechanism of the COVID-19 pandemic for export-oriented companies in North Macedonia. The early hit of the crisis in China and the subsequent disruptions of transportation and movements in general were the first to impair the production processes. Moreover, the increasing input prices due to the new conditions potentially aggravated the dependency of exporters on raw materials from abroad. On the other hand, exporters who were less rooted into the domestic economy and their suppliers have been predominantly on a distant market suffered most. The primary importance of the supply chain factors devises a policy space oriented in two directions: first, if other segments of the supply chain decide to relocate in order to ameliorate such a global problem, then domestic policies may be tailored towards attracting such relocations nearby; and second, if at least some of the segments may be replaced by being sourced into the domestic economy (or regionally), then such rooting may be encouraged despite may take time and effort.

Demand disruptions were as much important. Globally reduced demand, as well the one for the companies which are part of MNC value chain, is beyond the power of national economic policies. However, for part of exporters, the pandemic potentially opens the space for rethinking destination markets and if such could be sought elsewhere. This is particularly important for exporters who were found to have accumulated inventories due to demand halt. COVID-19 is a hit on globalization in general, and the immediate thinking restores the role of regional or closer markets for own or complementary/alternative products, supported by our finding that exporters to the EU fared through the crisis better than the rest of them. Particularly the findings that job dynamics in large exporters is more succinctly determined by the demand, as well that there exists a high investment readiness among a sub-group of exporters, devise a policy space in which any support of the capability of the companies to produce and export more would drag up domestic employment.

Given the shock of an unprecedented nature, export-oriented companies in North Macedonia undertook some coping mechanisms in terms of the financial and human resource management. The first one was to resort to own liquidity reserve and debt markets in the wake of the crisis in order to maintain employment levels. This signifies that the need for additional external liquidity did not pick up immediately, possibly exploiting the government liquidity support measures, however it may exert a significant drag in the recovery phase should have funds drained over 2020. In that regard, exporters with established access to the debt markets are found more capable to exploit its benefits in case of liquidity emergency. For the exporters which are part of large value chains, this issue may be resolved in relation to the mother company, however, for majority of exporters – among which the SME exporters were found more vulnerable to the shock - the potential need of additional liquidity creates a policy space in which the government steps in with measures to support access to finance. This further implies that supported credit activity is assumed to occur in an accommodative policy environment in which monetary policy remains relaxed while fiscal policy does not crowd out private ventures.

Notwithstanding the personnel management strategies, exporters with higher technological advancement weathered the crisis better. Technology exerts a significant drag-up on companies' competitiveness, implicitly suggesting that companies' which were highly competitive in the global marketplace were able to cope with the crisis better, despite facing the same intensity of supply and demand disruptions. The policy space key for the recovery phase should be hence populated by measures that facilitate a (quick) adoption of machines, equipment and practices that advance the technological level of exporters. While such endeavours are embedded

in the Fund on Innovation and Technological Development, as well a technology-advancing subsidy amid COVID-19 was offered through the Ministry of Economy, their potential and value should be gauged against a set of indicators assessing companies' absorption capacity. Some notions are provided in the next section.

Still, any technological advancement will be curtailed if not accompanied by the appreciate set of needed skills. Skill shortage was existing on the labour market in North Macedonia before the pandemic (see, Petreski and Petreski, 2020, forthcoming) while our findings suggest that they augmented the severity of the pandemic impact. Still, it is likely that during the pandemic such pressure has been eased, given market's propensity for lay-offs and its reduced absorption capacity. However, this does not overcome the skill shortage problem in a meaningful way. Speedier recovery will be accomplished with skill availability increases in a systematic manner and this need develops a policy space whereby exporters support the production of skills in a manner tailored to their current and future needs.

In summary, the above wrap up identifies the following potentials for ameliorating the immediate effects of COVID-19 onto exporters and for supporting the near- to medium-term recovery:

- Reducing dependence on distant markets via relocation of sister/supplier companies and/or regionalization
- Reducing dependence on distant markets via rooting in the domestic economy
- Reducing input costs
- Concurring new (and/or deeper) and more-diverse markets
- Adaptation of production with supplementary, complementary or alternative products
- Seizing investment readiness
- Increase access to favourable-terms finance
- (Swift) adoption of new and advanced technology
- Support to the generation of demanded skills

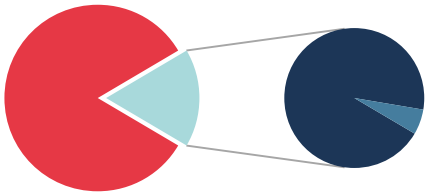
In the next section, we provide some stylized facts about the prominence of these potentials.

6.2. Exporters' potential to address obstacles and constraints

The pandemic has precipitated serious **supply disruptions** which may possibly trigger revisions regarding geographical positioning of MNCs' capacities. Figure 3 shows that the largest share (83%) of MNCs retain their geographical distribution, while the rest experience geographical re-positioning or integration of their capacities. The dominant portion (94%) of the exporters which experience geographical re-positioning have possibility to introduce new production lines in North Macedonia. While only small portion of MNCs re-consider the locations of their capacities, almost all of them are eager to extend their production lines drawing from their parent companies. The evidence opens space for policy actions to enrich or upgrade the existing exporters' capacities.

