

Made or Invented in Hungary?

Upgrading Possibilities in Light of Global FDI Tendencies

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Abstract

This paper analyses industrial upgrading possibilities for the Hungarian economy in light of recent changes in global Foreign Direct Investment activities. The changing economic landscape provides a reason to investigate the impact of the recent developments in Hungary, a country with an open, dependent economy. The study investigates how the front-running sector, the manufacturing industry, performs during the current, turbulent times. Does it upgrade from the earlier assembly-focused positions in global value chains, or are there any signs of deterioration by backshoring certain activities to the headquarters of multinational companies? By using both primary and secondary research and conducting a regional comparison, the study finds that the Hungarian economy still shows the characteristics of a „factory economy”, but progress has been made towards the aspired „knowledge economy” status.

Keywords: FDI, upgrading, manufacturing industry, global value chains

JEL codes: A10, F21, F23, O00

Introduction

The global economy faced a series of shocks over the last five years. After the 2008 crisis, there was a nearly ten-year period of growth in different manners: growth of GDP and trade (Eichengreen, 2018). Still, different events started to generate a negative impact: first, the USA-China trade war, then the pandemic and recently, the Russia-Ukraine war. Unsurprisingly, these events negatively impacted some of the key economic performance indicators, such as inflation rate and debt rates (UNCTAD, 2022), created some risks for global value chains (Xing et al., 2021), and led to the implementation of reconfiguration strategies (Xing et al., 2023)

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In line with other Central Eastern European (CEE) countries, Hungary is a good example of an open, FDI¹-dependent economy (Szalavetz, 2017). A marked characteristic of such countries, often also dubbed „factory economies” (Szalavetz, 2017), is that the manufacturing industry is a substantial receiver of incoming investments (Veres, 2018). The broad objective of this case study is thus to gauge how the Hungarian economy is capable of converging with its Western peers in terms of generating foreign direct investment during these economically unstable years. This convergence is linked to the aspiration of reaching the knowledge economy status, where knowledge acts as the primary tool for generating economic benefits (Chandler & Munday, 2011). A complementary research objective is to see to what extent the situation is similar to other CEE countries, especially to other members of the Visegrad Four (V4), as they are also intensely reliant on incoming FDI for their economic growth (Kalotay et al., 2021).

Consequently, this article considers the changes in the position of the Hungarian manufacturing industry in terms of FDI and upgrading status in global value chains (GVC). The three possible scenarios examined for the current and short-term future are the following:

1. the worst-case scenario is that a significant level of backshoring or reshoring of investments happens from Hungarian factories to other countries,
2. Hungary maintains an assembly-focused manufacturing position,
3. Hungarian companies can perform significant upgrades within the GVCs.

The source of the paper is the combination of the results from primary and secondary research. The primary research was conducted during the second half of 2022 and the beginning of 2023 in the form of semi-structured interviews with experts and managers from the manufacturing industry.²

The paper aims to answer the following three research questions:

1. Are there any backshoring or reshoring activities from Hungary to other countries?
2. Is there any upgrading process in Hungary in the global value chains of large multinational enterprises?
3. To what extent is the FDI-dependant economic model of Hungary similar or different from the other V4 countries?

The paper starts by mapping both the FDI and GVC-related literature. This is followed by introducing the Hungarian economy using statistics and former research results in this field. It then proceeds to describe the interview methodology and presents the results of the dialogues with experts and managers. The analysis section compares the interview results with the literature using data triangulation, and finally, the paper is closed with the conclusions and recommendations.

¹ Foreign direct investment

² The primary research also provided a basis for an article on robotisation (Gurály, 2023).

1. Literature review

There are two main related parts of the economics theories relevant to the current article: the key studies on foreign direct investment, on the one hand, and the literature on global value chains, on the other hand.

1.1. Foreign Direct Investment

The research papers on foreign direct investment usually investigate two main directions: how useful is FDI for the receiving countries, and what is the mechanism leading to FDI-related investments?

When it comes to the first question, whether FDI is a useful tool for the economy, economists generally agree that it is; their research suggests that FDI makes an important contribution to the modern world as FDI inflows have a positive impact on the development of receiving countries (Nistor, 2015). According to an empirical investigation by Baishvili and Gattini (2019), FDI positively impacts economic growth. However, the impact is different depending on the country's income level. Middle-income nations are most affected by FDI, whilst low- and high-income countries are less affected by it, as seen by an inverted U-shaped graph of the relationship. Additionally, the institutional setting is also important: when receiving the same amount of FDI, nations with effective legal systems do better (Baishvili et al., 2019).

Other economists have diverging opinions. Hausmann and Fernández-Aries admit that if the share of FDI is very high in a certain economy, it is a sign of economic problems, as it means that these countries do not have enough possibilities for other kinds of financial support (Hausman et al., 2000). Recently, some researchers have argued that high FDI dependence can slow the development of a certain country. This term is called the „middle-income trap”, where a middle-income country does not grow to be high-income because of the increasing costs and declining competitiveness (Griffith, 2011). The dilemma is whether to „race to the bottom” for FDI or to be satisfied with less FDI (Amaro, 2006). The focus on low-value-added manufacturing is also called as maquiladora³ strategy (Elingstad, 1997). The diverging opinions on the usefulness of FDI are also present among Hungarian researchers (Gál, 2019, Klauda, 2022).

