ANALYSIS OF THE EFFECTS ON THE METAL PROCESSING, ELECTRIC, MACHINERY AND AUTOMOTIVE INDUSTRY FROM THE HEALTH-ECONOMIC CRISIS CAUSED BY THE COVID-19 PANDEMIC

Note:

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INTRODUCTION

The rise and outbreak of the COVID-19 virus has created severe problems for the world economy. The issues are both on the supply and the demand side. Namely, in conditions of a **global production system**, where the **supply chains are dispersed in many locations around the world, the closed borders and the difficult movement of goods have caused interruptions in production connections and temporary disruption of the production**. As an import-dependent country whose output is mostly determined by imports of raw materials, it felt this immediately, especially in several sectors and industries such as the machinery, electrical, and automotive industries that are practically dependent on production components and parts from China.

Another important fact is that the **health crisis has caused a temporary halt for most of the companies' production processes in the analyzed sectors in March and April.** Also, the imposed emergency circumstances forced the companies to reorganize their production processes so that they can protect their employees' health, which, on the other hand severely reduced the utilization of production facilities in the recent months.

Also, **most foreign companies in the automotive industry inside and outside the TIR zones are an integral part of the world's major corporations, which means that slowing and shutting down the corporate's production activity as a result of the global crisis has already affected their operations.** The duration of this process will largely depend on how quickly the automotive industry will stabilize worldwide. But companies from the metal-processing, machinery and electrical industries will not avoid the effects of the crisis. Namely, most of them are export-oriented, which means that the slowdown in foreign demand will cause a downturn in their exports, which will automatically reduce their revenues.

Official statistics for the industrial production and exports in March confirmed the expectations for a serious slowdown in production and economic activity in the analyzed sectors. Specifically, in March, there was a **decline in industrial production** by **14.3%,** while **the decline in exports** was even more significant with 26.8%. The worrying factor is that except for the metal processing industry, where the industrial production grew in March, all other sectors fell sharply. These negative trends will only intensify in the coming period since all expectations say that these sectors will be most affected in the next two quarters of the year.

Having in mind that these sectors have a significant economic impact on the Macedonian economy, it points out that the preparation of such a study is crucial in quantifying the consequences of the crisis and defining policy proposals aimed at mitigating the negative effects on these sectors.

The **main purpose** of the analysis is **to assess the negative effects and consequences** of the health and economic crisis caused by the COVID-19 virus on the metal processing, machinery, electrical and automotive industries. Additionally, **to study their importance to the Macedonian economy and to define proposed**

measures to deal effortlessly and effectively with the crisis, to lessen the negative effects in these sectors, which would also reduce the impact on the entire economy.

The **use of different methods and techniques for the analysis** will lead to the accomplishment of this goal. **The first thing** will be to **systematize the international experiences** related to trends and conditions in the analyzed industries, in the context of the global crisis we are witnessing today. This way, we will provide a useful basis for assessing the effects in our country, given the fact that these sectors are strongly export-oriented and primarily determined by developments in global markets.

Secondly, a comprehensive sector analysis will be conducted for the period before the outbreak of the crisis, **to quantify the importance of the analyzed sectors for the national economy**. It is extremely important to prepare a more accurate assessment of how the effects of the crisis on these sectors will reflect the Macedonian economy in the period ahead.

Thirdly, a study survey of the representative companies from the analyzed sectors will investigate the conditions and problems faced by companies in this period, the effects of the crisis on their operations, and whether they are satisfied with the government's measures. It will also analyze the possible proposed measures which may reduce the negative effects of the crisis on their operations.

Fourth, to deepen the survey, **several representatives of the most important companies** from each analyzed sector and industry **will be interviewed** to discuss the current situation in their industries. It will analyze the effects of the crisis and what they are doing to overcome this period, including their expectations for the course of events in the future.

1. INTERNATIONAL EXPERIENCES FOR THE EFFECTS OF THE CRISIS ON THE ANALYSED SECTORS

The declining trend in car sales in 2019 was just a prelude to the slowdown in the automotive industry in 2020, even without the crisis outbreak. The pandemic outbreak only exacerbated the negative trend that in March caused a sharp drop in global demand for cars. That **decline** in **various EU countries** is between **45-80%,** while in the United States for the same month, 30%[1] of **sales decreased**. The forecasts for car sales in April given by renowned international institutions, including the European Automobile Manufacturers' Association, are genuinely pessimistic. The assumptions are that the demand will stop entirely or kept to a minimum, given that new car dealers across Europe are closed.

It will cause serious negative effects on the industry in the next few months, as all predictions point to the fact that its recovery will continue even after the crisis, given the fact that the demand for cars will not recover so quickly.

Companies that buy vehicles for official duty generate part of the demand in Europe, especially Germany. In contrast, in the United States, car rental companies are the ones that generate part of the demand for new vehicles. It indicates that many companies in other sectors that will not be spared from the crisis, subsequently it will delay the purchase of vehicles this year. The demand for cars by car rental companies is in similar situation, which will be forced to reduce the purchase of vehicles due to the reduction of tourist services and the movement of people this year. Additionally, some households, as end consumers of cars, will also delay the purchase of new vehicles, partly due to declining revenue and partly due to the apparent tightening of loan conditions by the banks.

All this will pull back the global demand for cars, which **some world agencies predict it will reflect in decline by 30% in 2020**, compared to last year. It will be a major blow to the industry, which will reflect in declining production and massive layoffs. Namely, **some initial forecasts** indicate that as a result of the crisis with the COVID-19 virus and the decline of the automotive industry, **more than 1 million EU employees are affected**, which is about **45% of the total number of employees in this industry**. These estimates for the number of threatened jobs are only in the automotive industry, truck manufacturing, buses, and other transport vehicles and equipment. The number of endangered jobs as a result of the crisis is much higher if we take into account the sectors that serve as suppliers to these industries.

The table below shows **estimates of declining car production and the number of endangered jobs in the automotive industry** caused by the pandemic crisis in some countries within the EU and the UK.

[1] ACEA - European Automobile Manufacturers' Association.

Table 1. The number of endangered jobs and production losses in the automotive industry.

Country	Employees affected	Production losses
Austria	14,307	16,865
Belgium	30,000	30,306
Croatia	700	-
Czech Republic	45,000	139,084
Finland	4,500	16,327
France	90,000	278,903
Germany	568,518	498,010
Hungary	30,000	47,695
Italy	69,382	108,595
Holland	13,500	26,986
Poland	17,284	41,957
Portugal	20,000	29,325
Romania	20,000	68,673
Slovakia	20,000	85,419
Slovenia	2,890	16,414
Spain	60,000	316,663
Sweden	67,000	22,527
UK	65,455	156,344
TOTAL (EU + UK)	1,138,536	1,900,093

Source: ACEA - European Automobile Manufacturers' Association

As seen in the table, Germany will suffer the most significant damage, which is evident from the fact that most of the automotive industry within the EU is located in this country. Also, what we can see from these assessments from the effects of the crisis on the automotive industry in Europe is that the CEE countries will be no less affected. Namely, the most significant negative effects are registered in the Czech Republic, Hungary, Slovakia, and Poland, where more than 100.000 jobs are affected. Within this analysis, North Macedonia has not been considered. But still, since the companies from the automotive industry in our country are suppliers to EU companies, especially German manufacturers, it is evident that the decline in production is visible as well as the in the number of employees in our country.