Figure 3: Relocation decisions and potentials

As a consequence of COVID-19 pandemic and global circumstances, does your company relocate certain production lines, from one location to another or integrate several production capacities?



- There are no relocations
- There are relocations and we could introduce new production line (with re-adaptation and within existing capacity or with establishing new capacity)
- There are relocations, but the countries in the region offer more competitive terms

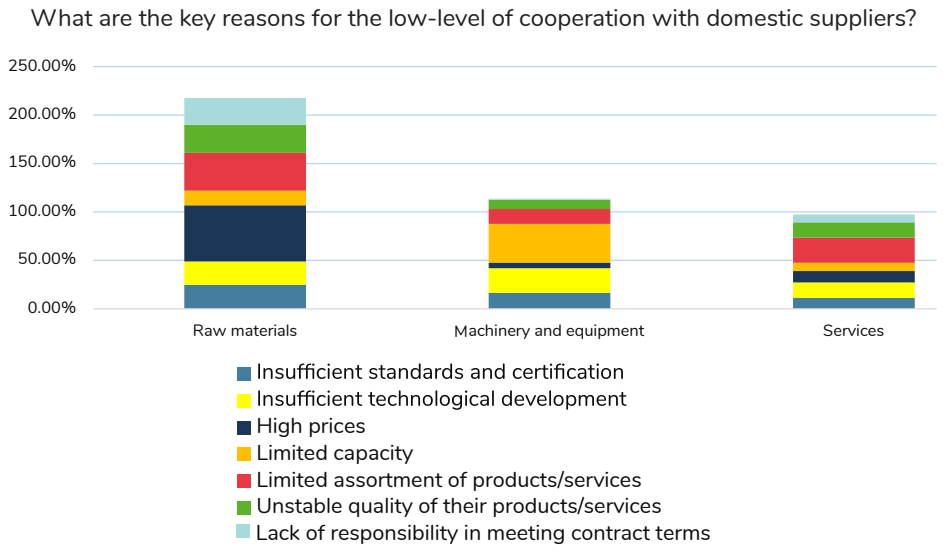
Source: FT-XBCS-COVID19

The import disruptions during COVID-19 create opportunities for the domestic suppliers to connect with the importing exporters and both benefit in terms of cost reduction and less external dependence. Only 7% of exporters which had or may have disrupted imports during COVID-19 (may) have replaced their imports with domestic procurement, while 19% and 24% of exporters have replaced their imports from third country or have had no possibility to replace their disrupted imports, respectively. Moreover, 62% of exporters report that (some or all) of their key inputs have substitutes on the domestic market. Figure 4 presents the main constraints that exporters report for the low-level of cooperation with domestic suppliers.[17]

[17] The exporters were primarily asked whether they (may) replace their disrupted imports during the pandemic. Those, that responded that they have replaced their imports from third country or have had no possibility to replace their disrupted imports, were asked a follow-up question about the key reasons for the low-level of cooperation with domestic suppliers, with an option to select up to three reasons.

The most attention received the suppliers of raw materials, while machinery, equipment and service providers are of secondary importance. The exporters report that the high prices of the raw materials and the limited capacity for production and assortment of machinery, equipment and services are the main reasons for the low connectedness. Evidently, one part of exporters consider sourcing from the domestic economy once domestic suppliers provide more competitive prices and increase their capacities with respect to the product quantities and diversities.

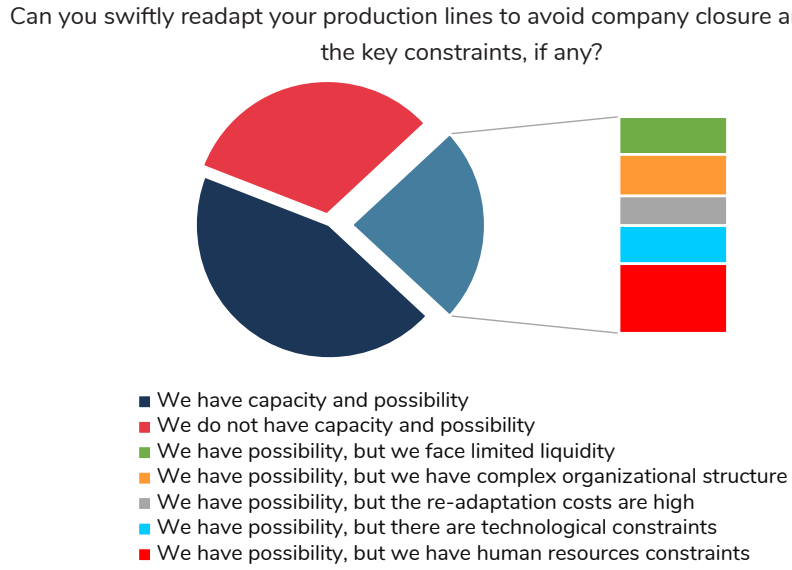
Figure 4: Constraints for the cooperation between domestic suppliers and exporters



Source: FT-XBCS-COVID19

The exporters' resilience to **demand shocks** depends on their flexibility to readapt their production to the "new normal" environment during COVID-19, as well as on their potential to target new markets to recoup the losses in the current markets. Figure 5 provides evidence for high exporters' flexibility. The largest share of exporters (46.4%) has capacity and possibility to readapt their production to avoid closures, while additional 19.7% have possibility but they are facing constraints, of which the human resources constraints dominate. The higher adaptability to the current environment suggests that exporters have potential to better cushion the demand shocks and bounce back to their growth potential once the pandemic ends.

