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**THE IMPACT OF THE CRISIS ON AND CRISIS-
HANDLING PATTERNS IN FOREIGN-OWNED
COMPANIES IN HUNGARY**

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The impact of the crisis on and crisis-handling patterns in foreign-owned companies in Hungary

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Abstract

The COVID-19 pandemic has brought over a related economic crisis, which affected firms differently. The paper concentrates on the impact of the pandemic on foreign-owned subsidiaries operating in Hungary in the automotive and electronics industries. Based on interviews with the representatives of fifteen such companies, we analysed the extent of the impact of the crisis on these firms and their crisis handling measures, including their reliance on state support. Our results are mainly in line with findings from the international literature, but with certain new elements. We found that not only the industry but the activity itself is also important from the point of view of the impact of the crisis. We have also shown that foreign-owned subsidiaries are seldom in need for state financial support. In Hungary, as well as in other countries, layoff is the last resort for handling the crisis. We showed signs of increasing solidarity in handling the crisis at the company level.

JEL: F23, H12, L62, L63

Keywords: economic crisis, foreign-owned subsidiaries, automotive and electronics industries, Hungary

1. Introduction

The COVID-19 pandemic has serious and long-lasting consequences on the economies and the firms operating therein. It affected industries and countries to different extent and various economic actors reacted differently to the consequences of the crisis.

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Our paper is descriptive in nature, related to the relevant literature and the main areas analysed in that. Our aim is to show the impact of the crisis on foreign-owned automotive and electronics companies operating in Hungary and their approaches to handling the consequences of the crisis. We rely on company interviews with representatives of foreign-owned firms, thus we could collect more detailed information, which can be compared with the existing research results. Our results are mainly in line with findings from the literature, however, we can highlight certain specific factors based on our research. We found that it is not only the industry but also the segment and the activity itself, which influences the impact of the crisis. Furthermore, we found that all the analysed companies are financially stable, and thus for them state aid was rather an additional benefit than a tool for survival. An additional interesting finding is the increase in solidarity (which has not been significant recently in Hungary at the company level).

The paper first presents a detailed review of the related literature. Then the details about the methodology applied are presented. The next chapter contains descriptive details about the impact of the crisis on foreign-owned firms operating in Hungary in the automotive and electronics industries, and their crisis handling measures, including their reliance on the various forms of state aid. The last section concludes and presents potential future research directions.

2. Review of the literature

We rely on various strands of the literature in our analysis. First, it is important to see whether foreign-owned companies are impacted upon differently by the various crisis. Second, there is an increasing number of articles on how the COVID-19 pandemic specifically affected the different groups of firms and what the main factors are on which this impact depends. Third, there are already numerous analyses about crisis handling measures by firms and state support during the COVID-19 pandemic in the world economy and in individual countries. Fourth, in the last group of articles, we can find some preliminary analysis on Hungary in these respects as well.

2.1 Impact of the crisis on foreign-owned versus other firms

It is worth having a closer look at the question of the impact and handling of various crisis by foreign-owned firms before the COVID-19 pandemic. According to the literature, foreign-owned firms usually may be better able to weather the crisis situations (Athukorala, 2003), as they are financially more stable than their domestic counterparts and have access to multiple sources of inputs, thereby they can minimize disruptions to the supply chain. At the same time, foreign-owned firms may also be exposed to the impact of the crisis on a larger scale, due to their size, presence in multiple countries with different timing in terms of the crisis impact. Furthermore, the demand for their products is generally more sensitive to business cycles, increasing their vulnerability (Markusen, 2002). Their better reaction to and quicker recovery after crisis can be attributed to the ownership advantages of multinational enterprises (MNEs), which enable them to react to sudden events on the market and adapt themselves relatively quickly to new market conditions, especially if their motivation is not reliant on the local market (Alvarez and Görg, 2007). On the other hand, their quick reactions to negative events could even have a destabilising impact on the host economy, though many factors influence these reactions, such as the position of the subsidiary in the network of the multinational firm, its level of internationalisation, the industry of operation, or the home country of the investor.

From that point of view, the 2008-9 financial crisis provides a good study case. Some articles have found that subsidiaries of multinational companies adjusted to the 2008-9 global financial crisis relatively fast compared to their similar local counterparts. Similarly, their production and financial linkages could also benefit local partner firms in terms of coming out of the crisis more rapidly than otherwise. On the other hand, among these subsidiaries, those which share stronger vertical production and financial linkages with parents exhibited greater resilience (Alfaro and Chen, 2010). Thus, global value chain (GVC) related activities and subsidiaries fared the crisis better. Other empirical studies have not found significant differences between foreign-owned and domestic firms in crisis situations. For example, subsidiaries proved to be no more footloose than domestic firms after the 2008-9 crisis in Ireland (Godart et al., 2011) or in Chile during other crisis instances, as shown by Alvarez and Görg (2007). Other empirical studies call attention to

the fact that the behaviour of foreign-owned versus domestically owned firms may differ from each other in certain areas, while in others they behave similarly. For example, according to Varum and Rocha (2011), there were no significant differences between domestic and foreign firms in employment growth during recession, but they differed from each other in terms of firms' sales turnover growth, which latter was larger for foreign-owned firms. Thus, the empirical evidence is rather inconclusive.

2.2 Impact of the COVID-19 pandemic

The impact of the COVID-19 pandemic is analysed in the international literature in three main areas: first, how the pandemic affected firms and what factors influence this impact. Second, what the role of state support is in handling the crisis at the firm level. Third, how companies themselves handle the consequences of the crisis.