The situation is similar in the metal processing, machinery, and electrical industries. Namely, the reduction of investment and construction activities and the decline in demand for other sectors caused a downfall in the metal processing and machinery industry. Their decline may be milder than in the automotive industry, but it is significant globally.

The specific part is that some metal processing, electrical and machinery industries are suppliers to the automotive industry, which practically indicates that the decline in the automotive industry will further pull down these industries. It is an exceptional case with the machinery and electrical industry in North Macedonia, which are closely related to the automotive industry and will undoubtedly have a negative impact on them, especially in the area of exports. On the other hand, the metal-processing industry is mostly related to construction, which is also affected by the crisis. It will also complicate matters in this sector, especially in terms of exports of some products.

2. EMPIRICAL ANALYSIS OF THE METAL PROCESSING, MACHINERY, ELECTRIC AND AUTOMOTIVE INDUSTRY

2.1 Number of business entities in the analyzed sectors

More than **1.130 companies** were registered in the analyzed sectors in 2019, **831 companies** in the metal processing sector, **153 companies** in the machinery sector, **102 companies** in the electrical industry, and **48 companies** in the automotive industry. If we take into account the fact that within the entire processing industry, there are about 8.362 companies, it means that about 13.5% are from the analyzed sectors.

Table 2. Number of business entities by individual sectors and industrial branches

SECTORS	Number of companies
1. Production of fabricated metal products, except machinery and equipment	**831**
1.1 Production of metal structures	289
1.2 Mining, pressing, stamping and rolling of metals; powder metallurgy	39
1.3 Metal processing; general mechanical work	248
1.4 Production of blades, tools and metal equipment for general purpose	56
1.5 Production of other fabricated metal products	175
2. Production of electrical equipment	**102**
2.1 Production of electric motors, generators, transformers and devices for distribution and control of electricity	25
2.2 Production of batteries	1
2.3 Production of cable and electrical installation material	8
2.4 Production of electrical equipment for lightening	18
2.5 Production of household appliances	12
2.6 Production of other electrical equipment	38
3. Production of machines and devices not mentioned elsewhere	**153**
3.1 Production of general-purpose machines	27
3.2 Production of metal processing machines and machine tools	9
3.3 Production of other machines for special needs	43
4. Production of motor vehicles, trailers and semi-trailers	**43**
4.1 Production of motor vehicles	8
4.2 Production of body parts for motor vehicles, production of trailers and semi-trailers	5
4.3 Manufacture of parts and accessories for motor vehicles	30
TOTAL	**1.130**

Source: State Statistical Office

The table above shows that most of the companies in the analyzed sectors come from the metal-processing and machinery industry. Additionally, an interesting fact related to the number of business entities is that the automotive industry, as a relatively new industry in our country, has a total of 43 companies, most of which are foreign-owned and located in TIR zones.

2.2 Economic performances of the analyzed sectors

What is perhaps more important in the sectorial analysis is how much the analyzed sectors create added value in the Macedonian economy, their relative share in the processing industry and the GDP of the country, and the level of productivity of the analyzed sectors.

The table below shows the added value that each of the analyzed sectors creates in the economy.

Table 3. Gross value added by individual sectors (in euros)

Description	2015	2016	2017	2018	2019
Production of fabricated metal products, except machinery and equipment	43.626.016	46.601.626	54.065.041	69.503.735	66.163.072
Production of electrical equipment	30.162.602	29.219.512	25.300.813	43.605.755	25.108.017
Production of machines and devices not mentioned elsewhere	117.609.756	153.138.211	133.772.358	140.255.070	145.336.250
Production of motor vehicles, trailers and semi-trailers	69.024.390	84.406.504	131.430.894	178.280.340	180.373.981
Production of other transportation equipment	6.308.943	4.699.187	5.512.195	6.017.065	6.250.037
Total added value	**266.731.707**	**318.065.041**	**350.081.301**	**437.661.965**	**423.231.358**

Source: Own calculations based on SSO database

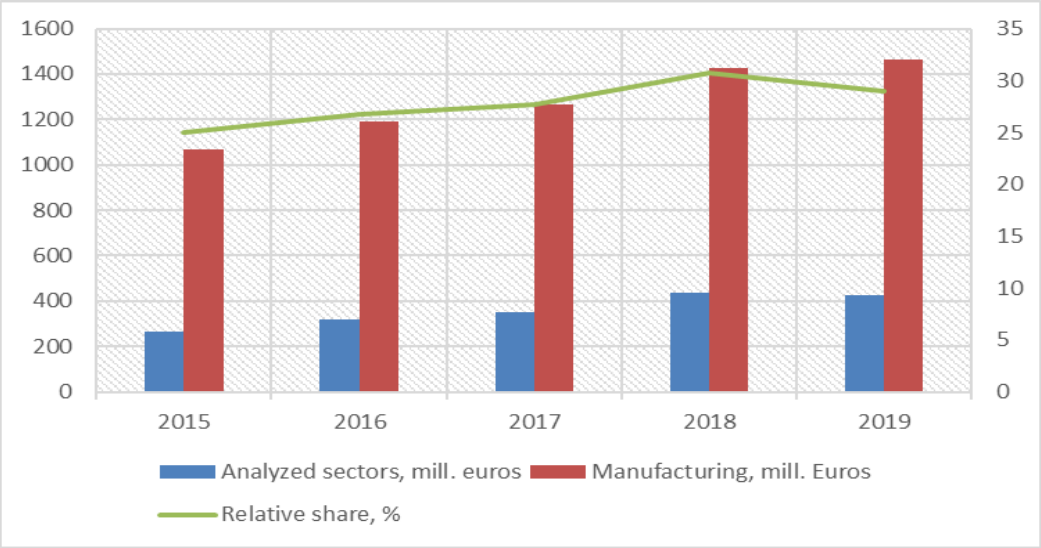
The analysis shows that the automotive and machinery industries have generated the most significant amount of gross value added (GVA). Namely, the **GVA** of the automotive industry in 2019 reached **180 million EUR**, while the machinery industry generated **145 million** GVA. The third sector in terms of GVA is the metal processing sector, which in 2019 generated **66 million EUR**. The least important is the electrical industry with a GVA of **25 million EUR** and the production of other transport equipment with a GVA of **6 million EUR**.

At the same time, the automotive and machinery sectors have the **highest annual growth** in the period 2015-2019. Namely, the automotive industry recorded an increase in added value by as much as 111 million EUR (from 69 million in 2015 to 180 million in 2019), which is an annual average growth rate of 40%. The machinery sector for the same period increased by 28 million EUR (from 117 million in 2015 to 145 million in 2019). It means that this industry grew at an average annual rate by 6%

in the analyzed period. No less significant is the growth of the metal processing industry, which generated an additional 23 million EUR in 2019 compared to 2015, which means an average growth rate by 13%.

The growth of individual sectors, especially the automotive and machinery industries, has contributed to a significant increase in the total added value of the analyzed sectors. Namely, the total added value of the analyzed sectors increased from 266 million EUR in 2015 to 423 million EUR in 2019. It means that these sectors recorded an average annual growth by 15%.