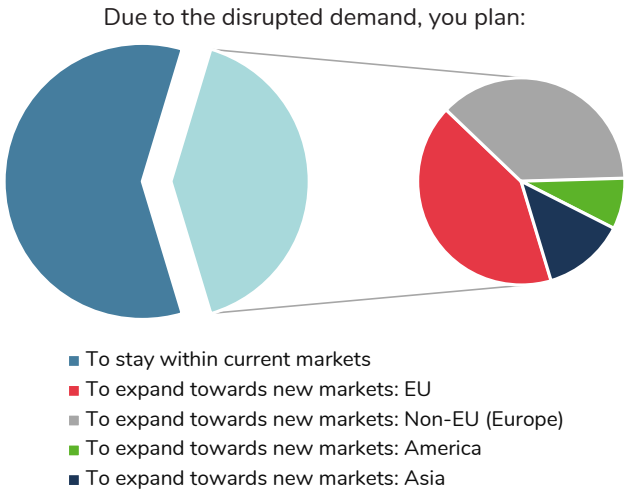
Figure 5: Re-adaptation potential



Source: FT-XBCS-COVID19

The slump in demand puts pressure on companies to stay within the current markets trying to mitigate the losses or to target new markets trying to 'hedge the risk' exploiting the differential impact of COVID-19 across countries and regions. More than 40% of exporters plan to expand towards new markets during and after the pandemic (Figure 6). The largest share of targeted markets are European countries equally belonging to EU and non-EU region. As our regression analysis showed, the higher exposure to the EU markets strengthens the resilience of exporters to demand shocks caused by similar systemic events.

Figure 6: New markets potential

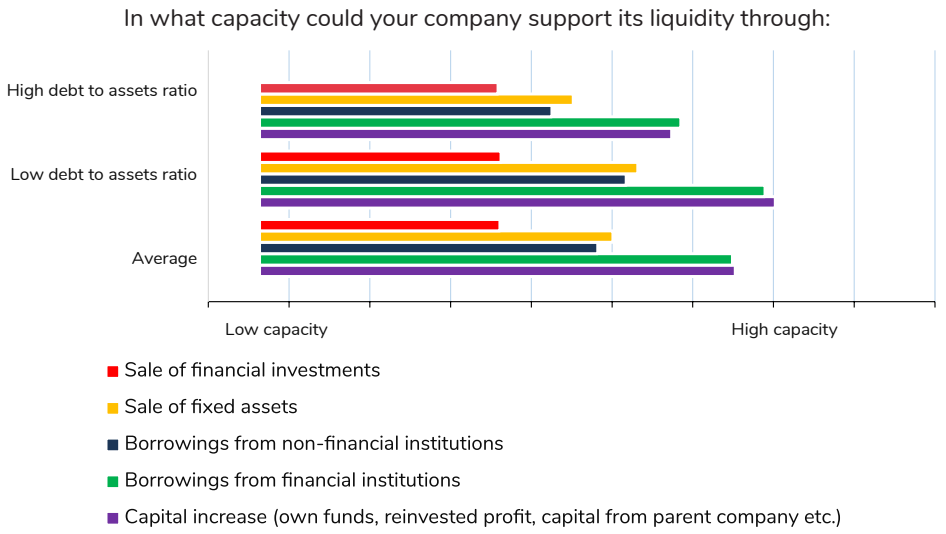


Source: FT-XBCS-COVID19

The pandemic has caused 'dash for **cash**' among the companies searching variety of sources to protect their liquidity positions. The access to finance was essential in weathering the revenue loss during the pandemic. The less liquidity constrained exporters suffer less during the pandemic, however their increasing reliance on debt markets limits the future financing potential. Figure 7 presents the capacity of exporters to support their liquidity positions through various sources differentiating the more liquidity constrained (low debt to assets ratio) from the less liquidity constrained (high debt to assets ratio). The more liquidity constrained exporters show greater capacity in leveraging the debt markets and in increasing their capital reserves through internal funds or retained earnings comparing to the less constrained counterparts. The evidence that the exporters keep their debt levels low but report high capacity for financing through borrowings from financial institutions implies an increasing debt aversion, possibly related to the unattractive crediting conditions on the market. On aggregate, the exporters show great potential for financing their activities through capital and debt increase, however facilitating that potential would require appropriate measures to alleviate barriers on debt markets.[18]

[18] ILO (2020) elaborates the main barriers for access to finance for micro, small and medium enterprises (MSMEs) in North Macedonia taking into consideration banks' and companies' perspective. The high costs of financing driven by the high information asymmetry is the main impediment of higher-level of collaboration between banks and MSMEs.