2.2.1 Heterogeneous impact on firms- explanatory factors

The COVID-19 pandemic affected firms overall very negatively in the world economy as cross-country (for example Apedo-Amah, 2020; Tressel and Ding, 2021) and country studies (for example Bartik et al., 2020 for the US; Shen et al., 2020 for China or Tourek; 2021 for Rwanda) show. At the same time, the impact of the crisis on firm performance is heterogeneous, contingent on various factors. The findings in the literature emphasize some common elements, though there are some contradictory results as well. Golubeva (2021) underlined that the impact on firm performance varies depending on certain firm-specific, financial and country specific factors, such as sector, firm size, participation in exports and market demand for companies' products. In terms of handling the negative consequences of the crisis at the firm level, equity contributions, cash balance and debt financing are of primary importance, while the impact of government support is not significant. Country-specific characteristics also matter from the point of view of the impact of the pandemic at the firm-level, especially the level of development and corporate governance infrastructure. Other company-level strategic factors and characteristics that influence the impact of the crisis on firm performance, resilience and sustainability are emphasized by Obrenovic et al. (2021). These factors are, among others, networked structure, distributed leadership, adaptive culture, more

informed and decentralized decision-making, and existing financial contingency plans. Based on the experience of China, South Korea and Singapore, resilience, strategic agility, entrepreneurship and innovation are emphasised as factors helping to combat the crisis at the firm level (Liu et al., 2020). Other studies point at further important characteristics of firms, which influence the impact of the crisis. Internationalised firms are usually more deeply affected, but they also handle the crisis better than their non-internationalised counterparts (Borino et al., 2021; Mirodout, S, 2020; or Zhang, 2021 in the case of Japanese multinationals). Size of the firm also matters: smaller firms are usually more hit by the crisis (Apedo-Amah et al., 2020; Bartik et al., 2020; Gu et al., 2020).

As a further distinguishing factor explaining the heterogeneity of firm-level impact of the pandemic, a few studies found differences between domestically and foreign-owned firms in general or in individual countries in terms of their “crisis-affectedness”. Gu et al. (2020) documented that private firms suffered more than state-owned enterprises and foreign-owned firms in Sozhou, China. Based on survey data, Saurav et al. (2021) showed that while the overwhelming majority of MNE subsidiaries in developing economies were negatively affected, there is a gradual improvement through coming out of the crisis. Manufacturing firms are harder hit than service ones, due to weak demand and supply chain disruptions. The recovery of demand and supply chains as well as government support help these firms to pull through. The importance of participation in GVCs in terms of influencing the impact of the crisis is underlined by Waldkirch (2021) as well, who documented that foreign-owned firms that rely more on GVCs were especially affected compared to other company groups in selected developed and developing economies.

Certain authors call our attention to different ‘mindsets’ of those firms, which could handle the crisis well. Companies that have responded successfully to the pandemic, consider the crisis as an opportunity. They invested in new industries (Zou et al., 2020), introduced marketing innovation (e.g., new way of selling) (Marques Santos et al., 2021), or changed their product mix (Apedo-Amah et al., 2020).

Industry differences also matter. COVID-19 has had a different impact on each industry, whereby lower productivity activities are replaced by higher productivity ones.

Some industries, such as accommodation or air traffic experience significant decline, while certain others have moderate increase (Bloom et al., 2021). This cross-sectoral redistribution is also highlighted by di Mauro and Syverson (2020), who add that state aid policies in response to the COVID-19 shock interfere in this process. By taking sectoral aspects into account instead of competitive high-productivity businesses, state aid may affect firm competitiveness. Model calculations of Maliszewska and her co-authors (2020) also pointed out this sectoral effect. Due to industry differences, the economic downturn may be greater in countries with different sectoral compositions, in those, for example, that are more dependent on trade and where tourism plays a key role. Industry links also matter. Liu et al. (2021) provide examples from the manufacturing industry in Asian countries. Factory closures in China have had a negative impact on manufacturing of electronics, as well as the Korean automotive industry halt its production because of Chinese component shortages. Companies restructure their production with decoupling their orders from Chinese suppliers as well as relocating their production out of China.

The importance of GVCs is also analysed. The question arises whether the solution to shorten the supply chain and make it more regional is viable? The evidence is not inconclusive. Certain GVCs may shift towards regionalism based on geographical proximity to the home country of MNCs, this trend may rise after the pandemic, especially in industries where cost and efficiency are important in addition to flexibility (Pla-Barber et al., 2021). On the other hand, regarding the vulnerability of GVCs and their consequent reorganisation, Mirodout (2020) nuances the picture. Experience from previous crises and disasters, like the Japanese earthquake and tsunami in 2011, and the current COVID-19 crisis, has shown that global supply chains have flexibly adapted to the new conditions. Flexibility of the company can be achieved through product, (re)design of the value chain and resilience monitoring.

A further influencing factor from the point of view of the impact of the pandemic comes from the financial situation of a company. Not surprisingly, many otherwise sound companies are facing acute liquidity constraints that eventually might cause solvency problems. Tressel and Ding (2021) found that, both in emerging markets and a few large, advanced economies, the short-term impact of the shock on firms' cash balances and on the capacity to pay interest expenses from operating profits is very severe as a very large

share of non-finance firms with debt would face liquidity difficulties and may cause for many firms an increase in their debts. This resulted in problems of debt service solvency when companies' interest rate coverage ratio (ICR) falling below one and having a cash shortage (in the absence of further borrowing). While solvency risks and debt repayment (ICR-related) risks tend to be concentrated in a few sectors, liquidity and borrowing needs tend to be more widespread across industries, which may be translated into lower investments compared to the pre-pandemic period (Benassy-Quéré et al. 2021).