Figure 1. Cross Added value of the analyzed sectors and their relative share in the manufacturing industry

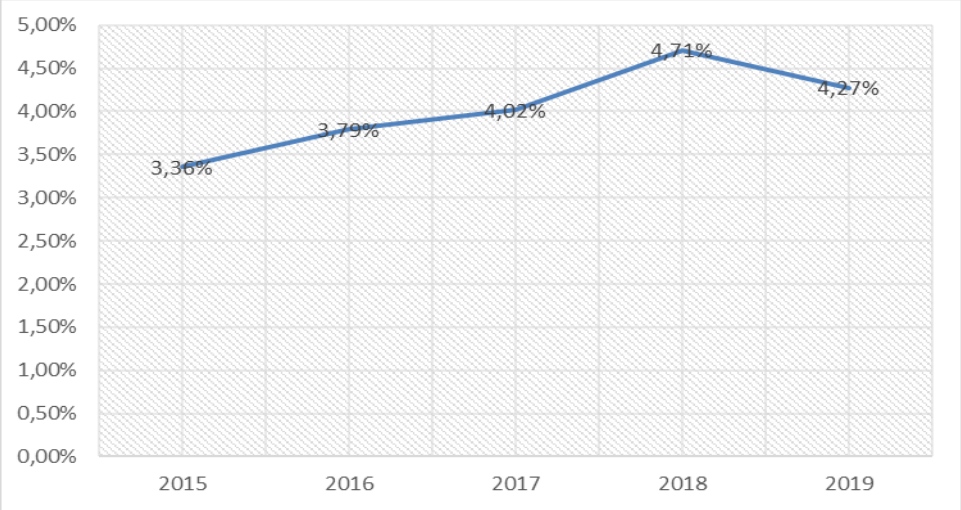


Source: Own calculations based on SSO database

Such significant growth had a positive impact on increasing the relative share of the analyzed sectors in the entire processing industry, from 25% in 2015 to almost 30% in 2019. It only shows that these industries are the leading industrial sectors within the processing industries and also have a significant role in the Macedonian economy.

Having in mind that the processing industry participates with 12% in the country's GDP, it indicates that the **relative share of analyzed sectors** in **GDP** is **4.3%** and there is a growing trend in the analyzed period, which is a confirmation of the importance of these sectors for the Macedonian economy as a whole.

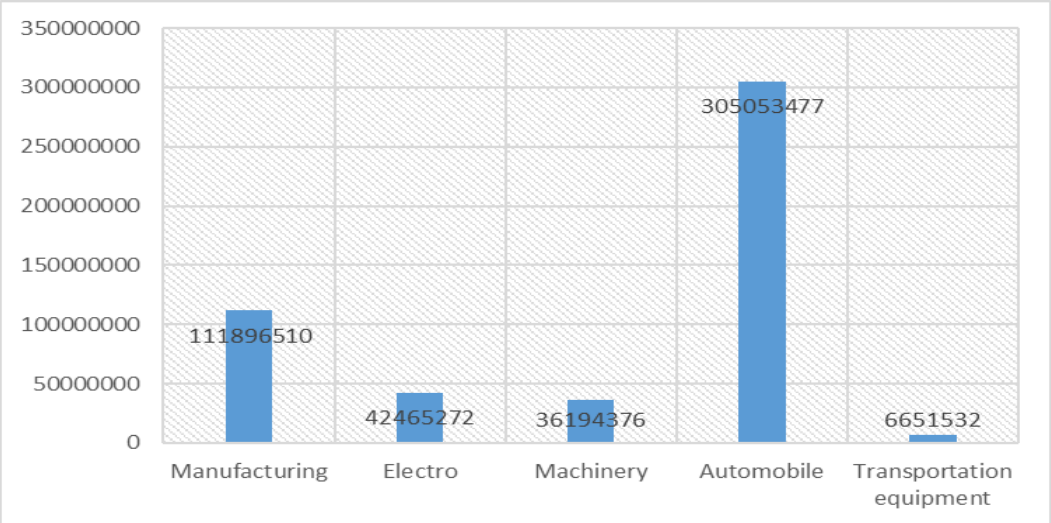
Figure 2. Relative participation of the analyzed sectors in GDP



Source: Own calculations based on SSO database

The contribution of the analyzed sectors in filling the budget by the taxes and employee contributions is significant. Namely, the total value of **social health insurance contributions** that companies in these sectors pay to the Health Insurance Fund, the State Pension Fund, and the Employment Agency **in 2019** was **502.261.168 denars.**

Figure 3. Total value of social health contributions and pension insurance of the analyzed sectors (in denars)



Source: Public Revenue Office

The automotive industry **(305.053.477 denars)** and the metal processing industry **(111.896.510 denars)** have the largest share, given the fact that these two industries have the largest number of employees.

Additionally, the contributions from the analyzed sectors in terms of **profit tax** reached **289.519.077 denars** in 2018, as a year for which we have official data from the PRO, while in terms of **VAT**, the amount was **1.796.171.704 denars**. The automotive industry has the largest share in the **profit tax**, with a total amount in 2018 reaching **99.800.012 denars** and the metal processing industry for the same year with **99.800.012 denars**. On the other hand, concerning **VAT**, the metal processing industry has the largest relative share with **1.050.187.179 denars**, the electrical industry with **374.294.787 denars**, and the machinery industry **303.264.505 denars**. Here, the automotive industry share is lower because most of the automotive industry is export-oriented and has minimal revenues in the domestic market.

Also, a large number of export companies pay customs duties on the import of machinery and customs duties on the import of raw materials needed in their production processes, which means additional funds that enter the country's budget.

2.3 Analysis of the number of employees and average salaries in the analyzed sectors

The total number of employees in the analyzed sectors in 2019 reached **47.112**. Most of these employees are in the automotive industry or a total of **28.523**, and this industry has the most significant number of newly created jobs in the last three years compared to any other sector in the economy. Namely, in the period 2017-2019, more than 16.000 jobs were created in the automotive industry, which shows that this industry has reached its biggest progress in recent years.

The second-largest sector in terms of the number of employees is the metal-processing industry or the factory for fabricated metals, which generates more than **10.000 jobs**. Like the automotive industry, this industry has seen a significant increase in the number of employees. Namely, in the period 2017-2019, approximately 4.000 new jobs were created, which means that the growth rate of employment in this sector is 64% in the analyzed period.

The machinery and electrical industries created a smaller number of jobs, or about **6.200**, and there has been a positive trend in recent years. Namely, in 2016, the number of employees in these two sectors was around 3.300, and the numbers jumped to 6.800 employees in 2018.