Figure 7: Access to finance potential

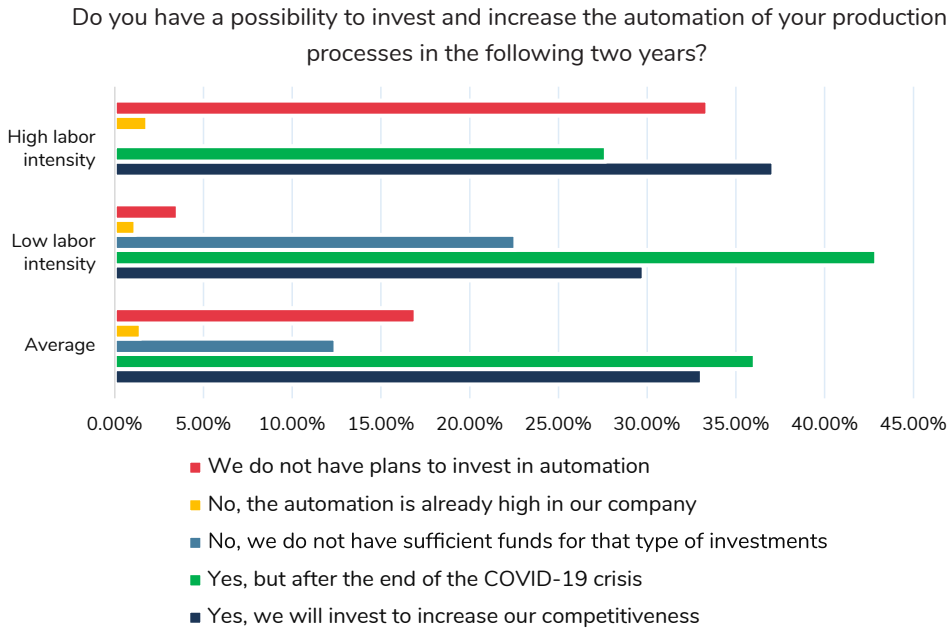


Note: The companies are classified in the "High" / "Low" group if they had higher than / lower than 30% debt to assets ratio in 2019

Source: FT-XBCS-COVID19

The labor intensity was an important company characteristic explaining the variation in COVID-19 and post-COVID-19 growth rates, however the labor considerations arise as a long-term problem in the Macedonian economy. The percentage of exporters that reported heavy constraints in finding low-skilled, medium-skilled and high-skilled workers is 21%, 33.4% and 47.9%, respectively. Essentially, the COVID-19 impact has put in the spotlight the labor intensity and labor market constraints, which factors are also relevant for long-term labor productivity. The resilience of less labor-intensive sectors on pandemic shocks suggests that investments in technology advancements and automation limit the sensitivity of exporters to systemic labor market disruptions, in addition to the benefits for labor productivity. Figure 8 reports the intention of exporters to invest in automation in the following two years. As expected, the highest percentage of exporters plan to invest in automation to increase their competitiveness after the end of the COVID-19 crisis. A 12.4% are limited to make such investments due to insufficient funds. While the largest share of less labor-intensive exporters (69%) intends to advance their technological levels, the share of more labor-intensive exporters (64.8%) is considerable as well. Regardless of the labor-intensity level, exporters show significant potential for technology investments.

Figure 8: Technological investments potential



Note: The companies are classified in the "High" / "Low" group if they reported that the employees' salary costs to total costs are more / less than 15%

Source: FT-XBCS-COVID19

In summary, potentials exist in each of the defined segments: **supply-chain, demand, access to finance and human capital**. Firstly, regarding the supply chains, the exporters have potential to attract production lines from their parent companies and, to an extent, root in the domestic economy increasing the cooperation with domestic suppliers. Secondly, the high adaptability of exporters enables them to rebound swiftly after COVID-19 and to seize new markets, especially in the EU. Thirdly, the exporters show high financing capacity with regard to leveraging the debt markets and drawing from internal funds or retained earnings. Fourthly, there are potentials for investments in technology and for swift skill upgrade as a main driver in building sustainable human capital capacity, resulting in increasing labor productivity.

An appropriately designed policy mix should provide for a maximum utilization of the identified potentials and boost the exporters' competitiveness.

6.3. Potential government measures to populate the policy space

In this section, we devise a couple of policy recommendations to populate the policy space given exporters' potentials to adapt to the post-COVID-19 conditions and to participate in faster recovery. Beneath each policy idea, we provide a general guidance of its potential and the impact on the post-COVID-19 recovery, whereby we denote: (+) low; (++) medium; and (+++) high.