Regarding the geographical impact of the crisis, it has a financial aspect as well, as firms in developing economies with shallower financial markets are more vulnerable to liquidity problems and insolvency risks (Apedo-Amah et al. 2020). Potential credit risks to financial systems from large corporations would be significant, in particular among several emerging markets and in a few advanced economies and credit risks to banking systems are also significant in these countries. In general, liquidity constraints and solvency problems are more acute among countries with less developed financial systems (Apedo-Amah, et al. 2020). Furthermore, there is a huge inequality among firms in terms of their access to finance and therefore their likelihood of managing to survive the crisis. At the same time, size matters from the point of view of the financial situation of the company as well: smaller firms tend to face more severe financial constraints, have enough cash buffers for shorter periods of time, and are even more likely to go bankrupt during COVID-19 in developed countries. Of course, the extent of financial difficulties also depends on the sector of operation. For those services and manufacturing companies which are more affected by the pandemic, this is higher. However, among SMEs, firms perform differently. Gourinchas et al. (2020) classify SMEs into three groups based on estimates of their cash balance in the absence of direct policy support and with no additional borrowing: (i) 'survivor' firms that don't need support to weather the COVID-19 shock; (ii) 'viable' firms that would survive in normal times but fail under COVID-19; and (iii) 'ghost' firms that would fail regardless of COVID-19. Banerjee and Hofmann (2020) define "zombie" firms that have a lower debt repayment ability measured by ICR. Zombie is defined as non-viable firms based on their capacity to generate "adequate" profits and productivity, and their high reliance on subsidized lending. The prevalence of Zombie firms may increase as the result of the crisis.

2.2.2 The role of state support

Governments introduced various measures to help distressed firms. Blanchard et al. (2020) explain that solvency and liquidity policy support for firms has been crucial at the onset of the pandemic, and should continue in the post-lockdown period, aiming at protection and reallocation, in the form of temporary wage subsidies and loan guarantees. They note that dealing with legacy of debt will be complex and expensive and that restructuring plans for viable but insolvent firms will be needed, together with temporary wage subsidies. However, Golubeva (2021) found in her econometric analysis that in terms of mitigating the negative financial consequences of the crisis at the firm level, equity contributions, cash balance and debt financing are of primary importance, while the impact of government support does not prove to be a significant financing source (as it has been directed towards the most vulnerable and not the most viable firms).

Other types of government support are also available, and some authors emphasize the usefulness of certain measures. Increasing unemployment induced governments to deploy various schemes in order to keep workers in employment, such as short-time work schemes, solidarity funds, tax deferrals or other types of government support (for example Osuna and Garcia-Pérez, 2021 for Spain, or Bénassy-Quéré et al., 2021 for France) thus trying to reduce the number of job losses. These schemes varied from country to country. Demmou et al. (2021) stress the importance of alleviating labour costs for reducing the proportion of newly insolvent firms. Since firms react to negative shocks by reducing their payroll, through short-time work, non-renewal of short-term contracts or layoffs, therefore public support consists of the possibility to introduce short-time work, direct subsidies through the 'solidarity fund' (a subsidy scheme for SMEs), tax deferrals and tax reliefs. It is assumed that, thanks in particular to state-guaranteed loans, firms are not subject to credit constraints. The importance of state support is highlighted through the fact that the proportion of insolvent companies would be much higher without state support in France (Benassy-Quéré et al. 2021). The problem is that state support does not systematically protect more productive nor less productive firms, most likely because the support was provided very broadly. On the other hand, Bighelli et al. (2021) argue that public support was distributed rather efficiently. Government subsidies were distributed towards medium productive firms, and only marginally towards the

'zombies' defined by Banerjee and Hofmann (2020) and mentioned in the previous section. However, the negative impact of the pandemic on productivity growth was large, because more productive firms received lower relative size of the support.

2.2.3 Crisis management at the firm level

In terms of handling the consequences of the crisis, firms used various measures. When searching for classifications of response strategies a recent work (Wenzel et al., 2021) included four types of responses – retrenchment, persevering, innovating, and exit – highlighting the different approaches at the firm-level. Besides, the specific response of an organisation may also be shaped by the institutional context that influences allocation of resources, culture, and actions (Zhou, 2020).

According to empirical analyses, while the pandemic caused an unprecedented shock to the labour market (Fujita et al., 2020), firms usually refrained from sacking employees or at least tried to do so (Apedo-Amah et al., 2020), they rather sent workers on (paid) leave or reduced working hours, in certain cases cut wages (Meyer et al., 2020). However, firms getting into hopeless situation and going bankrupt still had to lay some their employees off, indeed, rising unemployment data back that statement. For example, in the US, there was a significant job loss, according to Coibion et al. (2020), in the first month of the pandemic in 2020, the number of estimated job loss was larger than over the entire Great Recession. As it was mentioned, governments used various schemes in order to keep workers in employment, and firms also resorted to these schemes in order to keep their employees.

During the pandemic, digital solutions appeared in the operations of almost every company (Pla-Baber, 2021, Apedo-Amah et al., 2020, Kuriakose & Tran, 2020; Mont et al., 2021), although to varying degrees for companies of different sizes and in different countries (Apedo-Amah et al., 2020). The pandemic probably led to more remote work (Foss, 2021; Zou et al., 2020), to the establishment of remote business negotiation models and remote recruitment (Zou et al., 2020), to more intensive use of e-commerce (Andrews et al., 2021). Applications, Intranet, social media, online communication platforms and other online solutions were included in the daily business routines (Foss, 2021; Obrenovic et al., 2020; Andrews et al., 2021). These types of measures had considerable impact on

the everyday operation of firms – and some of these changes may be long lasting. Remote work affects the way performance is monitored and rewarded and the way employees work together (teamwork, team size). These and the increasing use of freelancers and part-time workers may reduce loyalty (Foss, 2021).