Regarding the second question, i.e. to understand the decision-making mechanism behind a foreign direct investment (FDI), Dunning's theories provide a starting point. Dunning invented the OLI paradigm to express how management decides on FDI. Within OLI, „L” stands for the location-specific advantages, whereas „O” means ownership and „I” internationalisation-related benefits for the investing firm (Dunning, 1980). Dunning also collected and categorised the push and pull factors for an investment decision. The first refers to the factors that influence an organisation's decision to carry out an activity abroad through investment, while

³ Maquiladoras are low-cost factories in Mexico close to the US border.

the second describes the factors that make a specific region appealing as a destination for foreign capital. There are four main categories according to investor motivations: market-seeking, resource-seeking, efficiency-seeking, and asset-seeking (Dunning 2005).

The factors that led to an investment decision might change, and in this case, reshoring might happen. According to De Backer and his co-authors, *„...re-shoring can be described as the reverse decision with respect to a previous off-shoring process resulting in the transfer of activities to the home country (back-shoring) or neighbouring country (near-shoring) of the company”* (Backer et al., 2016, p. 8). As mentioned above, a part of the reshoring activities is nearshoring, where the investment is brought to the proximate area of the investor. This manner of geographic factors can also play a role in investment. A gravity model complemented for FDI shows that investments are indirectly proportional to distance costs (Paniagua, 2015), meaning that nearshoring can be economically advantageous.

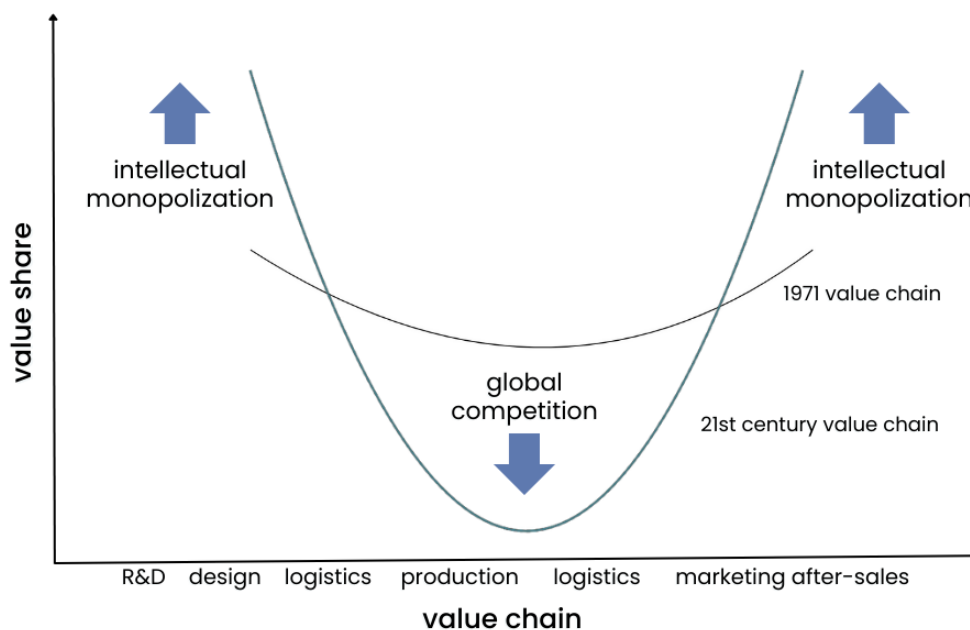
Also, automation can have geographical impacts. According to some researchers, backshoring might occur from developing countries to developed ones as they can build on automation trends better (Lund et al., 2019). Other authors also underline the effect of automation and robotisation on investment decisions as multinational companies *„...make strategic locational decisions: whether they (a) keep their existing manufacturing facilities and upgrade them through installing Industry 4.0 technologies (retention); (b) consolidate and concentrate manufacturing activities in a (couple of) specific location(s) (selection); or (c) reshore part of the activities, and at the same time establish new facilities, and/or outsource certain tasks (reconfiguration)”* (Szalavetz, 2017, p. 5).

1.2. Global value chains

Investments seldom occur in an isolated manner. Usually, they are embedded into a global value chain (GVC), where there are various value-enhancing international intermediate stages of conversions before reaching the final version (Buelens, 2017). GVCs have increasing importance, reflected by the growing trade volume and investments within these networks (Antras et al., 2014). Analysing GVCs can support the research by providing a holistic view of global industries' activities in inter-firm networks worldwide (Gereffi et al., 2011).

It is crucial to acknowledge that the GVCs are evolving, and nowadays, there is a tendency for various kinds of activities to create substantially different values within a GVC. As seen in Figure 1, the assembly function is less valuable than other activities, like product development and marketing. Moreover, the assembly function has become even less advantageous for a country to possess than it was previously (Baldwin, 2013).

Figure 1: Baldwin's smile curve



Source: Edited by the author on the basis of Durand (2019)

2. Foreign direct investment and global value chains related trends in Hungary and the V4

As previously stated, Hungary and the other V4 countries rely substantially on FDI, and the manufacturing sector accounts for a sizable portion of their economies. As a result, it is appropriate to continue the analysis by introducing the most recent statistics and previous studies on foreign direct investment and upgrading trends in these countries.