Policy area 1: Comply import tariffs with the EU tariffs on key components

Potential: +++

Impact on post-COVID-19 recovery: +++

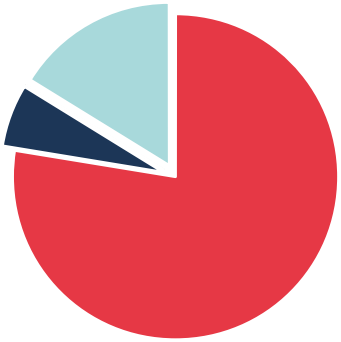
Import tariffs on key import components are essentially seen as a primary cost of production, particularly constraining during the pandemic. Increasing global costs of inputs in particular segments aggravated the problem.[19] Seen from another angle, such high costs are an impediment for extension of the current production lines and attraction of new FDIs in the country. Additionally, trade liberalization and tariff reductions on imported (intermediate) inputs boost the importing companies' factor productivity, innovation, employment and investments (e.g. Amiti and Konings 2007; Bustos 2011; Fernandes 2007; Goldberg et al. 2010; Topalova and Khandelwal 2010; Wang et al. 2018). This may confront the idea of protecting domestic companies, however, on the long run, trade liberalization should boost domestic companies' efficiency and productivity through tougher import competition (e.g. Topalova and Khandelwal 2010). Therefore, it is necessary to carefully comply with the import tariffs in the EU on key components, strongly considering related aspects like their fiscal implications, rules regarding CEFTA membership, the departure of the UK from the EU and its associated caveats like the treatment of the rule of origin, and so on.

Figure 9 presents that a 77.6% of MNCs prefer import tariffs adjustments to motivate inflow of new production capacities to North Macedonia. The secondarily preferred option is the improvement in the business environment with regard to the public administration efficiency. Both interventions suggest that exporters' primary concern is the cost efficiency which is pivotal in increasing their international competitiveness.

[19] For instance, Sforza and Steininger (2020) claim that trade barriers would exacerbate the income losses in addition to those generated by COVID-19.

Figure 9: Policy space for attracting new production lines

What intervention is crucial for increased attractiveness of our country in drawing production lines dislocated by the parent companies?



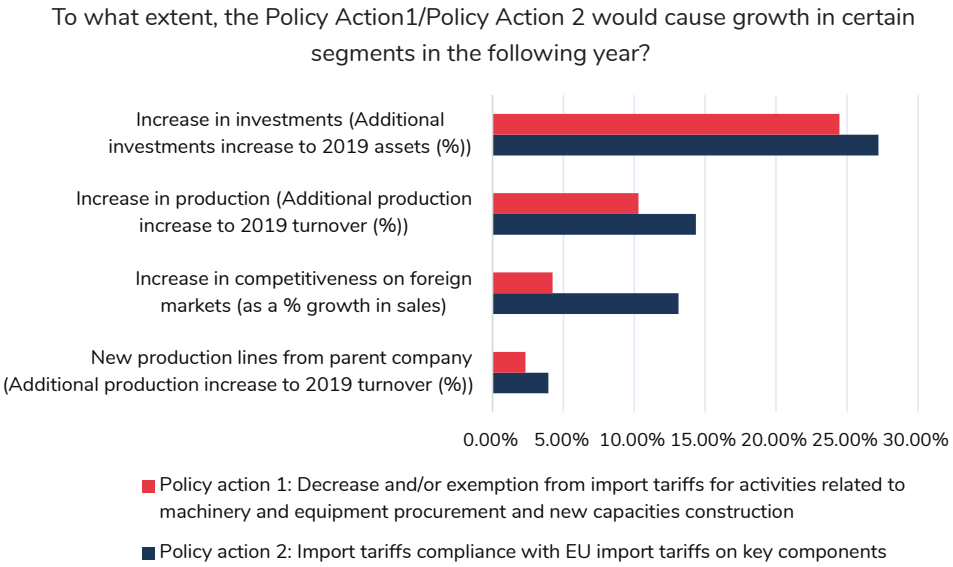
- Import tariffs changes (compliance with EU tariffs for the key components, import tariffs exemptions directly related to investments, simplified import procedures)
- Intervention in and/or support of human capital development (qualifications upgrade, salaries or social contribution subsidies, fast generation of human capital)
- Investments support (no-fee utilization of land, decreased costs for building infrastructure etc.)
- Improvements in the business environment (administrative procedures, public administration services, reduction of parafiscal costs)

Source: FT-XBCS-COVID19

To assess the potential of import tariff adjustments to boost the production and competitiveness, we asked exporters to state the impact on their production, investments and sales of the following two policy measures: decrease and/or exemption from import tariffs for activities related to machinery and equipment procurement and new capacities construction, and import tariffs compliance with the EU import tariffs on key components.[20] Figure 10 shows that the compliance of key components import tariffs with the EU tariffs carries significant benefits for exporters with respect to boosting their investments, production and competitiveness. While both actions incentivize exporters' investments in a similar degree, the import tariffs compliance would significantly increase the sales growth and production upgrade. The increase in new production lines under the policy action 2 (4%) is almost twice of the increase in the same segment under the policy action 1 (2.3%). The policy action 2 has the largest impact on their competitiveness stimulating sales growth of 13.1% compared to the policy action 1's impact on sales growth of 4.2%.