In addition, research also emphasizes that modularization of tasks and task sequences (Foss, 2021) are more likely to sustain business operation during the pandemic. On the other hand, there is limited research on organisational responses during pandemics, with some exceptions being responses to SARS (Henderson and Ng, 2004; Johnson Tew et al., 2008) and Ebola (Shin et al., 2018), but those are focusing mainly on specific sectors such as tourism or health care. When it comes to the effect of COVID-19, it is not yet clear whether it effected companies' (re)organisation at all. What we know is that many organisations have responded by "going digital" as it was mentioned above, i.e. by shifting to digital means of communicating and delivering their products and services (Mont et al., 2021). Others had been forced into "imposed service innovation", that is they took enforced actions to transform business models within resource and operational constraints (Heinonen and Strandvik, 2020).

We need to mention not only the long-term remaining practices caused by the pandemic but also the efforts of companies to respond more successfully to future unforeseen events. More intensive use of solutions that support corporate foresight are expected, such as risk-monitoring systems, business continuity plans, scenarios and stress tests as well as the continued use of various digital solutions (Pla-Barber, 2021, Foss, 2021, Liu et al., 2020, Mysore & Usher, 2020, Tressel & Ding, 2021).

Overall, the literature has already touched upon various aspects of the crisis, including the factors, which affect the impact of the crisis at the firm, industry or country level, the importance and efficiency of government support, the measures and changes applied by companies in handling the crisis situation and those changes and modifications among these, which are expected to stay with us in the future.

2.3 The impact of the COVID-19 pandemic on Hungary's economy

The Hungarian economy and firms operating in Hungary were hit hard by the pandemic-related economic crisis. The negative impact was similar to what other countries in the region (Visegrad countries) experienced, partly because their similar level of integration into the European and world economy and the high share of the automotive industry in these economies (Dániel et al., 2021). Indeed, the various industries and subindustries faced different risks during the pandemic (Juhász and Szabó, 2021). Exports of the automotive industry declined considerably (Várhegyi, 2021). However, foreign-owned export-oriented firms experienced larger falls and quicker recovery compared to Hungarian-owned companies (Köllő and Reizer, 2021). Employees were also negatively affected. In the first two quarters of 2020, especially school leavers, young workers and unskilled workers were hit hard and there was a 6 % decline in working time (Köllő and Reizer, 2021). The growth of real wages decelerated (Várhegyi, 2021). There was an increase in telework and the use of digital solutions, but that was mainly available for (highly) skilled workers (Köllő and Reizer, 2021) and understandably much less for blue-collar workers. In Hungary, according to empirical studies, there are significant differences in the HR part of crisis management of small and medium-sized companies on one hand and large and/or foreign-owned companies on the other hand: SMEs resorted much more often to lay-offs, to wage cuts and freezes and overall, took more drastic steps than their larger and/or foreign-owned counterparts (Pató et al., 2021). The importance of HR increased in all companies in providing a supportive environment for workers in these turbulent times (Pató et al., 2021) and among the circumstances of the simultaneous emergence of numerous types of risks, the most efficient crisis management techniques are those, which pay attention to the wellbeing of employees (Juhász and Szabó, 2021). State support may play an important role during pandemic times to help firms survive and keep their employees – wage subsidies in Hungary were found to be small (Nagy et al., 2021), though with relatively flexible regulations (Csiki, 2020).

3. Methodology

As far as our methodology is concerned, we collected the information for the analysis of our research question from questionnaire-based, semi-structured interviews with leading managers of 15 automotive or electronics subsidiaries operating in Hungary. We narrowed down the analysed industries in order to handle the impact of industry specificities to some extent. Our interviews were conducted between January and July 2021. In our sample, there are seven Hungarian subsidiaries of German, two of U.S., two of Chinese and one-one French, Japanese, Austrian and Swiss multinationals. Nine companies operate in the automotive industry and six in electronics (however, in certain cases, electronics part and components for cars are produced, showing the close connection and interlinkages between the two analysed industries).

Besides enquiries about the main characteristics and operation of the subsidiary, we included into our questionnaire the following COVID-19 related questions:

1. Has the COVID-19 pandemic had an impact on the development of industrial relations within the company? Did you have to lay off workers, reduce working hours, send workers on leave or otherwise deviate from normal operations? Did the parent company give any direct instructions or suggestions in this respect? Have representatives of the company's employees been consulted on these measures?

2. What virus protection measures has the company put in place? How do these virus protection measures affect effectiveness? Do you have any data on the number of employees absent during normal three or two-shift (depending on your normal operation) working hours (not during lockdowns)?

3. Have you applied for and received any public assistance or financial support from the government? What kind of assistance have you applied for?

4. In your opinion, how will the operating environment, and possibly the internal functioning of the companies and enterprises, change after the pandemic compared to the pre-pandemic period?

Characteristics of our company sample are shown in Table 1. Our sample is not representative, though it has a good coverage in terms of including foreign-owned firms from various regions of Hungary, of different sizes, of different activities and segments and of different ultimate investor companies.