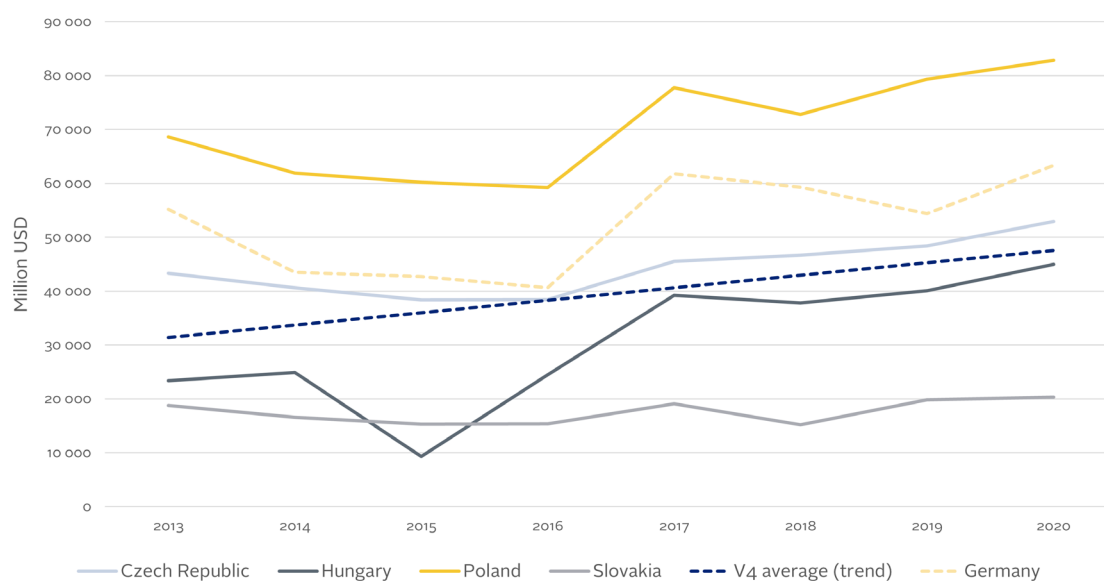
2.1. FDI-related tendencies

FDI stock is a good variable to show the success of FDI over a longer period. The V4 countries are a kind of „champions” in attracting inward FDI; they possess 1.5% of the global IFDI stock, while their share is only 0.8% of the world population and 1.3% of the global GDP (Kalotay et al., 2021). This difference also stands when examining a more extended timeframe (back to 1993). It can be observed that the V4 countries: „...had considerably higher levels of FDI stock to GDP than the OECD countries as a whole, and also than the European Union member countries (with the exception of Poland)” (Sass, 2021, p. 19).

As manufacturing is a key FDI-absorbing sector in the V4, it is adequate to look closely at the related statistics (OECD, 2023). As shown in the figure below (Figure 2), the order of the V4 countries in the manufacturing IFDI (MIFDI) stock in nominal value follows the order in population size. The FDI dependence of these countries can be immediately seen based on the fact that Poland outperforms the

twice more populous Germany. It is also interesting to see that the trend line created from the average MIFDI stock of the V4 countries shows continuous growth in the examined period⁴. If the figure shows the MIFDI per capita, the results would be substantially different, as considering manufacturing investment from this aspect indicates that the Czech Republic is the largest receiver of funds to the manufacturing sector, closely followed by Hungary, Slovakia is third, and Poland is the fourth. Germany receives far less investment in this sector proportionately, only 15% of the Czech numbers.

Figure 2: Incoming FDI stock to the Manufacturing Sector in the V4 countries and in Germany (million US dollars)



Source: Edited by the author on the basis of OECD statistics (OECD, 2023)

When investigating the V4 countries one by one, a crucial aspect of Hungary is that the country follows a vertical export-focused investment strategy⁵ (Beck, 2017). An excellent example of this is the automotive industry (Sass, 2020). The industry-focused FDI incentives align with Alfaro's FDI classification (2003) and have a positive impact in the manufacturing industry, a negative in the primary and a determining one in the service sector.

The Czech Republic is usually mentioned as a frontrunner in the group, also in terms of FDI investments in proportion to the GDP (De Castro et al., 2016). However, there are considerable regional differences behind the attractive numbers, even though the Czech Republic is not a large country in terms of territory. According to earlier data (2016), more than half of the whole FDI stock is concentrated in Prague (Szabo, 2019).

⁴ The growth continued even in 2021 for the Czech Republic, Hungary and Poland, whereas there is no related data available for Slovakia (OECD, 2023).

⁵ Vertical FDI takes place when the multinational fragments the production process internationally, locating each stage of production in a country with the least cost („What Is Foreign Direct Investment (FDI)?”, 2023).

Slovakia started the FDI focus later than the other three countries in the region. Still, after the reforms of the Dzurinda government, a significant growth period has begun. However, this growth was more the result of the previously closed structure of the economy than a foundation of long-term economic policy (Pogatsa, 2009). The country has an exceptionally high focus on the automotive industry, as it is the number one country in the world in terms of passenger car production per capita („Czech Republic and Slovakia”, 2020).