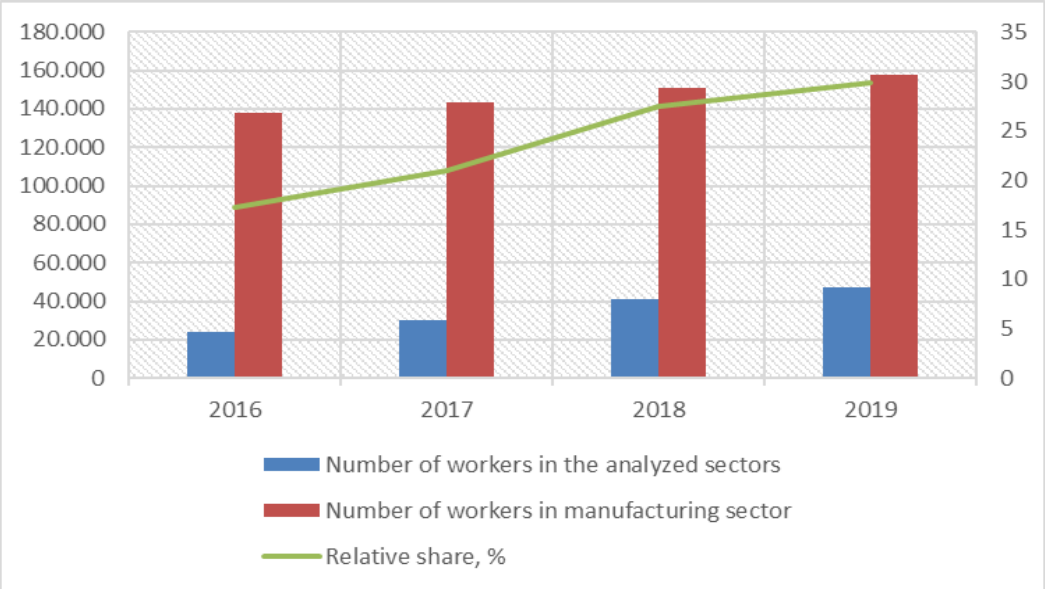
Table 4. Number of employees in the analyzed sectors

Description	2016	2017	2018	2019
Production of fabricated metal products	6.294	6.464	8.531	10.296
Production of electrical equipment	2.122	1.895	4.492	3.723
Production of machines and devices not mentioned elsewhere	1.233	1.386	2.340	2.500
Production of motor vehicles, trailers and semi-trailers	12.568	18.796	23.964	28.523
Production of other transport equipment	499	441	460	480
Repair and installation of machinery and equipment	959	1021	1553	1600
TOTAL	**23.675**	**30.003**	**41.339**	**47.122**

Source: Own calculations based on data from the SSO

If we compare the number of employees in the analyzed sectors with the total number of employees in the processing industry, we will conclude that these sectors have a constant growth in the relative share. Today, they create about 30% of the total jobs in the entire processing industry which is a proof for the exceptional importance of these production sectors for the Macedonian economy.

Figure 3. Number of employees in the analyzed sectors and their relative share in the processing industry

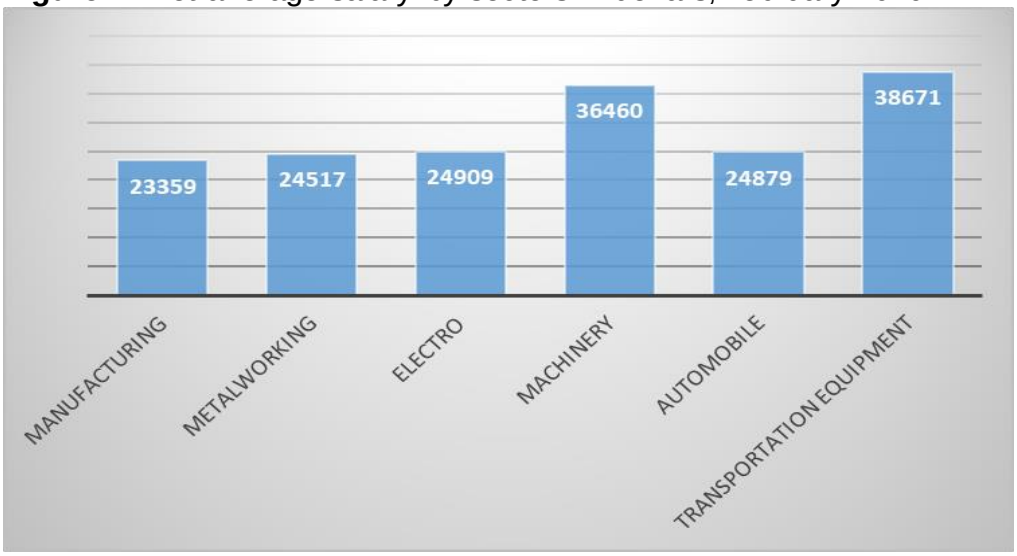


Source: Own calculations based on data from the SSO

Last but not least is the question of the level of productivity[2] of the analyzed sectors compared to the productivity level of the entire processing industry. **The average productivity of the analyzed sectors** in 2019 was approximately **9.000 EUR per employee**, which is roughly the same level as the average productivity in the entire processing industry, which is 9.200 EUR. It suggests that, given the fact that the analyzed sectors are intensive ones, from the capital and technology point of view, they are expected to have much higher productivity. However, this is not the case due to certain specifics that are characteristic of the automotive industry and a part of the electrical and machinery industry and refer to the fact that most of the added value of these industries are created in other countries. It is because most of the raw materials in the production processes in these sectors are imported. Additionally, part of the company profits is not displayed because the products are not exported at full market price.

From the point of view of the level of salaries, we can conclude that they are higher than the average **monthly net salaries** within the processing industry, which amounts to **23.359 denars** and is approximately at the level of the net average wage in the country. Namely, in February 2020, the average net salary in the metal processing industry was **24.514 denars**, in the machinery industry **36.460** denars, in the electrical industry **24.909 denars**, in the automotive industry **24.879 denars**, and in the production of other transport equipment, the average net salary was **38.671 denars**. A positive fact is also that salaries in the analyzed industries in February 2020 compared to the same month last year, increased by more than 15%, which means that these industries had strong development potential before the crisis.

Figure 4. Net-average salary by sectors in denars, february 2020



Source: State Statistic Office

[2] We measure productivity as the ratio between the gross value added in relation to the number of employees, which means how much each labor average generates added value.

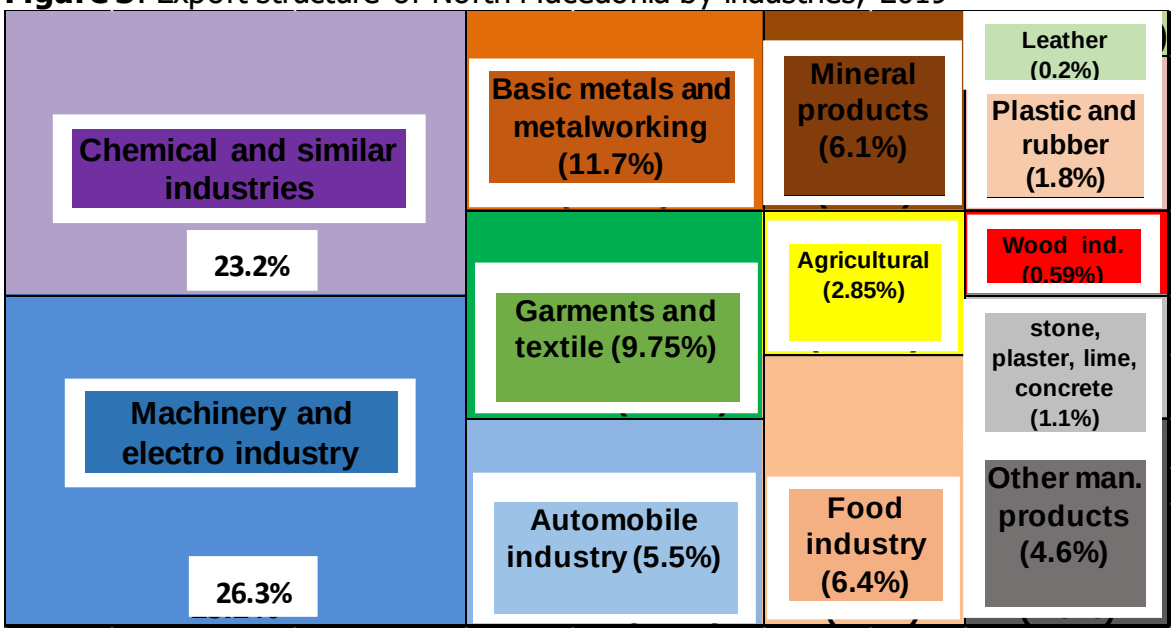
2.4 Export performances of the analyzed industries

What is significant in the analysis of the metal processing, machinery, electrical, and automotive industries is that these sectors are strongly export-oriented, and this makes their importance for the economy even more significant. If we analyze the number of export companies, we can conclude that as many as **271 companies from the analyzed sectors have exporting activity**, which is **24%** of the total number of active companies in the analyzed sectors. Or nearly **18.5%** of the total number of export companies in the country comes from these sectors. Micro and small enterprises have a dominant share, but in terms of export value, medium and large enterprises have a larger share.