[20] The question has asked for nominal euro value increase in investments, production and new production lines for the following two years. The values were transformed in denars using the 2019 year-end exchange rate and divided by two to make the average annual increase. The average annual increase was scaled using the 2019 assets or 2019 turnover. The question was answered by whole sample, except for the new production lines segment which was filled solely by MNCs.

Figure 10: Import tariffs policy actions



Source: FT-XBCS-COVID19

Policy area 2: Subsidize the expansion on new markets, with focus on EU markets

Potential: ++

Impact on post-COVID-19 recovery: +++

Exporters revealed that they may seek new demand for their products on new markets, primarily the EU's ones. The government operates a measure – under the Pillar 2 of the Plan for Economic Growth 2018-2020 – which provides financial assistance of up to 20% of the costs borne for acquisition of new markets, including costs for exposition on fairs, business events abroad, marketing campaigns on foreign markets, certification related to foreign-market entry etc. The COVID-19 crisis partially attenuates the role of such a support due to travel restrictions, although there is no evidence for its utilization even before the pandemic.

One way of thinking when recasting such a support is to tie the financial package to the output rather than the input. The state aid may shift to support a certain percentage of the first deal on a new market, defined as a new country (or a new province in large countries) and/or new product supplied to existing markets.

Another way of consideration is the deployment of the economic diplomacy which should be facilitating the entry of companies on new markets.

Policy area 3: Support the mitigation of human resources constraints in the process of re-adaptation of production lines

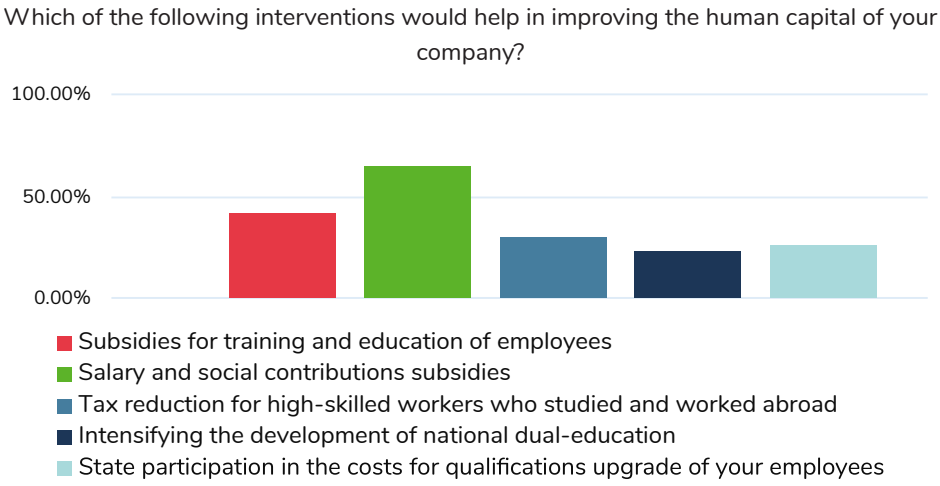
Potential: +++

Impact on post-COVID-19 recovery: ++

Skills are the domain requiring most of the government intervention, as it has been lingering since the pre-pandemic period. However, the pandemic highlighted the need for fast action, which does not replace the need for continuous investment in the quality of the formal educational process in the country. Yet, for the support of the post-pandemic recovery, it is crucial that the government introduces a palette of in-house capacity building support measures and grants for skills trainings, which should be weighed against the capacity to seize such skills and retain/expand employment. The stimulation of the dual education by assisting the matching of foreign companies with VET schools should be retained as an option but potentially rethought once the pandemic subsides.

Figure 11 presents exporters' preferences for five policy actions which should stimulate human capital upgrade. The largest share selected subsidies for training and education (42.4%) and for salary and social contributions (64%), while the least preferred option was the development of national dual education (23%). Given that the salary and social contributions subsidies as a short-term solution were heavily utilized (and exhausted as a policy option), as well carry a significant fiscal burden, the alternative options should be considered, so to achieve efficient and sustainable human capital capacity.

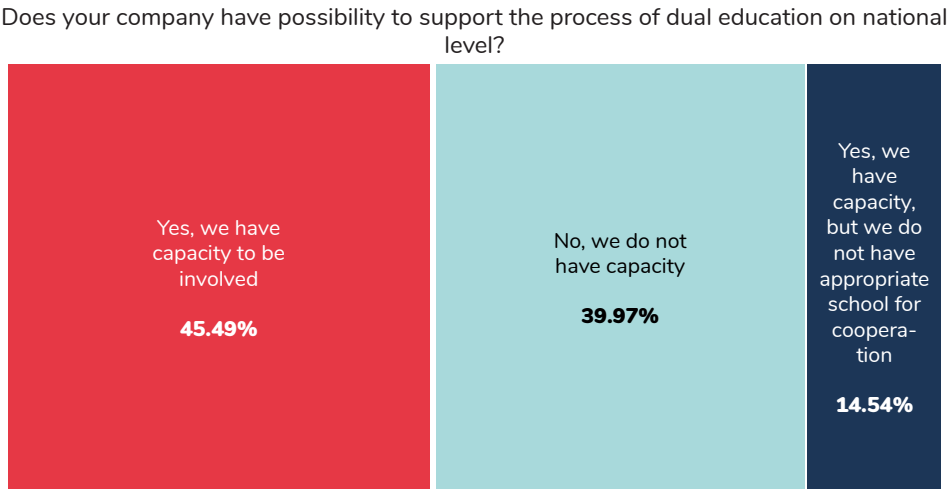
Figure 11: Policy actions for human capital upgrade