Poland is a bit different from the V4 in economic terms, and one of the main reasons is its size; its population is larger than the other three countries altogether (World Bank, n.d.). Similarly, roughly half of the GDP of the region (996 bn EUR) is generated in Poland (Grübler, 2021).

It is essential to mention that the success of these countries only partially takes place „automatically”; the governments continuously offer benefits for foreign multinational companies, especially in the manufacturing sector. The following benefit mix is used to attract investors:

- fiscal tools, e.g., tax incentives,
- financial subsidy to prepare and execute the investment,
- investment-related regulatory environment and activities of the investment agencies (Szanyi, 2017).

After the system transitions in 1989-1990, the V4 countries needed capital for their development, and FDI was an obvious tool to access it. However, some researchers made negative revelations, as they found the long-term economic and overall social effects less favourable than the governments' representatives. After Nölke (2009), the Central Eastern European economies can be labelled as „dependent”, since they have to rely on the investment decisions of the management of large foreign multinational companies. Pavlinek found that the main motive of these companies is to utilise the wage differences in these countries (Pavlinek, 2016).

Despite the warnings, the development of the V4 countries is supported by statistics: during the second half of the last decade, there was a significant (30-40%) wage increase as well (Éltető, 2019). One of the main reasons for the increase in salaries is the growing demand for employees in Hungary. The rising demand for labour is also justified by the growth in the participation rate: the traditionally very low employment ratio⁶ increased only slightly until 2012 (from 53.6% in 1998 to 56.7% in 2012⁷), but then there was a substantial growth in ten years, reaching 74.4% in 2022. Another reason is the shift in the population towards skilled jobs: the share in the population possessing only a primary school certificate (or less) decreased by 39% from 2009 to 2022, while at the same time, the proportion of people holding a university diploma increased by 73%⁸. Despite the progress

⁶ Within the 15-64 years old population group (HSO, 2024a).

⁷ The calculation method of HSO changed in 2021, the 2012 value is 58,6% according to the new methodology (HSO, 2024b).

⁸ The data is concerning to the 15-74 years old population groups (HSO, 2024c).

mentioned above, there are warning signs in the statistics for the manufacturing sector: during the same period, there was a slight decrease in the number of people holding a vocational training certificate⁹ and also in the group with a secondary vocational school maturity and professional certificate.

According to Éltető (2019), backshoring from V4 was relatively rare. However, the same author also mentions that this situation might change in the future due to Industry 4.0 developments, so the governments of the V4 countries should work on ensuring the necessary skilled labour to remain attractive to investors (Éltető, 2019).

2.2. Progress in upgrading

The quantification of upgrading is more complex than in the case of foreign direct investment. One possibility is the measure of the Trade in Value Added (TiVA) content of the V4 countries. As shown in the table below (Table 1), the domestic value added (DVA) of gross export stagnated on average in the V4 during the last decade, and there was a slight increase in Hungary (WTO, 2023). Besides, the V4 DVA values are significantly lower than the DVA values of leading industrial countries: in 2018 the domestic value-added content was 77% for Germany and 83% for China (WTO, 2023).

Table 1: Comparison of the share of Domestic Value Added in exports in the V4 in percentages in 2010 and 2018

DVA Exports	2010	2018	Difference
Czech Republic	60%	57.8%	-2.2%pt.
Hungary	51.7%	53.7%	2.0%pt.
Poland	70.3%	69%	-1.3%pt.
Slovak Republic	55.5%	52%	-3.5%pt.

Source: Edited by the author on the basis of WTO (2023)

Besides the lower domestic added value, it can also be observed that the R&D activities brought to Hungary „are not at the technological frontier of production but only subpar processes that are relevant for their assembly lines” (Veres, 2018, p. 17). This fact limits the catch-up process of the Hungarian economy to the Western ones.

⁹ Without a high-school diploma.

There is also research conducted on upgrading in the whole region, as in a recent study, the automotive industry of the CEE region was analysed (Cerna et al., 2022). The key findings of the article are:

- According to the GVC participation index¹⁰, three countries (the Czech Republic, Hungary and Slovakia) are more integrated into global production networks than Poland.
- The V4 economies focus more on backward¹¹ than forward¹² linkages within the GVCs.
- In all the V4 countries, the manufacturing industry is more embedded in GVCs than the service sector (Cerna et al., 2022).

Among the earlier studies on upgrading in Hungary, a book by Andrea Szalavetz (2019) has particular relevance to the current article. Managers from the manufacturing industry were interviewed approximately ten years ago for this book, making it worth comparing their results with my recent findings.

According to the book, the managers agreed that the „natural way” of upgrading, e.g., the simpler functions implemented at the subsidiaries are followed by other functions, and gradually more knowledge-intensive functions are placed in these „daughter companies”. The first means quantitative upgrading, while the second is called „deepening”, i.e. there is a qualitative upgrading at the level of the local subsidiaries. The third type is the upgrading in scope when the local company is taking over regional or even global tasks from the headquarters. Some lessons learnt from the study were: upgrading in the type of activities has a more prominent effect on the volume of the added value generated by the daughter company than its profitability. Also, it causes a higher number of professional jobs, and consequently, the value/employee is increasing. The book mentions that service centres are the key to future success for FDI-dependent economies (Szalavetz, 2019). These shared service centres (SSCs) have a growing role in the Hungarian economy as mentioned in the economic news (Bucsky, 2021) and the literature (Juhász, 2020).