Table 1 Details of the interviews conducted in the framework of the research

Company No.	No. of sites in Hungary	Year of establishment/ acquisition in Hungary	Entry mode	Number of employees at present	Date of interview	Interview type (phone, online, personal)
1	6 sites 8 companies	1991	greenfield	3300	9 June 2021	phone
2	1	(1989) 2016	Acquisition (previously just ownership stake)	391	18 June 2021	phone
3	1	1991	greenfield	2800	27 June 2021	phone
4	1	1993	greenfield	12226	6 April 2021	online
5	1	1989	greenfield	534	14 July 2021	phone
6	3	1990	greenfield	4243	14 May 2021	online
7	1	1991	greenfield (joint venture)	1405	7 July 2021	online
8	1	2017	acquisition (originally greenfield)	2000	30 March 2021	online
9	1	2000	greenfield	4000	17 March 2021	online
10	4	2005	greenfield	330 (white-collar, directly) + 2500 (blue-collar, indirectly)	15 June 2021	personal + online
11	1	2017	brownfield and greenfield	290	5 June 2021	online
12	1	2001	greenfield	3900	12 July 2021 24 March 2021	online
13	1	2020	greenfield	50	25 June 2021	online
14	4	1991	greenfield and acquisition	1000	12 July 2021	online
15	1	1990	acquisition	1400	8 July 2021	personal

Source: own compilation based on company interviews conducted in the framework of the research

Our qualitative research justifies why we rely on company interviews: in-depth information on various elements related to the impact and handling of the COVID-19 crisis could only be obtained through interviews. This type of methodology of relying on interview-based company case studies, has its advantages and disadvantages as well. An

advantage is that we have detailed quantitative and qualitative data in the analysed areas and on their development over time. At the same time, given the low number of companies in the sample and the fact that our sample is not representative, it does not allow us to generalise our conclusions.

4. How did the crisis affect Hungarian subsidiaries and how have they handled that?

Overall, the firms in our sample were on average less negatively affected by the crisis than other firms in Hungary. Based on their balance sheet data, sales revenues of seven firms in our sample of 15 actually grew in 2020 compared to 2019. The largest annual increase was 42%, while the largest decrease amounted to 21%. The average for the sample was +4%, while in the economy in the two industries, there was a 1.4% decline, according to the data of the Hungarian Central Statistical Office. Indeed, almost all the respondents reported that the COVID-19 situation had not caused any significant downturn for their companies, and in many cases efficiency had increased during this period. The exception was one German company (No. 5), which cited a shortage of raw materials and slowdowns in work as the reasons for the relatively large downturn. A Japanese company (No. 3) was able to maintain production levels even with a reduction in staff. Thus, here we assume a slight selection bias, in terms of the fact that more successful firms were more open to our interviews.

4.1 What are the main factors influencing the impact of the crisis at the firm level?

Overall, due to the composition of our sample, we cannot differentiate between industries and level of internationalisation, as all our companies operate in the two (intertwined) industries and are highly internationalised (the lowest export/revenue ratio is 62 %, the highest 98% and the simple average of the sample is 83 %).

Our analysis found that it is not only the industry, what matters. If we have a closer look at the activities carried out by the firm, we can differentiate between high value-added, custom manufacturing, based on the individual needs of the customer on one hand and highly standardised mass production on the other hand in the two analysed industries. In our sample, four firms specialising in the former types of activities

experienced no losses. On the other hand, mass producing firms are the ones, which suffered great losses during the pandemic. Because there is a correlation between the size of the firm (mass, standardised production is related to larger firm sizes in terms of employees), we found a link between the size of the firm and its level of losses as well. Furthermore, certain companies, the market demand for the products of which increased considerably (e.g., health-related electronics) were also among those, for which sales revenues increased. This is the case fully for one company in our sample, and for another one partly (with numerous products, including goods for which demand increased). Thus, activity type and market segment also matter.

A further observation can be made based on the experiences gathered during the interviews is that the impact of COVID-19 on a company depends to a large extent on how long the company has been operating in Hungary and/or how young/old the company ('s subsidiary) is. We found that companies that are either in the early stages of their operations or have recently arrived / started new activities in the country are less likely to be diverted by COVID-19 pandemic from their established operating patterns and usually they have not experienced much change during the pandemic. These companies are characterised by a relatively fresh, modern, more flexible way of operating, which already includes digitalisation, working online, home office, etc., that is these working methods were more responsive to the challenges posed by the pandemic. By contrast, companies that have been operating in Hungary for a longer period of time and had a way of operation established much earlier, have more often deviated from their usual - often old-fashioned - operating patterns and were forced to initiate new programs, solutions or techniques. In most of the latter cases, however, the pandemic was not the trigger, but rather the opportunity to implement such changes.

4.2 Firms' response to the crisis

Firms' responses to the crisis are analysed in two areas: whether they have used state support and what type of measures were taken in order to manage the crisis. We compare our results with those of the international literature.

4.2.1 The use of state support

As the literature showed, governments introduced various measures to help ailing firms, affected negatively by the crisis. That was the case for Hungary as well. From the point of view of large firms, in the analysed period of the year 2020, the measures published in the Government Decree of 105/2020 on the support of the Hungarian government within the framework of the Economic Protection Action Plan (IV. 10.) regarding the support for reduced working hours, as well as the government decree of 103/2020 (IV.10.) providing for the support of employees carrying out research and development activities.

The Hungarian government's grants⁶ could be claimed in three areas from the point of view of large firms operating in the analysed industries:

1) the so-called Kurzarbeit from April 2020 (state support for reduced working hours in order to keep employees)⁷

2) Wage subsidies for researchers and developers for three months active in all sectors especially to those that are research and innovation intensive (HUF 31.5 billion for 12 months)

3) State support that increases competitiveness, which can be spent on investment that increase the company's efficiency and productivity. Loan guarantees for firms. Compensation for large companies for the damages suffered due to the coronavirus outbreak and the confinement measures that the Hungarian government had to implement to limit the spread of the virus.

The aim of these government support schemes was to maintain employment of thousands of workers, the maintenance of wages and the avoidance of redundancies, and the creation of new jobs.

