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TEMPORARY AND FOREIGN LABOUR FORCE VS. INDUSTRIAL UPGRADING IN GLOBAL PRODUCTION NETWORKS: HIGH OR LOW ROAD FOR POLISH MANUFACTURING?

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Tymczasowi i zagraniczni pracownicy a awans w globalnych sieciach produkcyjnych: wysoka czy niska ścieżka rozwoju polskiego przemysłu?

Zarys treści: Celem artykułu jest uchwycenie związków między zatrudnianiem pracowników tymczasowych i zagranicznych a rozwojem zorientowanej na eksport działalności produkcyjnej w Polsce. Przeprowadzone badania ilościowe i jakościowe, obejmujące analizę regresji i 85 pogłębionych wywiadów z menedżerami firm i związkowcami, pokazują, że „wysoka ścieżka" rozwoju i ograniczone wykorzystanie pracy tymczasowej są również skorelowane. Skłonność do szerokiego wykorzystania pracowników tymczasowych zależy od cech produkcji i rynku, strategii firm i ich menedżerów oraz sytuacji na lokalnym rynku pracy. Jest ona większa w dużych aglomeracjach miejskich. Co ciekawe, sięganie po pracowników zagranicznych niekoniecznie musi prowadzić do równania w dół pod względem warunków zatrudnienia.

Słowa kluczowe: awans w globalnych sieciach produkcyjnych, pracownicy tymczasowi, pracownicy zagraniczni, Polska

Abstract: The authors aim to capture the relationships between the employment of temporary and foreign workers and the recent development of export-oriented manufacturing in Poland.

The study employed both quantitative and qualitative research, including regression models and 85 in-depth interviews conducted with company managers and trade union representatives, which show that a 'high road' of development and limited use of temporary labour are correlated. The propensity to use temporary workers depends on production and/or market conditions, company and managerial strategies, as well as the local labour market situation. It is greater in major urban agglomerations. Interestingly, reliance on foreign workers does not necessarily lead to a race to the bottom in employment conditions.

Keywords: industrial upgrading, temporary labour, foreign workers, Poland

Introduction

There is a continuous process of change in the geographical distribution of industrial production. Some countries, regions and towns experience severe deindustrialisation, while others increase their role in the international division of labour. The post--communist countries of Central Europe (CE) are in the latter category showing a spectacular expansion of manufacturing activity since the 1990s. This has been part of a broader process of their economic growth, which has resulted in a significant reduction in the GDP per capita gap between these countries and Western European economies. Whereas the GDP of the Czech Republic represented about 69% of the EU average in 1989 and the GDP of Poland only 33%, by 2022 it had reached 91% of this average in Czechia and 80% in Poland[1]. These countries became important exporters of manufacturing goods, including motor vehicles and their components, home appliances, furniture and other products. Foreign capital has contributed to this development, as transnational corporations (TNCs) invested in several sectors there, originally seeking new markets and then increasingly shifting production from Western Europe.

It is broadly believed that the characteristics of labour were an important factor underlying the growth of economic activities in CE, together with the geographical proximity to Western European markets and political stability associated with the integration into the European Union. Significantly lower nominal wages, relatively good skills, motivation and the flexibility of the workforce attracted foreign capital and built the competitive advantage of the CE economies. Overall, labour market trends in Central Europe look positive. High unemployment, which plagued these countries during the shock phase of post-communist transition, has disappeared, and real wages have been on the rise. A new phenomenon, however, has been the increasing difficulties in labour recruitment. The number of temporary (agency) workers has begun to grow, including more and more foreign workers. The issue of their employment in the CE`s semi-periphery, which was historically a labour-expor-

[1] The comparison refers to 27 EU members in both 1989 and 2021 based on Eurostat data.

ting region, is poorly understood. While there is a substantial amount of literature on the development of emerging economies and the poor working conditions in export-oriented manufacturing sectors dominated by foreign-owned subsidiaries, in particular, much less is known about the relationships between industrial growth of CE countries, which are strongly integrated with the Western European core and local employment systems.

In this context, there are two major puzzles addressed by the authors. First, the competition between migrant and domestic workers may be expected to lead to a race to the bottom in employment conditions (Clibborn 2015; Cumbers et al. 2016), with some contradictory insights from Chinese industry (Jürgens, Krzywdzinski 2015). Second, the extensive use of temporary labour is generally associated with a development model based on low costs and limited upgrading. In various spatial contexts, temporary and foreign labour are seen as comprising low-wage workers (Reber 2021; Scott, Visser 2022). To what extent is this true in a fast-growing semi-peripheral economy today?