3. Methodology

In the context of my primary research, I conducted interviews with the Hungarian respondents during the second half of 2022, while I discussed with the V4 experts at the beginning of 2023. Altogether I interviewed nineteen people, as shown below. (Table 2).

¹⁰ It means the consideration of domestic value added in exports (Przedziecka et al., 2022).

¹¹ Meaning the focus of foreign suppliers to the domestic firm (Przedziecka et al.).

¹² The export of the domestic firm is used as input for future production and export by a foreign firm (Przedziecka et al.).

Table 2: Nationality, positions of the respondents, type of organisations

Code ¹³	Nationality	Type of company	Position of the interviewees
CAOEM1	HU	Automotive OEM ¹⁴	Production Leader
CAOEM2	HU	Automotive OEM	CEO ¹⁵
CHOEM1	HU	OEM in healthcare	Project Manager
CASUP1	HU	TIER – 1 ¹⁶ automotive company, OEM in other fields	CEO
CASUP2	HU	TIER – 1 automotive company, OEM in other fields	Group Leader
CASUP3	HU	TIER – 1 automotive company	2 Operations managers, 1 line manager
CVSUP1	HU	TIER – 1 vehicle company	R&D Director
EA1	HU	Automotive networking organisation	Managers of the organisation
EIN1	HU	Innovation network	Managers of the organisation
EIN2	HU	Innovation management	Manager of the organisation
ER1	HU	Research organisation	Researcher
EG1	HU	Government agency	Investment Promotion Expert
EPL1	PL	University	Professor of Economics
ECZ1	CZ	University	Professor of Economics
ESK1	SK	University	Professor of Economics

Source: Edited by the author

¹³ Respondents are identified with this code in the paper.

¹⁴ Original Equipment Manufacturer

¹⁵ Chief Executive Officer

¹⁶ Direct supplier of the final product

With one exception, the interviewed managers are from the automotive sector, which has a significant share of investments within the Hungarian manufacturing industry (Gurály, 2023). The Hungarian experts are from various organisations, while the interviewees from the other three V4 countries are all university economics professors.

The interviews were semi-structured (Willis, 2006). Accordingly, a list of questions was prepared in advance, but the framework of the actual discussion gave the interviewees some flexibility in expressing their views on certain topics.

The objective was to understand how the respondents see the global position of Hungary and the other V4 countries in terms of FDI and GVCs. The experts received similar questions to the managers, but the focus was more general, while in the case of the managers, they related more to a local company or subsidiary.

The questions to the experts were:

- Do you see an upgrading process in your country in the global value chains of Large Multinational Enterprises? If yes, how, to what extent and how quick is the process?
- Can you provide some examples of increased production of a multinational factory in your country? Can you provide examples of the opposite (closing factories, decreasing production volume, or taking it to more cost-effective countries)?
- Can you provide examples for upgrading of activities of a multinational firm in your country (e.g. starting research and development activities and/or higher involvement in innovation in other areas: product development, optimisation, marketing, etc.)?

The main questions to the managers were as follows:

- Do you see any trends of reshoring tasks, duties, or part of the production to the headquarters?
- Is there any upgrading process for your organisation in the GVC? If yes, to what extent and in which areas?

In most cases, the interviews were bilateral, but in some cases, more than one interviewee from the same organisation was present. Generally, all respondents were asked the same questions, but the approach was flexible; some questions may not have been asked of some managers or experts due to a greater focus on other fields or because it seemed irrelevant for a specific person. As the aim was to draw general conclusions and there was no quantitative element in measuring the responses, this did not cause a problem.

To balance the possible distortion effect due to the nature of qualitative research, by using data triangulation (Bhandari, 2023), I also compare the findings of the interviews with some earlier research.

4. Results

This section presents the direct feedback from the interviews. First, I investigate whether there is any backshoring from Hungary. The second subsection describes the respondents' view on the upgrading potentials in the country, and I close the section with an outlook of the other V4 countries.

4.1. No backshoring observed

According to a government official (EG1), the FDI inflow to Hungary is still significant and has a positive effect on the economy. The trends affecting IFDI to V4 and Hungary, in particular, are as follows: greening, transport cost, robotisation, and other factors (e.g. salaries, plant prices, etc.)

Based on the interviews¹⁷, I can state that the Hungarian manufacturing industry is not engaging in backshoring, and this is unlikely to change in the future. In fact, in a multinational company's Hungarian factory, the production level of certain products has already reached 70-80% of the total global production volume (CHOEM1). The interviewee believed that even if the robotisation level were higher in the future, the personnel cost of line managers would still count, and it would always be more competitive in Hungary than in the USA or Germany.