In line with European Union directives, the aim of the state support is not only to protect the critical economic sectors hardest hit by the pandemic but also to protect their assets, technologies, and infrastructure, and, above all, the workers and their jobs. Overall,

⁶ https://ec.europa.eu/info/live-work-travel-eu/coronavirus-response/jobs-and-economy-during-coronavirus-pandemic/state-aid-cases/hungary_en

⁷ <https://drkrlegal.com/kurzarbeit-in-hungary/>

in line with the experience with state aid up till now (Éltető and Antalóczy, 2017), it can be assumed that the support schemes of the Hungarian government are beneficial mainly for large firms, especially large, foreign-owned export-oriented firms.

During our interviews, we asked the representatives of the Hungarian subsidiaries whether they applied for or received any public assistance or financial support from the government and what kind of assistance they applied for. We asked which of the various support measures provided by the Hungarian state were used. Most of the MNCs' subsidiaries did not have significant liquidity problems and their financial buffer was more stable than in the case of the Hungarian SME sector. Thus they were not the primary target groups of the governmental support. At the same time, MNCs' subsidiaries have been an important pillar of the government's job retention program due to their size and number of employees. Among the subsidies offered by the state, the wage supplement support for part-time employees and the support for R&D&I employments were the most often used.

Most of the largest automotive companies and suppliers have benefited from Kurzarbeit support, and as R&D&I employers, they have all claimed and benefited from R&D&I support programme. Most of the automotive companies participating in the survey applied for part-time wage subsidies (Kurzarbeit). Most often, automotive suppliers applied for this support where supply chain disruptions in their global value chain led to a reduction in production capacity. For several automotive subsidiaries, the R&D job support program was an obvious choice in the case of having the R&D department or employing a larger number of engineering staff.

The interviews also included specific individual cases. One automotive company (No. 1) applied for state support in June 2020, and they received a wage subsidy for engineering in August-October. As a result, the parent company relocated new projects to Hungary, so the subsidiary's positions within the group has been strengthened. Although cost-cutting measures were introduced, at the end of the year 2020 there was also a salary increase and bonus payments. As a result, Hungarian state subsidy helped the whole multinational company to maintain its competitiveness through subsidizing R&D activities. Another interesting case is company (No. 3), operating in the automotive

industry, which applied for R&D&I wage subsidies for a staff of about 100 engineers - which was spent on the entire production process; besides the salaries of the engineers. However, the interviewees were quite critical: they highlighted the inflexibility and over-administration of the Hungarian short-time working support system, which made it impossible for some flexible working firms to seek assistance.

In several cases, the parent company itself made the decision for its subsidiary to apply for state aid. Reduced part-time employment support (Kurzarbeit) was applied by a Tier 2 automotive supplier (Company No. 2). At the same time, this support wasn't really significant for the company because of the continuous operation and secure orders. The main problem was dealing with the situation at the subsidiary, as the transition to part-time employment required by the Kurzarbeit support produced some problems in the production line as the same amount of orders had to be produced in a shorter time period due to the reduced working hours.

However, some companies have not applied for any state support, which can be explained in several ways. Two Chinese-owned subsidiaries (No. 10 and 11) did not require any state support. To apply for state aid in a foreign country to a foreign government would not be in line with China's business habitus, culture - it would be more of an admission that the subsidiary and its management do not operate properly. Interestingly, the Swiss-owned electronics company (No. 13) also did not request support, as the parent company does not like any kind of state aid (including in its home country). At the U.S. electronics company (No. 8), they used state part-time wage subsidies for workers who didn't have to work full-time, so they had to work 3.5 days per week. In addition, they introduced a 3-half-day training, for which they also received a wage subsidy.

In summary, in the case of the Hungarian subsidiaries of MNCs, it was not the financial, loan guarantee and liquidity subsidies that proved to be the most significant, but the wage subsidies for job protection: Kurzarbeit for larger companies with a large workforce and, R&D& jobs support for the others. This is in line with Demmou et al. (2021) who stress the importance of alleviating labour costs for reducing the proportion of newly insolvent firms. Since firms react to negative shocks by reducing their payroll,

through short-time work, non-renewal of short-term contracts or layoffs, therefore public support consists of the possibility to introduce short-time work, direct subsidies in the form of Kurzarbeit are essential to keep job stability in particular those sectors which were mostly affected by supply chain disruption.

The impact of state support does not prove to be a significant source of funding for the firms in the sample as it targets the most vulnerable and not the most viable ones, in line with the literature (Golubeva, 2020). At the same time, the Hungarian case studies also prove that through the support of the MNC subsidiaries, the majority of state support was given not to the companies struggling with liquidity problems or being in the worst financial situation. In the case of our Hungarian survey, the subsidiaries of the MNCs do not have a real need for liquidity support, and the wage subsidies meant only an additional bonus rather than a tool for survival. The problem is that, due to the dual structure of the Hungarian economy, state support does not systematically protect domestically owned companies more in need, because the support was provided very widely, so the subsidiaries of MNCs could use this opportunity as major employers with strategic importance in the governmental economic policy.

4.2.2 Crisis handling measures at the firm level

Organisational approaches

In many of the analysed companies, the crisis situation was handled through a formal or informal organisation, whereby employees or their representatives were also present. Where there was some institutional form of employee representation, either in the form of a works council or a trade union, there were continuous consultations regardless of the country of origin, size and activity of the company. This was the case for all the subsidiaries in the sample, except for one company. In some companies (No. 6, 7, 12, 14), even a separate formal organisation (Covid Committee, Emergency Action Group) has been set up to deal with the COVID-19 situation. In other companies, already existing organisations were used for the aim of coordinating between workers and managers.