The centrepiece of this study is an exploration of the role of temporary and foreign workers in Polish export-oriented manufacturing industries, examining the underlying factors and their consequences. The aim is to capture the relationships between the employment of temporary and foreign workers and the current and future development (upgrading) of manufacturing in the (semi)periphery focusing on three main questions:

1. What are the trends in the share of temporary and foreign workers and how do they compare with permanent employees and local workers regarding wages, working conditions, opportunities for vertical mobility and long-term employment prospects?
2. Why are temporary and foreign workers employed? More specifically, what factors underlie the share and position of these groups, including the impact of sector, size of the company, production and/or market conditions, managerial strategies, situation at the local labour market, and other location-specific characteristics?
3. What is the relationship between the use of temporary and foreign labour and company/sector upgrading (‘high road’ vs. ‘low road’)?

The upgrading of manufacturing in the semi-periphery

Upgrading is understood as a move towards high value-added products and services with enhanced competences of firms operating in Poland within global production networks. ‘Industrial upgrading’ means a growing share of more sophisticated products (product upgrading) and/or better technologies of production (process upgrading), while ‘functional upgrading’ indicates the development of non-production functions such as design, R&D, decision-making, and marketing (for further characteristics of these three types of upgrading, see the seminal paper by Humphrey, Schmitz 2002). Although the most common type of upgrading in the industries studied in Poland relates to products and processes, functional upgrading remains weaker (Domański et al. 2025), we investigate all three types of upgrading in this paper.

The ability of the periphery to achieve upgrading in global production networks is a contentious issue. The reproduction of the inferior role of peripheral economies is explained by various classical theoretical concepts, such as Wallerstein's (1979) world-systems approach, Vernon's (1966) product life-cycle theory and the new international division of labour (Fröbel et al. 1980). The development of higher value-added processes in parts of the periphery is interpreted through the perspective of global value chains (Gereffi 2019) or global production networks (Coe et al. 2008; Yeung 2015; Blažek 2016; Pike et al. 2017). In effect, two contrasting models (paths) of development for national and regional economies are distinguished: (1) the high road and (2) the low road (Sengenberger, Pyke 1992; Malecki 2007). The former indicates specialisation in high-value-added products and services, with steadily growing labour competences, while the latter points to competitive advantages based primarily on low labour costs.

It is argued that the high and low paths of development are associated with attributes of the labour market; that is, there is a connection between economic upgrading within global production networks and social upgrading. This is expressed in the segmentation of the labour market, with differing roles for long-term vs. temporary employees, skill structure and trends, wages, and industrial relations (Barrientos et al. 2011; Jürgens, Krzywdzinski 2016).

The dual labour market concept demonstrates a split between two parallel labour submarkets with different characteristics (Doeringer, Piore 1971; Edwards et al. 1982). The primary markets provide high pay, secure employment and opportunities for on-the-job skills development. By contrast, secondary labour markets are composed of low or unskilled jobs with less favourable conditions, e.g. low wages, unstable employment, and few possibilities for acquisition of skills and internal promotion. Mobility between the two labour markets is constrained. Some authors distinguish more than just two distinct labour segments. For example, Hudson (2007) characterizes three parts of the labour market based on occupations, disciplines, and employee features, while Standing (2011) proposes a sixfold classification of employment groups. New forms of labour market segmentation arise from employers' pursuit of labour market flexibility. Atkinson and Meager (1986) identify four basic types of this flexibility: numerical, functional, wage and time flexibility. OECD (2015) and ILO (2016) reports show a rise in contingent forms of work in both advanced and emerging economies.

Moreover, labour markets are geographically bounded, which result in spatial segmentation of the labour market. Migration, both internal (between localities and regions within the country) and international, is an important element of labour force dynamics. Yet, immigrants are especially likely to belong to the most exploited groups and join the peripheral segment of the labour market, often filling the gaps of low-skilled jobs that native workers refuse to take (Waterman 2014; Buckley et al. 2016). Therefore, labour shortages in this segment may serve as a pull factor for international migration.