The most significant number of export companies are in the metal processing industry or **158 companies**, while the numbers are fewer in the automotive industry and the production of transport equipment or **29 companies**. Most of them are foreign companies located in the TIR zones. But what we need to keep in mind is that some companies that don't have direct export activity, for example the automotive industry, they work as suppliers to other export companies in the sector, which means that in some way they have indirect exports.

The figures are even more apparent if we look through the prism of relative participation in the export of the analyzed industries concerning the total export of the country. Specifically, the **total exports** of the analyzed sectors in 2019 amounted to **2.092 million EUR**, which is almost **36%** of the country's total exports.

Figure 3. Export structure of North Macedonia by industries, 2019



Source: Author's calculation based on data from the State Statistical Office

Table 5. Export performances of the analyzed sectors

Industry	Export value, EUR	Relative share, %	Number of export companies	Top 10 export products
Fabricated metals	231.757.005	3,96	158	92,3
Machinery	677.230.007	11.6	48	95.8
Electric	862.598.393	14,7	36	92
Motor vehicles and transport equipment	321.103.388	5,48	29	96.8
TOTAL	**2.092.688.793**	**35,74**	**271**	**/**

Source: Author's calculation based on data from the State Statistical Office

The electrical industry has the most significant individual share, with **exports of 862 million EUR**, mainly due to the export of the product "sets of conductors for ignition of internal combustion engines," which amounts to 615 million euros.

The second-best export sector is the machinery industry, whose exports in 2019 amounted to **677 million EUR**, mainly due to the export of the product "devices for gas filters and purification of internal combustion engines" which amounts to 480 million EUR.

The sector for the production of motor vehicles and transport equipment has exported **321 million EUR**, which is mainly due to the export of buses. In comparison, the exports of the metal processing industry reached 231 million EUR, the largest share of which is the export of pipes and profiles with an export value surpassing more than 150 million EUR.

This analysis indicates that even though these sectors had great export value and significant relative share in the country's total exports, there is still a strong export concentration. **The top 10 most exported products** in the total exports of specific sectors participate with more than **90%.** It means that a decline in exports of several products could lead to a severe drop in exports of the entire industry, something we have already witnessed in March.

3. EFFECTS OF THE CRISIS ON THE ANALYZED SECTORS AND POLICY PROPOSALS

Currently, the Macedonian economy is going through a challenging period due to the crisis caused by the coronavirus pandemic. The new projections for the growth rate for 2020 predict it will end with a recession that will range from 3.4-4%, which is a severe reduction in economic activity, given that the projected growth rate at the beginning of the year was 3.8%. A worrying is the fact that **exports in March fell by 26.8%,** while **production in the processing industry fell by 14.3%.**

The metal processing, electrical, machinery, and automotive industries will be affected by the crisis, too. Besides the metal processing industry, which in March recorded a production growth by 9.8% or 11.2% in the first quarter of 2020, all other sectors marked declines in the industrial production. **In March**, the machinery industry saw **a massive decline in the industrial production** by **36.2%**, the electrical industry **decreased by 30.7%**, while the automotive industry **decreased in the same month by 16.6%**. These negative trends will certainly not change quickly in the next few months. On the contrary, if we follow the world trends, likely, they will only deepen in the second and third quarters of the year.

Survey analysis and interviews with many managers and representatives of companies from the analyzed sectors were conducted to make a detailed quantification and assessment on how the crisis will affect the analyzed sectors in terms of revenue reduction, exports, employment and other aspects of operations, as well as to assess the expectations of companies and their proposed measures that can help overcome the crisis.

3.1 Results and conclusions from the survey

Within the **survey research**, a **questionnaire** was defined, **consisting of 25 structural questions,** designed to analyze the initial effects of the crisis on companies' operations from the analyzed sectors, viewed through the prism of production volume, achieved revenues, exports, employees, liquidity, etc. Additionally, some of the questions are related to the assessment of the measures taken by the Government, how many of them apply to the analyzed sectors, whether the companies use them or plan to apply for them, and the possible proposed measures that the companies themselves would recommend to the economic policymakers to overcome the crisis more quickly.

The questionnaire itself was sent to **more than 130 small, medium, and large companies** in the metal-processing, electrical, machinery, and automotive industries. **Forty-six companies adequately responded to the questionnaire**, indicating reasonably good responsiveness and sufficient representativeness of the research findings.

From the companies that responded, **20 companies are small enterprises** with up to 50 employees, **10 micro enterprises** with up to 10 employees, **7 medium enterprises** with up to 250 employees and only **5 large enterprises** with over 250 employees. It practically reflects the real condition of the analyzed sector's structure in terms of the companies' size.

Additionally, most of the companies come from the Skopje region or more than half. The rest are companies from the different areas of the country, such as the Eastern, Vardar, Southwest, Pelagonija, and other regions.

The survey results indicate that the crisis will not bypass these sectors, i.e., they will have substantial negative effects. Almost all companies point out that the crisis will have an impact on reducing their operating income.

A worrying factor is that **80% of companies** have indicated that **in 2020** the revenue **reduction will be higher than 20%** compared to last year. It practically corresponds to the official data from the State Statistical Office regarding industrial production for the first quarter of 2020.

However, according to the obtained results, a **much higher decline in revenues is expected by medium and large companies**, compared to micro and small companies. It may be because medium and large companies are more export-oriented and more sensitive to declining global demand as they are tied to global supply chains for large corporations facing severe problems due to the crisis.

Given the fact that most of the surveyed companies are export-oriented (more than 80%), according to them, **most of the reduction in revenues** will be due to reduced exports. As many as **81% of exporting companies** indicated that the crisis has a **partial or substantial negative impact on their exports**, which confirms that the most significant effect of the crisis on the analyzed sectors is due to reduced exports, due to delay/cancellation of orders/agreements with foreign partners.

However, an additional problem for the companies caused by the closure of the borders and the difficulties in transport due to the crisis, is the slowdown and the delay in the import of raw materials. **Most of the companies that import raw materials** (even 80%) pointed out that the crisis has a **negative impact on the normal conduct of imports**, which de facto reflects on the availability of repro materials and increase their price.