Source: FT-XBCS-COVID19

The development of dual education on national level presents an efficient and long-term solution to the human capital problem, besides its low preference among exporters. Figure 12 shows the potential for collaboration between the government and exporters on the issue. The dominant portion of exporters have capacity to participate in the process of dual education, while additional 14.5% would likely contribute to the process if there is a matching school. While the development of dual education is auspicious at partnering future employees with potential jobs in the industry, it demands strategic approach and sustainable financial support to create a successful model.

Figure 12: Potentials for dual education development



Source: FT-XBCS-COVID19

Policy area 4: Introduce a stimulation package to support the inclusion of domestic suppliers into the value chain of exporters

Potential: +

Impact on post-COVID-19 recovery: +++

Overcoming constraints and establishing stronger connection between domestic suppliers and exporters is a one-step forward towards introducing domestic component in supply chains and reducing the sensitivity to external supply-chain disruptions. However, the potential for establishing such links is subdued: it is definitely almost inexistent in the case of sourcing machinery and equipment domestically, however, limited potential still exists in the case of raw materials. Similar results were obtained in Trajkovska and Petreski (2018).

As FT-XBCS-COVID19 revealed that reliability of domestic suppliers – in terms of varying qualities, prices and quantities – is the key problem, intervention may shift to the domestic suppliers rather than export-company buyers. Namely, the Financial Support of Investment Law from 2018 prescribed a subsidy for the buyer in the amount of 1% of the value of the purchase if made from domestic supplier. While no information exists on the usage of this measure, it seems to have been significantly underutilized. The stimulation package should instead focus on the supplier and may consist of a combination of financial stimulus and a mentoring program for elevating their technological level (including but not limited to: certification and standardization, cooperation ethics etc.) to be able to include in the value chain of the exporter.

Policy area 5: Introduce and expand long-term investment loan options at favorable terms

Potential: +++

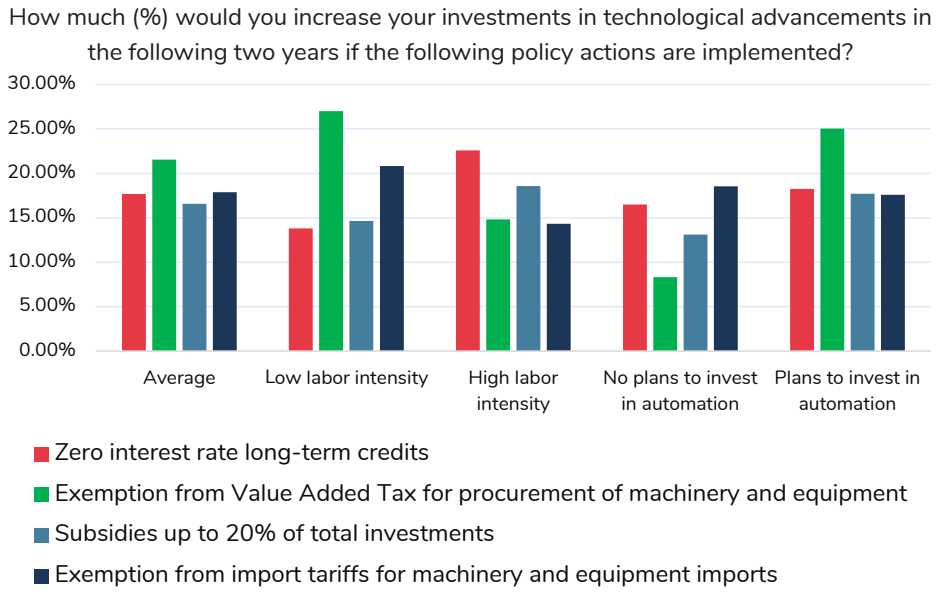
Impact on post-COVID-19 recovery: +++

For the post-pandemic recovery, a crucial policy area is the production and investment support with favorable-term loans and, possibly, grants. This is an option currently pursued through the Development Bank of North Macedonia (primarily for support of short-term liquidity) and through the Ministry of Economy (which operated a line for support of investment in machinery and equipment to increase competitiveness). Moreover, there has been an announcement by the government for making guarantees of commercial credits available to private companies. As the pandemic fades, such loaning and guarantees options should gear towards support of investment and production more than of short-term liquidity. Such a support proves especially important for the exporters – particularly

the more labor-intensive ones, which are apparently smaller and less technologically advanced – who reported no plans to advance technology (33.4%).