There is an ongoing debate on the development of post-communist Central Europe in this context. As Coe (2011, 100) puts it, the economic success of these countries since the 1990s 'necessitates further adjustments to frames of understanding and interpretation'. Their economic growth can be seen as relying primarily on relatively cheap, yet skilled labour and the capital and technologies acquired from abroad, hence they represent dependent market economies (Nölke, Vliegenthart 2009) with limited potential for upgrading (Phelps et al. 2015; Pavlínek 2017). However, for some authors, industrial upgrading of CE economies is under way, evidenced by growing exports of complex, high value-added products (Hotopp et al. 2005; Kureková 2018). There is more ambiguous evidence regarding the development of non-production functions, especially product design (Micek et. al. 2021).

As far as employment systems in the new EU member states are concerned, some convergence with the Western European situation is observed, though significant differences remain (Drahokoupil et al. 2015; Parteka, Wolszczak-Derlak 2015; Mrozowicki, Trappmann 2021). We can find papers that discuss general patterns of foreign workers' presence in the CE labour market (e.g. Duszczyk, Matuszczyk 2018; Pratt, Bui 2018), and occasionally address attitudes toward foreign workers (Kubiciel-Lodzinska et al. 2020), their employment in agriculture (Górny, Kaczmarczyk 2018), construction and services (Keryk 2017). Few studies, however, focus on immigrants in CE manufacturing. Interesting research by Meszmann (2019) on Ukrainian workers in Hungarian electronics shows their propensity to work long hours and examines their potential to transition from temporary to regular employment. The work of immigrants in CE may be compared with their earlier employment in Southern Europe (Domingo et al. 2007) and in the EU in general (Fellini 2007; Fedyuk, Kindler 2016).

All in all, there is generally a twofold motivation for this study: first, to explore a recent, largely under-researched phenomenon of the underprivileged segment of the CE labour market of foreign and temporary workers in manufacturing; and second, to contribute to the broader debate on the upgrading of CE economies by shedding light on its link with the evolution of employment systems.

The scope of analysis, data sources and methods

The analysis focuses on three manufacturing industries in Poland of varying characteristics: automotive, aircraft, and home appliances. Medium-high and high technology sectors are particularly suitable for addressing the research questions, given their extensive linkages with other economic activities, significant foreign control and the fact that these are industries where CE has gained comparative advantage in the European economy. The automotive industry is a prominent for high-volume production, including both sophisticated components and relatively simpler, labour-intensive ones. In contrast, the aircraft industry is characterised by lower production volumes with a higher share of high-tech products, while the manufacturing of home appliances represents mass production of standardised, durable consumer goods. These three studied sectors may thus differ in employment conditions and enable the capture of various trends and determinants associated with the upgrading process. However, selection of these three industries may introduce potential bias of further results, as industries dominated by domestic companies are not included.

The provision of high-value-added products and services is regarded as a high road to development, in contrast with the low road, which is typified by standardised products with limited non-production competences. The former should be associated with a strong core of production workers who are offered extensive training and a limited number of agency workers and foreign workers. The low road entails easy substitutability of workers, with a large mass of precarious employment contracts, few highly qualified employees and low earnings. Poor employment standards are often regarded as a reflection of race to the bottom approach.

The research is based on a collection of primary and secondary data and combines quantitative and qualitative methods. A CATI questionnaire survey was conducted among 855 medium-sized and large automotive companies (sampling frame) in February 2020 in order to identify their production capabilities, non-production competences and employment characteristics. The response rate was 23% (n=197). The sample characteristics are given in Table 1. The sample is populated by large and medium-sized companies. Over ¾ of interviewees operate in the automotive sector; thus, this industry (also due to its prominent role in Polish manufacturing – Domański et al. 2025) has been selected for further quantitative analysis. Step-wise ordinary least square regression was employed to capture the interdependence between labour features and upgrading. Acknowledging the potential interdependence of these two phenomena, it was decided to analyse the impact of upgrading-related measures and company characteristics on the share of temporary and foreign employment. Generally, we constructed the following two models:

Table 1. Sample characteristics
Tab. 1. Charakterystyka próby badawczej

Variable / Zmienna	Categories (share in total) / Kategorie (udział w ogóle próby)
Industries	Automotive (76.7%), aviation (16.1%), home appliances (7.2%)
Size of companies	Medium (52.7%; up to 250 employees), large (47.3%; 250+ employees)
Ownership	Foreign (46.1%), domestic (53.9%)
Location	Urban agglomerations (60.9%), non-agglomerations (39.1%)

Source: own elaboration.
Źródło: opracowanie własne.