The following factors prevent backshoring from Hungary (CASUP2):

- Competitive labour force: workers' wages are one-fourth of their German peers.
- Investment incentives: significant tax reductions offered to support IFDI.
- Low transportation costs: short distance to the end-users. It is essential, e.g., for the battery industry.
- Reliable workforce: Hungarian production efficiency exceeds those of other continents.

Although backshoring and reshoring are few in number, it is recognisable that some new developments stay in the highly developed home countries, as the more efficient manufacturing processes due to robotisation and automation make it possible for multinationals to keep the production of some high-quality products at home (EA1, EIN1).

4.2. Upgrading possibilities in global value chains

The experts and managers were also asked about the upgrading potentials of subsidiaries of large multinational enterprises within the GVCs. One of the main clusters within the answers dealt with the underlying forces driving upgrading.

How innovation is allocated within the value chain is key to assessing upgrading potentials. Usually, there is a centralised system within the multinationals to distribute the innovative processes among the factories (CAOEM1). The selection

¹⁷ CAOEM1, CAOEM2, CHOEM1, CASUP1, CASUP2, CASUP3, CVSUP1, EA1, EN1, EN2, EG1, ER1

of which subsidiary focuses on what kind of innovation depends on the local competencies. One innovation process always starts only in one plant. The new methodology/tool is also transferred to other plants if it becomes successful.

In line with the above-mentioned proving process, the „factory economy” status was a necessary first step in the development path for Hungary and the other V4 countries. Ideally, the process is that first, there is only simple manufacturing, then there is incremental innovation, and later breakthrough innovation might arise (EIN1). Some decades ago, the typical assembly process meant setting up simple end-products. Here, the value added was low, as the parts arrived in the country and were assembled via a relatively simple process. These simple assembly tasks are usually not present in Hungary anymore; nowadays, the focus is on manufacturing products with higher added value (EA1).

When comparing Hungary with the major FDI-sending economies, I found that, for most of the suppliers, the innovation activities are higher in the headquarters' facilities. For example, the rate of robotisation is typically higher in the headquarters, but there is upgrading in Hungary, and the gap is closing between the headquarters' factories and the Hungarian ones (CASUP2). Nowadays, the Hungarian subsidiaries have reached a status where the responsibility for production-related innovation relies mainly on them.

Regarding the upgrading of Hungarian factories in the global value chains, all the respondents confirmed that there is an ongoing upgrading process in the Hungarian automotive industry¹⁸. This progress is due to a natural, bottom-up process derived from the strategy of multinational companies. Besides the OEMs, the TIER-1 and TIER-2 suppliers are also dominantly global companies.

Although new automotive final product development (e.g. design of a new AUDI or Mercedes) is typically not prepared in Hungary, the Hungarian engineers have a key role in how to make these products 2-3% cheaper. Since in Hungary the focus is on manufacturing, the most prominent developments and innovations took place in this field: how to improve the production process, the production line, tools and machines used for production. These changes were made to speed up manufacturing, improve efficiency, and raise product quality. Consequently, production is where Hungary has strengths; this is where the country's technical and industrial background predisposes it to move forward (EA1).

However, as was already indicated, concentrating simply on manufacturing is not a suitable way to improve the position within a GVC. The increase in the share of research and development (R&D) activities within GVCs is probably the most important manifestation of upgrading. The allocation of R&D activities depends on the specific multinational's corporate strategy. Concentrating these activities on a limited number of locations is advantageous, as it is easier to reach the minimum necessary headcount for researchers. For example, it took several years for a Hungarian research centre of a German multinational company to reach the de-

¹⁸ The same process is valid for the interviewed health-care equipment focused company as well although in that case upgrading is taking place only within the production related functions.

velopment status where new engineers entering the firm could have been trained in Hungary and should not have had to travel to Germany because of that. This is one of the reasons that these facilities are much harder to move than factories. Consequently, even if it is very costly to conduct research activities in Western countries, many of the activities are kept there, as it is an expensive and lengthy process to build new research centres in another country (CVSUP₁).

In the case of the above-mentioned company, the Hungarian R&D centre is the largest, it is twice as big in terms of headcount as one of the German centres, and it is also larger than the one in India. There are several competencies possessed only by the Hungarian centre. The responsibilities delegated to Hungary in this company are much larger than in the case of most Hungarian companies. For instance, the Department of Advanced Engineering: researching future products (beyond 5-10 years), has been in Hungary from the beginning. In this centre, the goal is to bring more research to Hungary and deploy more global responsibilities to Hungary within the R&D activities.

The cooperation with universities means that instead of a brain drain, they employ the university staff part-time, so they can also remain active in the universities. There is a need for a good mix of university-related theoretical teaching for students and the practical training companies might offer for trainees and new employees. It is a win-win situation: the companies get good experts (teachers) who can support solving complicated development problems and, on the other hand, university teachers have a chance to confront real-life industrial challenges daily.

When bringing these centres to Hungary (e.g. artificial intelligence), cost-effectiveness was also an important factor, but even more critical was the accessibility of good experts in this particular field. There is an important difference between Europe and Asia, since, according to the manager of an R&D centre (CVSUP₁), in Europe, there are only a limited number of young people ready to study natural sciences. As a consequence, they have to be paid well.