Preventive measures to avoid infections

All companies followed the standards in terms of anti-virus measures and tried to comply as much as possible with the rules on distancing, which proved to be more challenging in the case of blue-collar workers. In one company, besides the above mentioned measures, even plexiglass walls were erected between the workers. The solution for white collar workers was similar (and more simple): all companies introduced various digital solutions during the COVID-19 pandemic. The most common solution was the home office in jobs where this was feasible. Meetings were held online, and all companies reported that the number of trips abroad was also significantly reduced, mainly replaced by online meetings. The extent of the home office was influenced by the nature of the activity, but also by management's (owner's) perception of teleworking. There were a number of interviewed companies where teleworking was being scaled down or eliminated as soon as possible and work was being reverted to the way it had been (Companies No. 2, 3, 8, 10, 11), including all of the East Asian companies. Expats in one of the analysed Chinese companies (No. 10) were constantly coming in to work during home office hours, which also points to a commitment to working with personal presence. However, it has also emerged from the interviews that the parent companies do not follow the same practices in their subsidiaries. For example, the interviewee from one Chinese company (No. 10) stressed that while they had to return working from the office, the German subsidiary continued to have home office solutions, while the other Chinese company also confirmed the existence of different practices but said that in their case the decision to abolish the home office was not a central instruction but a decision taken by the regional headquarters. These examples may suggest that the weaknesses of the Hungarian labour market (weaker labour bargaining power, less developed labour market) can still be exploited by companies. It is interesting to note, that two negative aspects of teleworking emerged during the interviews. One was that the home office slowed down the workflow (Companies No. 10, 9, 5). In addition to this, the role of loyalty is also a critical risk, emphasized in the case of one German-owned company (No. 1). Several companies have reported on the changing needs of employees (No. 1, 6, 14), and their surveys show that employees' demand for teleworking has increased as a result of COVID-19. Thus, in spite of the recognised downsides, non-Asian companies

more easily gave in to employee requests, which were usually demanding the continuation of home office, at least on certain working days.

Subsidiary autonomy in deciding about the crisis-handling measures

It is interesting to note whether the subsidiaries were autonomously taking decisions about their crisis-handling and protective measures or were instructed by the parent company. Some of the companies received detailed instructions from their parent company (No. 1, 9, 12) or from the regional headquarters (No. 10), others received guidelines, minimum standards, which they had to adapt flexibly to the local situation (No. 6, 14), and some of the companies took their own decisions (No. 3, 4). In large companies with several thousand employees (No. 4, 6), interviewees reported greater autonomy. A difference emerged where Hungarian subsidiaries enjoyed greater autonomy (No. 5) and where centralised standards typical of international companies were not introduced, decision-making was also autonomous.

Workers not laid off

The handling of the crisis in Hungary was in line with what we saw in the case of other countries analysed in the literature: laying off workers was the very last resort (e.g., Apedo-Amah, 2020; Meyer et al., 2020). The companies in our sample all did everything to keep their employees, which can be partly explained by the over-tense Hungarian labour market, with labour shortage in Hungary and with the increasing importance of company-specific knowledge of workers. Basically, all firms are struggling with staff shortages and are reluctant to part with their employees, trying to avoid this by bringing forward the granting of leave or reducing working hours in order to keep employees. This latter is in line with the observation of Köllő and Reizer (2021). Where there have been redundancies (No. 5) they have taken advantage of the stoppages to replace staff with whom the company was not satisfied. A Japanese company (No. 3) – as a result of new and innovative solutions – was able to maintain production levels even with a reduction in staff. This is in line with the theoretical literature that, once the crisis has been overcome, jobs that were eliminated during the crisis are not re-created (Jaimovich and Siu, 2012) – the solutions, which were found, are kept. Where the company strategy also relies on agency staff (rented workers), they have either replaced or reduced the number of agency

staff. This is essentially possible where there is a combination of skilled and unskilled labour, as it is mainly unskilled workers, who are hired from agencies. At the same time, a diversification of activities is also emerging within the vehicle manufacturing sector. In certain product segments (commercial vehicle suppliers, electric vehicle manufacturers, those linked to other industries), orders increased despite the crisis (No. 7, 11, 13), so the problem was not how to tie up labour but how to replace workers who had been lost through illness.

We saw various signs of solidarity from the management or from other workers of the company in order to avoid layoffs or help employees in other ways, which indicates a change compared to previous years in that respect in Hungary (Frege and Tóth, 1999). During the short shutdown, one company sent workers on a short unpaid leave of 4-5 days (No. 14), and one German company (No. 4) reported that workers gave up their 13th month's pay to finance paid leave for Covid, thus preventing redundancies. The Chinese company (No. 10) sent some of its employees to training during the shutdown. In one company (No. 14), high level management took a few days of unpaid leave in order to save the workplaces of physical workers. One Chinese company (No. 8) took into account workers' needs when organising shifts so that one parent could always be at home (parents could work alternately) and another firm provided home office for pregnant women (No. 8). Another firm provided masks for their host city (No. 11). These practices suggest that workers, recognising that there was a common interest, cooperated with management and vice versa.