Also, **many of the surveyed companies (74%)** point out that the crisis has a **negative impact on the overall logistics, distribution, and transportation process**. It entails severe problems in the whole production process. It's complemented by the problems that companies point out in terms of the regular conduct of administrative affairs with state bodies/institutions. As many as 50% of companies have indicated that they have problems obtaining the necessary documents from state institutions, which means that this is another burden for companies related to the lack of institutional capacity of state authorities in conditions of emergency.

All these difficulties faced by companies due to the crisis caused by the COVID-19 pandemic will inevitably impact the increase in costs of companies and reduce their productivity. Over **90% of the companies** pointed out that the crisis will have a **partial or substantial impact on the productivity** of their operations.

In particular, **the companies pointed out that their profits will decrease significantly** as a result of the crisis (as expected), given that their productivity is declining, fixed costs are rising due to reduced production, but also the costs of companies to provide specific health conditions and adjusted organization of the production and overall operation of the companies themselves. From the total number of surveyed companies, **80%** said the crisis would **reduce their profitability** by more than **20%**, of which over **50%** said that in 2020 they expect a reduction in their profitability by more than **40%.** compared to the previous year.

However, what is extremely important is that a **significant part of the companies**, despite the negative effects of the crisis seen through the prism of the reduction in revenues and increasing costs, point out that they **will not lay off a large number of their employees**.

Almost **40% of companies** indicated that they **would not fire employees at all,** while **26%** said the crisis would **reduce their employees by up to 20%.** Due to the seriousness of the crisis, some companies have indicated that there will be a significant reduction in the number of employees. In **17% of surveyed companies**, **the decrease in the number of employees would go as high as 40%.**

Also, most companies have indicated that the effects of the crisis have affected their liquidity. Specifically, **74% of the companies** pointed out at a **partial or strongly negative impact of the crisis on their liquidity.** In comparison, only 5% of the companies pointed out that the crisis does not affect their liquidity. Also, according to the survey results, small companies pointed out at a bigger problem with liquidity than medium and large companies, which is expected given that large companies have more stable financing sources than small companies.

What is also worrying is that many companies expect additional liquidity problems in the coming period. **61% of companies expect liquidity problems in the next 30-180 days.** This is confirmed by the fact that a significant number of companies have indicated that they already have problems with the collection of claims due to the crisis.

Practically, **85% of the companies** answered that the crisis has a **partial or substantial impact on the collection of their claims**, which of course, causes a severe danger in disrupting the liquidity level of the companies themselves.

The duration of the crisis itself will have a significant impact on the time required for companies to return to normal. Specifically, **in case the crisis lasts until June, most of the companies or 70% answered that it would take them a maximum of 6 months to return to normal.**

On the other hand, in case the crisis prolongs until the end of the year, companies expect it will take a longer time for them to return to normal. In such case,

only **39% of companies** indicated that **they would need up to 6 months** to return to normal, compared to most companies **(more than 55%)** who said **they would require significantly more time (6 to 12 months)** to return to the usual level of operations.

Concerning the measures that the Government has adopted within the so-called first and second package of anti-crisis measures, **most of the companies indicated that they are partially satisfied (48%) or not satisfied at all (41%).** In comparison, only a small part **(10%)** stated that they are satisfied with them. That's practically confirmed by the fact that **20%** of the companies answered that they **do not see any interest in applying for the measures**, while **28%** responded that they would not apply because they **do not meet the requirements**. The rest of the companies, or about 43%, said they plan to apply for the measures.

In the context of **potential proposed measures** that companies consider will help them overcome the crisis and lessen its harmful effects, the proposal to **subsidize part of the salaries of employees** is the most acceptable measure for companies. The companies find that the **provision of interest-free credit lines, loans with low-interest rates, and other relief in the credit conditions**, are also important proposals. Finally, some companies believe that in times of crisis, **it is necessary to reduce tax burdens and public duties.**

These proposals are in correlation with the problems addressed by the companies, especially in the part of reducing the revenues and increasing the costs that will have a direct impact on the profitability of the companies themselves, as well as the danger of liquidity disturbance due to disruption of the normal process of collecting claims.

3.2 Results and conclusions from the interviews

The interview is the second tool used to create a complete and objective picture of the effects of the crisis on the analyzed sectors. Specifically, within the research, **telephone interviews were conducted with 12 managers or representatives[3] of companies** from the metal-processing, machinery, electrical, and automotive industries.

The purpose of the interviews was to perform a detailed examination of the situation in the individual analyzed sectors based on the size of the companies themselves. For this purpose, **the selection of companies** whose representatives would be interviewed is based on several criteria: 1) representation of all individual sectors (metal-processing, machinery, electrical and automotive sector), 2)

[3] 1) Viktor Mizo – Kostel Ohrid; 2) Avram Stojcevski – Vanhul Skopje; 3) Borijan Borozanov – Aptiv Skopje; 4) Goran Anevski – Rade Koncar TEP Skopje, 5) Slavco Andreevski – Bratstvo Inoks Ohrid, 6) Aleksandar Seizov – AgroBar Vinica, 7) Darko Tasev – TM Stip, 8) Vlado Ancev – Brako Veles; 9) Ile Nikolov – Aktiva Stip; 10) Goran Petreski – TIM Engineering Kicevo; 11) Kostadin Nikolovski - Darkos Skopje; 12) Marta Naumovska Grnarova – Zavar Skopje.

representation of companies of different sizes (small, medium and large companies), 3) representation of domestic and foreign companies.

The focus of the interviews was to identify when the companies felt the first effects of the crisis, how they deal with the effects in terms of reorganizing their operations, how to adapt to the new conditions, what are their forecasts and scenarios for the effects and the time required for the stabilization of the work, whether they use or plan to apply for the Government's measures and what are the possible draft policies that can help the analyzed sectors in overcoming the crisis and its consequences.

The results of the interviews lead to **several useful conclusions** that could further clarify the effects of the crisis on the analyzed sectors, based on the results of the survey and proposed policies aimed at supporting the analyzed sectors.

Namely, **the first conclusion is that there is a particular specificity related to the consequences of the crisis, depending on the sectors**. Practically, according to the indications of the interviewed representatives from the selected companies, **the companies in the automotive sector are expected to have the most significant negative effects** due to the reduced world demand for vehicles and buses. **Slightly less affected will be companies in the metal-processing sector**, and **the companies in the electrical industry are the least affected.**

Also, **large companies** and **the ones mostly export-oriented will be more affected by the effects of the crisis**. In contrast, smaller companies being more flexible, predict that they will overcome the crisis in relatively more easily given that some of them are tied as suppliers of large domestic companies.

However, **the companies do not have an accurate projection of possible scenarios related to the decline in revenues by the end of the year.** Some of them have already canceled orders from their customers, but still can't say for sure how strong the crisis will be by the end of the year.

In terms of the period when the first effects of the crisis occurred, **most companies felt the first effects in the second half of March**, **initially predicting a decline in revenue by less than 20%** compared to the previous year. However, the most tangible effects of the crisis are expected in the second and third quarters of 2020. In contrast, recovery and normalization of the situation is expected by the end of the year and the beginning of next.

When dealing with the crisis, **some companies have reorganized their production into shifts, reorganized employees and retrained them according to current needs and orders. They also reduced the number of employees by sending them to regular annual leave**. Some companies dedicate time to educating and retraining their employees.