Despite the several positive examples mentioned above, not everything is right when considering upgrading from a bird's-eye-view. After an expert, the investments are mostly isolated to some leading sectors, and the spill-over tendencies to the rest of the economy are low (ER₁). It is also essential to consider the difference between research and development activities in terms of added value, so it also matters what kind of R&D is brought to Hungary.

Most of the managers¹⁹ mentioned an essential aspect as a disadvantage, which is also an obstacle to upgrading in certain cases. A lack of skilled workforce for many positions makes it hard for companies to fulfil production targets. Consequently, the interviewees agreed that an efficient education system is critical to ensuring a country's future competitiveness. More should be done in the education system to achieve a more successful upgrading in Hungary, and then, with persistent work, the added value in products developed or produced in Hungary

¹⁹ CAOEM₁, CHOEM₁, CASUP₁, CASUP₂, CVSUP₁

could be increased. The Hungarian age tree is not attractive: there is a substantial decrease in the population, and now the scarcity of engineers is felt by the R&D centres as well (CVSUP₁). German companies are ready to invest in Hungary for higher-value activities, but cannot find enough engineers.

4.3. Comparison with the other V4 countries

The main research questions: the role of FDI, the investigation of whether there is backshoring to headquarters, and the scrutiny of upgrading were also analysed in a Visegrad Four context. The opinions of Hungarian experts and managers were balanced by researchers from each of the other three V4 countries (EPL₁, ECZ₁, ESK₁).

Concerning the role of foreign direct investment, there is little difference between the four countries. FDI plays a role in all countries, and the manufacturing industry is a vital recipient of these investments. Many experts emphasised (ECZ₁, ESK₁) that the high-FDI dependency of the Hungarian and other V4 economies might have disadvantages, as well as the fact that they are stuck in the subsidiary role of some multinational companies.

Another issue a manager raises in the V4/CEE context is the available alternatives in the region within the multinational company. For example, Thyssen Krupp has all the manufacturing facilities in Hungary within the region. Some other companies have strong internal competition from other subsidiaries in Central-Eastern Europe (CASUP₁).

Regarding backshoring, none of the respondents said there were visible signs of it. However, as mentioned by one of the university teachers, some future risks are foreseen as the revenues and the efficiency of the European automotive industry are shrinking, and it might have adverse effects on the V4 subsidiaries (ECZ₁).

Foreign experts from the V4 countries did not mention any significant difference in terms of upgrading. A development gap is maintained between Germany and the V4 countries. Consequently, the Czech Republic, Hungary, Poland and Slovakia can focus on „sophisticated assembly”²⁰ activities. In contrast, the activities with the highest added value will likely remain in the leading FDI-sending countries. Within the GVCs, the OEMs have pressure on the suppliers who must complete the requirements, therefore there is little room for subsidiaries to implement their own initiatives to increase the added value of their activities. (EIN₂).

²⁰ Meaning the continuous development in the production process.

5. Comparing the results with the literature

Based on the results of the interviews, I revisit the main findings of the general and V4-related literature and statistics to investigate to what extent my results fit the conclusions of earlier research in the field.

5.1. Findings on backshoring

When I investigated the changes in the push and pull factors (Dunning, 2005) due to the automation possibilities or post-COVID resilience building, I found that the geographical concerns, e.g. potentials for backshoring from Hungary and the CEE region, are also not backed by company case studies. On the one hand, it is true that the level of „push” has decreased a bit, since a significant part of the personnel costs can be spared in a German factory due to robotisation. However, on the other hand, production is still much more cost-efficient in Hungary, as some managers said Hungary is still considered a „low-cost country” and has substantial benefits when considering an investment decision. The experts and the literature also back this finding; although there are warnings that, in a pessimistic scenario, some multinationals might leave Hungary in the future (Éltető, 2019), currently, there is no sign of such activity.

5.2. Towards invented in Hungary

When considering the upgrading tendencies in GVCs, the smile curve (Baldwin, 2013) is confirmed; there is a continuous motive for every factory and subsidiary site to perform a kind of upgrading, as this is the key to a sustainable future within the internal competition in the particular value chain. Regarding the several options the multinational company might choose from, e.g. retention/selection/reconfiguration (Szalavetz, 2017), the Hungarian cases fall into the „retention” category. It means that the Hungarian subsidiaries are maintaining their earlier functions, but in the meanwhile, they are continuously developed in order to increase the competitiveness of the overall GVC they are part of.

As mentioned earlier, in a book by Andrea Szalavetz (Szalavetz, 2019), the upgrading possibilities of Hungarian manufacturing subsidiaries were discussed on the basis of interviews made approximately ten years ago. Ten years is a significant timeframe in modern manufacturing, so it is worth comparing the findings in the book with the current study.

Largely, the results of the two studies are close to each other, showing that the trends forming the Hungarian manufacturing sector were also present ten years ago. Thus, there is a continuity in terms of driving forces behind the upgrading processes. As described in the book, the managers said a decade ago that new functions could be acquired within the GVCs by building on the success of earlier ones. This is in line with my findings from the recent study: managers said there is a proving curve within a GVC; first, simpler tasks (e.g. pure assembly) are given to a subsidiary, and they can gradually climb up to perform more significant tasks.