Organisational changes

Work organisation was also affected by COVID-19 in the post-closure period, with the Japanese company doing production in one shift instead of two (raw material shortages were partly to blame), several companies interviewed working with rotating work teams (e.g., A/B week split), employee bubbles, other measures to reduce the number of meetings between workers. Where R&D has a significant presence, the organisation of work has been reorganised to shift the focus from manufacturing to R&D activities. This is clearly reflected in the use of state aid, described above, with the exception of certain companies (No. 2, 8, 9, 10), where the aid was used to subsidise the

wages of R&D staff. However, for some firms, the request for assistance was either not a viable option (No. 10, 11) or not in line with the company's policy (No. 13). In those companies (for example No. 4) where highly skilled workers are employed and the production process is standardised, they tried to make the best use of the available workforce to replace the employees who were not available due to illness or quarantine. Some companies used the opportunity to carry out postponed activities. These cases typically involve previously planned restructuring or the implementation of efficiency plans, for which there was not enough time before. Two companies also reported that they used downtime to carry out previously planned tasks. At a Japanese company (No. 3), engineers worked on efficiency solutions during the downtime, and a German company (No. 14) used the time to complete tasks that were overdue but had been left undone due to time constraints. Several companies also reported that previously planned reorganisations were completed despite COVID-19 (No. 10), projects were started (No. 8), the production base was expanded (No. 11), i.e., COVID-19 did not have a significant impact on the companies' short-term plans.

Impact of COVID-19 on the future of work

In the context of the pandemic, all interviewees highlighted the growing importance of flexibility, efficiency, and digitalisation. All companies are trying to incorporate the useful elements of the solutions introduced during the pandemic. Automation was only highlighted by one company (No. 6), where monotonous tasks requiring highly skilled labour cause high staff turnover, and the company is therefore trying to replace live-work.

Regarding the long-term effects of COVID-19, most companies see that digitalisation and automation have accelerated as a result of COVID-19, and that companies will be more flexible in the future. A majority of companies expect the home office to survive in the long term. Online meetings will continue to be used for international communication, and one German company sees this, and more specifically the resulting reduction in travel, as an important step towards sustainability (No. 14). Other companies also emphasized that online meetings with local and international partners will remain more frequent compared to the pre-pandemic period.

In terms of digitalisation and the use of digital solutions, it is important to note how they have become more and more accepted in the interviewed firms. For example, in the first period of the pandemic employees (engineers) in one subsidiary (No. 1) preferred to spend 2-3 days per week in the workplace, while later on (May 2021) there are only 1.5 days per week they wanted to work in the office. The company benefitted from the resulting time savings, but at the same time, management was afraid that the long absence loosens the employees' loyalty to the company – which is to be seen in the future.

5. Conclusions

Economies and firms were affected to a great extent by the COVID-19 pandemic and its economic consequences. We have narrowed down our analysis of this impact and the measures taken to handle it to foreign-owned subsidiaries in Hungary in the automotive and electronics industries. Our results support those of the literature. However, in certain areas we could supplement these findings. First, we have highlighted the importance of not only the industry but within that, the activity carried out by the foreign-owned subsidiaries. Those specialised in mass production with lower value added, experienced greater decline in production, than other firms with more specialised, higher value-added production. Furthermore, the age of the subsidiary proved to be important, as newly established firms, even at the expense of financial reallocations within the firm network, maintained the momentum in realising their initial plans in spite of the crisis. Second, we found that R&D&I wage support sometimes “leaked out” to help to maintain the competitiveness of foreign multinationals through allocating related activities to Hungary. For this, they partly used the subsidies provided by the Hungarian state. Third, at the firm level, we found many similarities in handling the crisis, and an important sign of increased solidarity among the various groups of workers and managers. We found companies where the management waived its bonus in order to avoid layoffs. In one company, management took a few days' unpaid leave to avoid layoffs. Fourth, in the context of the previously mentioned examples, companies have sought to avoid layoffs or to make only the necessary redundancies. Actually, layoff seems to be the last resort among the crisis-handling measures. This is partly explained by the tense labour market in Hungary, but it can also be taken as a sign of increased attention to workers.

Based on the interviews conducted, COVID-19 has not significantly changed organisational practices, i.e., it typically did not lead to a complete reorganisation at the companies in question. Those changes that have taken place, however, share many similarities. For example, almost all companies have responded by creating home office solutions for white collar workers and decided to "go digital" in other areas. Of course, manufacturing plants – and blue-collar workers – are less affected, though various efficiency improvements did occur in some of the companies that affected blue-collar workers, too. During the shutdown, or slowdown periods, engineers and technicians worked on efficiency solutions. These programmes were often planned before (due to the above mentioned labour shortages), but were always postponed due to lack of time. These efficiency programs are likely to continue.

As regards future research directions, it remains to be seen if innovative solutions introduced during the pandemic - such as home office - are sustainable in the long term and if they are, what impact they will have on productivity and on loyalty to the company as well as on the "mindset" of affected workers. Therefore, it may be worth revisiting the companies analysed now in 5-10 years' time and monitor if the current innovative solutions proved to be successful, and/or new type of innovations are introduced. Similarly, much will depend on how long the pandemic continues to have either direct or indirect economic impact that could also affect the analysed companies' outlook. Interviewees highlighted the loss of production caused by supply chain disruptions due to the pandemic. It is advisable to research the existence of this shortage of goods due to supply difficulties and the corporate reactions to it in the short term (1-2 years). In the case of the pandemic ending in 2022, our findings now are probably correct, but in the case of the pandemic and its economic impact lasting for years, it is difficult to estimate the consequences.

In our research we focused on foreign-owned subsidiaries in Hungary in two industries. As a result, our approach could still be extended in several directions. First, we can compare the experience and behaviour of foreign-owned companies with domestic ones. Second, we can focus on the broader CEE region and compare the results for Hungary with research results on, for instance, foreign-owned subsidiaries in Czechia, Poland and Slovakia. Third, we can shift the focus from foreign-owned subsidiaries in

general to foreign-owned subsidiaries from specific regions, such as East Asia, core Europe or the United States. Fourth, we can extend the industry coverage and, fifth, we could also shift our focus from the host country to the companies and zoom in on how the companies analysed now acted in their different host countries and subsidiaries.

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