In terms of overcoming the problems concerning the reduced liquidity due to the crisis, there are certain specifics between foreign and domestic companies. Specifically, **most of the foreign companies will be temporarily financed by their parent companies. In contrast, the domestic companies will have to provide financial bridging by using regular bank loans, reprogramming the existing**

credit lines, or possibly credit lines with favorable conditions provided through the Development Bank. But most of those loans are aimed at overcoming the crisis and covering the cost of the working capital, while companies that had investment plans for this year are postponing them for next year.

Of course, all this has an impact on the expenses and profitability of companies. Specifically, **all companies point out that the expenses in this period show an increasing trend for several reasons.** First, due to the increase in fixed costs, resulting from lower utilization of production capacities. **Second,** due to increased expenses associated with interruptions and difficulties in the delivery of raw materials. **Third,** due to costs associated with the payment, significantly lower productivity, and the need to provide specific working conditions following the recommendations for more health and sanitation.

What is common to all companies is that they do not plan to lay off their employees, especially companies with fewer employees. At the same time, larger companies expecting a more significant blow from the crisis do not rule out this possibility but point out that this will be the last option. Additionally, in the event of layoffs, it would affect the temporary employees and those without any significant qualifications. They would be more than likely to retain the more experienced employees with specific qualifications, given that before the crisis, most companies faced a shortage of skilled labor. Some of the companies have invested in training their staff in the past period, so in that direction, their dismissal would cost them much more.

CONCLUDING REMARKS AND POLICY PROPOSALS

Based on the survey on the consequences of the crisis, and telephone interviews with representatives of companies from the analyzed sectors, **the metal-processing, machinery, electrical and automotive industries are facing severe negative effects of the crisis** that are likely to deepen in the next three quarters of the year.

Specifically, except for the metal processing industry, which in March recorded **a growth production** by **9.8%** or **11.2%** in the first quarter of 2020, all other sectors report declines in the industrial production. The machinery industry in March suffered a massive **decline in industrial production** by **36.2%,** the electrical industry decreased by **30.7%,** while the automotive industry decreased in the same month by **16.6%.**

The decline of the production in the analyzed sectors in March was due to delays in orders from foreign partners, due to the crisis and declining global demand, as well as difficult working conditions caused by the coronavirus pandemic. Namely, the **decline in exports of goods** in **March** amounted to **26.8%,** while exports in the **first quarter decreased by 8.1%.**

At the same time, the most significant **decline in exports** in the first quarter was recorded in the processing industry by **9%**. In comparison, exports of machinery and transport devices **fell** by **13%** in the first quarter, which means that these negative tendencies in March are significantly higher. The worrying factor is that these negative trends will certainly not change quickly in the next few months. On the contrary, if we follow the world trends and expectations of export companies in the country, then it is very likely that these negative trends will only deepen in the second and the third quarter of the year.

The consequences of the crisis in the analyzed sectors will have serious effects on the overall economy, given that their importance to the Macedonian economy in terms of several indicators such as relative participation in the processing industry and GDP, exports, number of employees, taxes and other parameters, is extremely significant.

Namely, the results of the sector analysis indicate that the **relative share of the analyzed sectors** in the **entire processing industry** is almost **30%**, which means more than **4%** of the country's **GDP**. It only shows that these industries are the leading industrial sectors within the processing industries and also have a significant role in the Macedonian economy. Also, the analyzed sectors' importance is even more significant if we look through the prism of their relative share in the country's total exports. The **total exports of the analyzed sectors** in 2019 amounted to **2.092 million EUR** or almost **36%,** or more than one-third of the country's total exports.

In terms of the number of employees, these sectors are also vital for the Macedonian economy. Namely, **the number of employees** in 2019 **topped 47.112**. Most of these jobs are in the automotive industry or a **total of 28.523**. The sector has

the most significant number of newly created jobs in the last three years compared to any other sector in the economy. In the period 2017-2019, more than **16.000 jobs** were created in the automotive industry, which shows that this industry has reached its greatest progress in recent years.

Additionally, **the average net salary in the analyzed industries** is higher than the average monthly salary in the processing industry, which in 2019 reached **21.450** denars. Namely, the average net salary in the metal processing industry in February 2020 reached **23.359 denars**; in the machinery industry, it reached **36.460 denars**; in the electrical industry, it reached **24.909 denars**; in the automotive industry **24.879 denars** and the production of other transport equipment, the average net salary reached **28.671 denars**. More importantly, wages in these industries have been growing steadily in recent years (only in February 2020, the average salary in the analyzed sectors increased by **15%** compared to the same month last year). It means that these industries had strong development potential before the crisis occurred.

The fact that these sectors are critical to the economy, indicates that policymakers need to have a particular approach in creating support for companies in these sectors so that the consequences of the crisis can be mitigated with less negative effects. Significantly, companies have made efforts with their resources to lessen the initial consequences of reduced production and revenue so that they can retain their employees. Some of them were forced to take annual leave without pay, while some companies took advantage of this period when production was reduced for training and retraining of their employees.

Companies' efforts have made it possible to save most of the jobs in these few months, which in some ways contributes to easier crisis management and smaller consequences for the overall economy. However, for companies to be able to maintain that in the next period in conditions when their production and exports are significantly reduced and when their financial flows are disrupted, and liquidity is needed, the state needs to offer some serious support.

Due to all these problems faced by companies in these industries and which will be reflected negatively in the Macedonian economy, it is necessary to create measures that will help them overcome this situation. Such state support should be in line with measures to preserve the liquidity of companies, preserve jobs, and facilitate the operation of companies and reduce their costs.

For such measures to be appropriate to the problems and real needs of the companies, interviews were conducted with several representatives of companies from the analyzed sectors and an online meeting with the Association for Metal, Machinery, Electrical, and Automotive Industry.

The systematized proposed measures that would help the companies overcome the crisis, based on the interviews with the companies' representatives, are:

1**) State support for the payment of salaries to employees** in the export companies that will suffer a decline in revenue by more than 30%. The support would be extremely significant in the next few months when the biggest blow to these sectors is expected. Such support by subsidizing part of the salaries of employees in the affected companies in these sectors will be extremely important in maintaining the

companies' overall condition and saving jobs, especially the qualified staff. It is essentially important further in the recovery process given the fact that these sectors will have the most significant impact in the second and third quarters, after which a gradual recovery is expected.

2) **Provision of favorable credit lines through the Development Bank** for the liquidity of companies in the analyzed sectors, facilitating access to finances for financing investment projects that will be aimed at increasing export competitiveness, including providing guarantees, purchases of export receivables, and customs debts and the like.

3) **Serious consideration for the possibility of coordinating and reducing the customs rates at the level of customs rates for imports in the EU.** It's essential given that some companies pay high customs duties on imports of raw materials from outside the EU, which significantly increases the cost of their production process. In terms of customs duties, **the reduction of customs duties on machines** from countries outside the EU should be seriously considered. It can be a powerful impetus for companies in their technological modernization and production upgrades.

4) **Changing the way VAT is calculated and collected when importing materials and raw materials** used in the production and export of products. That way, the funds that companies pay in advance for VAT will be reduced, while they wait for returns for several months. It will have a positive effect on cash flows and help companies increase their liquidity, especially in such conditions when it is significantly impaired.

5) **Facilitate all bureaucratic procedures** in such conditions and, at the same time, increase the cooperation of the competent institutions with companies to reduce the administrative-bureaucratic barriers faced by the companies, including those in the TIR zones.