The first possibility mentioned in the book is the acquisition of other functions, e.g. the company is no longer a simple assembly factory but has other related functions with indirect workers. This was not the focus of my study, as it is evident that the companies interviewed have a significant number and magnitude in the supporting functions, in other words, in the field of indirect workers. However, it has to be mentioned that there was also an example of the opposite: in the case of a Hungarian OEM factory, the number of office workers had to be decreased heavily due to the new cost reduction strategy of the new owner of the company.

The „deepening” process within a function mentioned in the book was underlined in the recent interviews. Although there are still subsidiaries focusing mainly on assembly-related activities, within this relatively mono-focus of activities, they tend to have more and more autonomy, e.g. in the design of the lines and planning and executing the supporting functions: maintenance, IT, human resources, etc.

The third type of upgrading is the upgrading in scope. Some subsidiaries have developed new functions, and the one that was most present in the interviews is research and development. Here, the book mentions „*research activities acknowledged at the level of the multinational holding*” (Szalavetz, 2019, p. 70). In the case of one of the interviewed organisations, a further development can be observed: the Hungarian research centre is the largest globally within the GVC, and it keeps growing.

There are some differences due to the different economic environments. For example, the robotisation rate has strengthened, especially in the headquarters economy. The labour availability has also lessened, and, in line with it, the cost of labour has increased. This process might further enhance the dynamism in upgrading, since companies were forced to increase the value added in their production and other subsidiaries in Hungary.

In conclusion, when comparing my research findings with the ones in the book, it can be declared that the main processes are not new, they were present earlier, but some of them became stronger during the last ten years.

Conclusions and Recommendations

The study's main findings are summarised in the table below (Table 3).

Table 3: Summary of main findings

Research question	Main relevant findings
Are there any backshoring or reshoring activities from Hungary to other countries?	<ul style="list-style-type: none"> • Backshoring is not visible in the Hungarian manufacturing industry. • It is not likely that backshoring will materialise soon, as the Hungarian economy provides several competitive advantages for investors.
Is there any upgrading process in Hungary in the global value chains of large multinational enterprises?	<ul style="list-style-type: none"> • The finding is that upgrading does happen in the Hungarian manufacturing industry. • However, most of the upgrading-related investments focus on production-related processes, so the highest value-added activities are still relatively few in number.
To what extent the related status of Hungary is similar to or different from the other V4 countries?	<ul style="list-style-type: none"> • The condition of the Hungarian manufacturing sector is similar to the ones in the other three V4 countries.

Source: Edited by the author

In conclusion, I revisit the three scenarios raised in the introduction: I can reject the first negative scenario, i.e. that there is a reverse process in foreign direct inflows with backshoring to the headquarters of multinationals. This observation is underpinned both by the current study and the literature in the field. Regarding the second scenario, i.e. Hungary is „stuck” in the „factory economy” status, the answer is not unambiguous. On the one hand, there is a straightforward upgrading process taking place; on the other hand, as per the interview results, the main focus of the multinational companies is still production-oriented activities in the Hungarian manufacturing sector. Concerning the third scenario: there is a continuous upgrading in global value chains, a move from the factory economy status towards more value-added ones, but as managers said, this is more a result of a bottom-up process derived from global tendencies than the effect of local industry policies. Consequently, the third scenario is valid to an extent: there is upgrading within the Hungarian subsidiaries of multinationals within the GVCs, but it is not sure that this upgrading strengthens the relative global position of these companies. In conclusion, I find that the Hungarian manufacturing industry is currently still more in the „made in Hungary” status, and it is likely that the assembly-oriented functions will play a vital role in the coming years as well. However, it has to be acknowledged that in the meantime, there is visible progress towards the „invented in Hungary” position. Although it is not yet explicitly recognisable in statistics²¹, qualitative research shows the signs of technological developments.

²¹ As mentioned earlier the Hungarian development in GVC upgrading was only two percent during the period 2010 – 2018.

As revealed in the article, some multinational companies gradually improve the role of their Hungarian research and development activities and there is a growing role of shared service centres located in Hungary.

As policy recommendations for the future, it can be stated that decision-makers should comprehend that, even though there are economic benefits from the growing volume of investments in Hungary's manufacturing sector, moving towards highly developed countries requires more than just concentrating on the investments' improvements. To support the ongoing upgrading trends of Hungarian companies in the global value chains, the supply of the workforce with the necessary and continuously changing skill set is essential. This can be best achieved by making the Hungarian vocational training more flexible and, in parallel to that, by ensuring the inflow of skilled foreign manpower to those vacant positions where there is no available supply in the Hungarian job market.

In terms of follow-up research directions, a compelling opportunity is to examine the latest developments affecting the Hungarian manufacturing industry. Probably, the most influential advancement is in the field of electric car production: on one hand, the existing OEMs are starting to produce electric cars (Audi, Mercedes), but on the other, new factories focusing on electric car production are being built (BYD, BMW). Besides the car factories, an important related progress is in the field of battery manufacturing. However, these investments also have drawbacks and some researchers have already revealed some of them (Gyórfy, 2023; Éltes, 2023). Another interesting evolution in the field of the study was the recent modification of the Hungarian immigration law introducing new requirements for foreign employees.

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