To assess the impact of different policy actions, we asked a follow-up question about the percentage increase in their technological levels if exporters are offered favorable crediting options, tax incentives and subsidies (Figure 13). All policy actions incentivize similar levels of technology increase (of around 18%), however there are differences with respect to the labor intensity and investment intentions. The less labor-intensive exporters would invest heavily if the exemption of VAT for procurement of machinery and equipment is introduced, while more labor-intensive prefer zero-interest-rate long-term credits. Notably, the exporters that had no plans to invest in technology would increase their technology investments more than 15% if zero-interest-rate long-term credits or exemption from import tariffs for machinery and equipment imports is introduced as a policy action.

Figure 13: Policy actions for technology investments



Note: The companies are classified in the "High labor intensity" / "Low labor intensity" group if they reported that the employees' salary costs to total costs are more / less than 15%

Source: FT-XBCS-COVID19

Table 9: Study summary – Constraints, potentials and potential policy measures

Impact on competitiveness	Aspect	Constraints	Potentials	Policy space	Measures
Cost efficiency	Supply-chain	Inventory costs pressure High impact on EU imports	Introducing production lines from parent companies	Stimulate relocations Reduce input costs	Policy area 1: Import tariffs compliance - key components (EU); Import tariffs reduction/ exemption - machinery and equipment
		Disrupted imports	Input substitution on domestic market	Stimulate rooting in the domestic economy	Policy area 4: Financial stimulus and mentoring program for domestic suppliers
Diversification and risk reduction	Demand	High impact on non-EU exports	Targeting new markets (EU and non-EU)	Stimulate concurring new and diverse markets	Policy area 2: Subsidization of expansion towards new markets (EU)
		Lower capacity for re-adaptation due to human resources constraints	High potential for re-adaptation	Remove constraints for agile re-adaptation	Policy area 3: Stimulation of human capital creation
Labor productivity	Human capital	Skills shortage	Willingness to participate in dual education process	Support generation of demanded skills	(subsidies for training and education and dual education)
		High labor intensity	Willingness to invest in automation	Stimulate adoption of advanced technology	Policy area 5:
	Access to finance	Limited access to debt markets Potential debt overhang	High capacity to borrow and re-capitalize through internal funds and retained earnings	Increase access to favorable finance	Long-term investment loan options at favorable terms

Fiscal and legal consid-erations

7. Conclusion

The pandemic slashes the steady export growth rate in North Macedonia imposing significant challenges for exporters and policymakers to revive the economy in the upcoming period. The export slowdown would mean limited contributions to the sectoral and geographical diversification, import coverage and employment growth. Additionally, the COVID-19-triggered trade disruptions exacerbate investment sentiment of exporters. However, the crisis unveils opportunities for exporters and MNCs operating in North Macedonia with respect to reorienting and adapting production processes to the current environment, acquiring new markets and relocating operations away from distant markets (e.g. those in Asia), if the presence on those markets becomes costlier. Furthermore, as the developed economies recover the positive shocks would transmit through export-oriented companies to the domestic economy. Thus, stakeholders need to be aware of the constraints that exporters are facing with, and of the potentials that exporters have, to support post-COVID-19 economic recovery. The design of targeted support should remove the identified hurdles and facilitate greater exploitation of exporters' potentials.

The exporters experienced systematic slowdown in their revenue, profit, investment, capital, employment and salaries growth rates. The sectoral distribution of the impact shows that the Automotive and Computer and electronic equipment sectors suffered more in comparison to the other sectors. The exporters with limited access to finance, import exposure to EU markets, high labor-intensity, export exposure to non-EU markets and lower competitiveness were less resilient to the pandemic shocks, representing the main obstacles they will be facing in the recovery stage. Despite the identified constraints, exporters show considerable potential in improving their liquidity positions through internal funds and debt, re-structuring their supply-chains through relocations and rooting in the domestic economy, reviving their demand through re-adaptation and capturing new markets, and investing in technology.

Based on identified constraints and potentials, we devise potential interventions in five policy areas. Firstly, the supply-chain disruptions harm exporters' competitiveness elevating the production costs. The decrease and/or exemption from import tariffs for activities related to machinery and equipment procurement and new capacities construction, and import tariffs compliance with the EU import tariffs on key components would reduce input costs, consequently alleviating the impact of COVID-19 supply-chain shocks and boosting their competitiveness. Secondly, the exporters have potential to weather the demand shocks through re-

adaptation of their processes and expansion towards new markets. The subsidization of the expansion on new markets and the deployment of economic diplomacy would facilitate the realization of these potentials. Thirdly, the skill shortage arises as a crucial impediment to the post-COVID-19 economic recovery. The short-term solution would be subsidizing the training and education of exporters' employees, while on the long-run the development of proper model of dual education would provide sustainable human capital creation. Fourthly, the COVID-19 crisis highlighted the importance of domestic producers' preparedness to replace the exporters' disrupted imports. While the potential is limited, a stimulation package focused on the supplier combining financial stimulus with a mentoring program for elevating their technological level should provide incentives for suppliers' inclusion in the value chain of the exporter. Finally, the limited access to finance and low level of technological development augment the negative COVID-19 shocks and hold back the post-COVID-19 economic recovery. The introduction and expansion of long-term investment loan options at favorable terms should relax liquidity constraints and stimulate automation in the post-COVID-19 period.

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