6) **To consider the possibility of changes in the law on labor relations** to increase flexibility and the possibility of flexible working hours that can be extremely useful for preserving more jobs in these conditions of reduced production and income. It means that employees can be paid and insured according to productive working hours. Also, there is a proposal that the state would cover part of the costs, or the employees will get 50% or 70% of their salary, in conditions of emergency or forced sick leave.

ANNEX 1 ELECTRONIC SURVEY QUESTIONNAIRE

1. Company size:

- Up to 10 employees (micro)
- 11 to 50 employees (small)
- 51 to 250 employees (medium)
- More than 250 employees (large)

2. Company headquarters

- Northeast
- Skopje
- East
- Polog
- Vardar
- Southwest
- Southeast
- Pelagonia

3. Sector

- Sector of agriculture and food industry
- Sector construction
- Sector tourism and hospitality
- Sector ICT
- Sector textile and leather industry
- Sector metal, electrical, machinery and automotive industries

4. To what extent the consequences of COVID-19 have direct impact on the number of your employees?

- Decreased by 1% - 20%
- Decreased by 21% - 40%
- Decreased by 41% - 60%
- Decreased by 61% - 80%
- Decreased by 81% -100%
- Number of employees has increased
- My company has no impact from the crisis

5. Do the consequences of COVID 19 have a direct impact on your exports:

- no impact
- weak impact
- partial impact
- big impact
- we don't export

6. Do the consequences of COVID 19 have a direct impact on imports from abroad:

- no impact
- weak impact
- partial impact
- big impact
- we don't import

7. Do the consequences of COVID 19 have a direct impact on the delay/cancellation of orders?

- no impact
- weak impact
- partial impact
- big impact

8. Do the consequences of COVID 19 have a direct impact on the collection of claims?

- no impact
- weak impact
- partial impact
- big impact

9. Do the consequences of COVID 19 have a direct impact on price increase or the availability of raw materials?

- no impact
- weak impact
- partial impact
- big impact
- we don't use raw materials

10. Do the consequences of COVID 19 have a direct impact on your productivity?

- no impact
- weak impact
- partial impact
- big impact

11. Do the consequences of COVID 19 have a direct impact on your liquidity?

- no impact
- weak impact
- partial impact
- big impact

12. Do the consequences of COVID 19 have a direct impact on your logistics and distribution?

- no impact
- weak impact
- partial impact
- big impact

13. Do the consequences of COVID 19 have a direct impact on your administrative functions - providing documents from state organs/institutions:

- no impact
- weak impact
- partial impact
- big impact

14. What measures have you taken (or are planning) as a result of COVID 19:

- Organizing part of the employees to work from home;
- Decreasing the working hours;
- Laying off part of the employees
- Laying off all employees;
- Pay cuts;
- Unpaid dividend;
- Closing part of the production processes/capacities;
- Closing the entire production process/facilities;
- Cancellation of planned production and orders;
- Adaptation and improvement of sanitary and technical operating conditions;
- Debt reprogramming and increasing credit borrowing;
- Organizing alternative delivery of products to end customers.

15. Do you have the ability to customize your work, independently of the workspace, through online platforms?

- Yes, entirely
- Yes, partially
- No

16. Compared to the first quarter of 2019, what is the estimation of your profit losses in the first quarter of 2020 as a result of the COVID 19 crisis?

- 1% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- Above 80%
- My operations are positive
- No impact from the crisis

17. How much do you think the revenues will decrease in 2020 as a result of the COVID 19 crisis?

- 1% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% -100%
- Sales will increase
- No influence from the crisis

18. How much do you think your profitability will decrease in 2020 as a result of the COVID 19 crisis?

- 1% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% -100%
- Profitability will increase in 2020
- No impact

19. How much do you think the number of your employees will decrease in 2020 as a result of the COVID 19 crisis?

- 1% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% -100%
- Number of employees will increase
- No impact

20. Do you expect problems in your liquidity?

- Yes, in the next 15 days
- Yes, in the next 15 – 30 days
- Yes, in the next 30-60 days
- Yes, in the next 60-90 days
- Yes, in the next 90 – 180 days
- Yes, after 180 days
- No, I don't expect any problems with my liquidity

21. Are you satisfied with the measures taken by the Government so far and how much will they help you as a company and your sector to overcome this crisis more easily?

- Satisfied
- Partially satisfied
- Not satisfied

22. What measures do you think the state should take in order to help stabilize your business quickly and keep the majority of workers?

- Subsidy on part of employees' salaries
- Postponement of income tax payment
- Reduction of tax burdens
- Reduction of social contributions
- Reduction of profit tax advance payments
- Recognition of sick leave for less than 30 days by the FHI
- Exemption from payment of pension insurance contribution
- Providing interest-free loans
- Granting loans to maintain liquidity and working capital for companies

23. If the COVID-19 crisis ends by the end of June, how long do you think it will take you to return to normal?

- Less than 30 days
- From 1 to 3 months
- From 3 to 6 months
- From 6 to 12 months
- More than 12 months
- Never will return to the normal work
- We expect the crisis to impact our work
- The crisis will not have any impact on the work

24. If the COVID-19 crisis ends by the end of 2020, how long do you think you need to get back to normal?

- Less than 30 days
- From 1 to 3 months
- From 3 to 6 months
- From 6 to 12 months
- More than 12 months
- Never will return to the normal work
- We expect the crisis to impact our work
- The crisis will not have any impact on the work

ANNEX 2 QUESTIONNAIRE FROM THE INTERVIEWS WITH THE COMPANIES

1. What are the effects of the crisis on your company's operations?
2. When was the crisis initially felt in your work?
3. Will you fulfill the annual plan, and what are your forecasts for the operation of your company by the end of the year?
4. What is your current work capacity, and have you taken any measures to redefine the production process?
5. What are the effects of the crisis on your company's productivity and profitability?
6. Do you have any interruptions in the supply chains, and do you face transport and logistical problems due to the crisis?
7. Will you be forced to reduce your employees due to the crisis?
8. What are your expectations for a return to normality?
9. Have you developed scenarios for the operation of your company according to the expectations for the outcome of the crisis?
10. Do you think about any changes in your production process after the crisis?
11. Have you used government anti-crisis measures, and do you think they can help your sector lessen the consequences of the crisis?
12. What are your proposed measures that can help companies in your sector?

ANNEX 3 INTERVIEWS WITH MANAGERS OF COMPANIES FROM THE ANALYZED SECTORS

	Company	Representative	Activity
1	Kostel Ohrid	Vktor Mizo	Automotive
2	Vanhul Skopje	Avram Stojcevski	Automotive
3	Aptiv Skopje	Borijan Borozanov	Automotive
4	Rade Koncar TEP Skopje	Goran Antevski	Electric
5	Bratstvo Inoks Ohrid	Slavco Adrevski	Electric and Metal Processing
6	AgroBar Vinica	Aleksandar Seizov	Metal Processing
7	TM Stip	Darko Tasev	Electric
8	Brako Veles	Vlado Ancev	Metal Processing
9	Aktiva Stip	Ile Nikolov	Metal Processing and Automotive
10	TIM Engineering Kicevo	Goran Petreski	Metal Processing and Machinery
11	Darkos Skopje	Kostadin Nikolovski	Metal Processing and Machinery
12	Zavar Skopje	Marta Naumovska Grnarova	Metal Processing and Machinery

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