1. temporary employment = f(industrial upgrading, control variables, random term)
2. foreign employment = f(industrial upgrading, control variables, random term) where industrial upgrading stands for variables describing industrial upgrading and potentially affecting the use of temporary and foreign workers and control variables are company-specific ones (see Appendix 1).

Finally, 85 in-depth interviews were conducted in three sectors between 2018 and 2022 in order to gain knowledge on the factors and mechanisms of upgrading, employment conditions and trends. There were three groups of interviewees: first, CEOs, HR managers and leaders of industry associations, second, trade union and works council representatives; and third, work agencies. These were supplemented with 7 focus group interviews with 22 trade union leaders and 2 focus group interviews with 7 managers of work agencies, all carried out in 2021.

Temporary and foreign staff in Polish manufacturing

Central European economies, including Poland, face increasing labour shortages. While in 2002 the unemployment rate in the country was 19.9%, it reached a record low level of 2.9% in 2021. This resulted from a shrinking number of economically active people due to demographic reasons and a steadily growing economy. In addition, 2.0–2.5 million Poles migrated to Western Europe in the last three decades. Consequently, there has been a growing gap between demand for labour force and its supply.

The employment of temporary agency workers increased until 2017, when it reached 864,000 people. It comprised 648,000 people in 2021, i.e. 4.0% of total employment. The average number of days worked by temporary workers also decreased (Polskie Forum HR 2022). At the same time, the growth in the employment of foreigners has continued. According to the official data, 0.5 million foreigners with 3- or 5-year work permits were employed in Poland in 2021 (one-fourth of work permits issued in the EU for non-EU citizens). In addition, about 2 million declarations of entrusting work to people from Eastern European countries were submitted by employers to labour offices. This simplified procedure had allowed to employ for up to 6 months, but the period was extended up to 2 years at the beginning of 2022. There are more than a million foreign citizens registered as social insurance contribution payers. All in all, it is estimated that 1.5–1.7 million foreigners worked in Poland, representing about 10% of total employment before the Russian aggression on Ukraine. More than two-thirds of them were Ukrainians, and Belarusians represented the second largest group. About 35% of Ukrainians work in manufacturing. Despite a growing number of Ukrainians with permanent contracts, the majority of immigrants are temporary workers (49% of agency workers are foreigners).

Higher wages than at home are among the top motivations for seeking employment in Poland. For Ukrainians and Belarusians, these factors are as important as geographical proximity, which makes travel home easier, the low language barrier as well as large number of compatriots in the country, including relatives (chain migration). Their wage expectations are growing in line with the general wage increase in Poland (which has grown faster than GDP since 2015) and with the length of their stay in the country. The Otto Work Force (2022) survey suggests that 79% of temporary Ukrainian workers are satisfied with working in Poland; the EWL study (2022) indicates that 38% of Ukrainians would like to migrate to Poland permanently and 62% to work here for at least a few years. Three-fourths of Ukrainians working in Poland are below 45 years of age and half of them below 35 years. There are large companies, which develop special programmes supporting the settling downs of entire families, targeted at both shop-floor workers and engineers. Local and regional integration centres providing free language courses, as well as educational, health care and tax advice, became widespread in 2022.

The share of temporary workers reaches 25 or even 35% in some large assembly plants for home appliances with a total employment of 2000–4000 people, and the majority of these workers may be foreigners. By contrast, two major car assembly plants have almost no agency workers, even though one used them in the past; the third one has 10–15%. The decreasing share of temporary workers is also evident among large automotive component manufacturers, where the share is usually up to 10% now, including 4–5% Ukrainians. Few or no agency workers (2–3%) are found in aircraft factories, many of which entirely lack foreign labour as well.

Results: Quantitative analysis

In explaining the share of temporary and foreign workers, the focus is on the automotive industry as the largest among the studied sectors. The average share of temporary employees was 7.4% and of foreign labour 8.7% in the sample (see Figure 1 for the distribution). Agency and foreign workers were found in the majority of enterprises (52% and 64% respectively); they represented more than one-fifth of employment in 15% and 17% of firms, respectively.

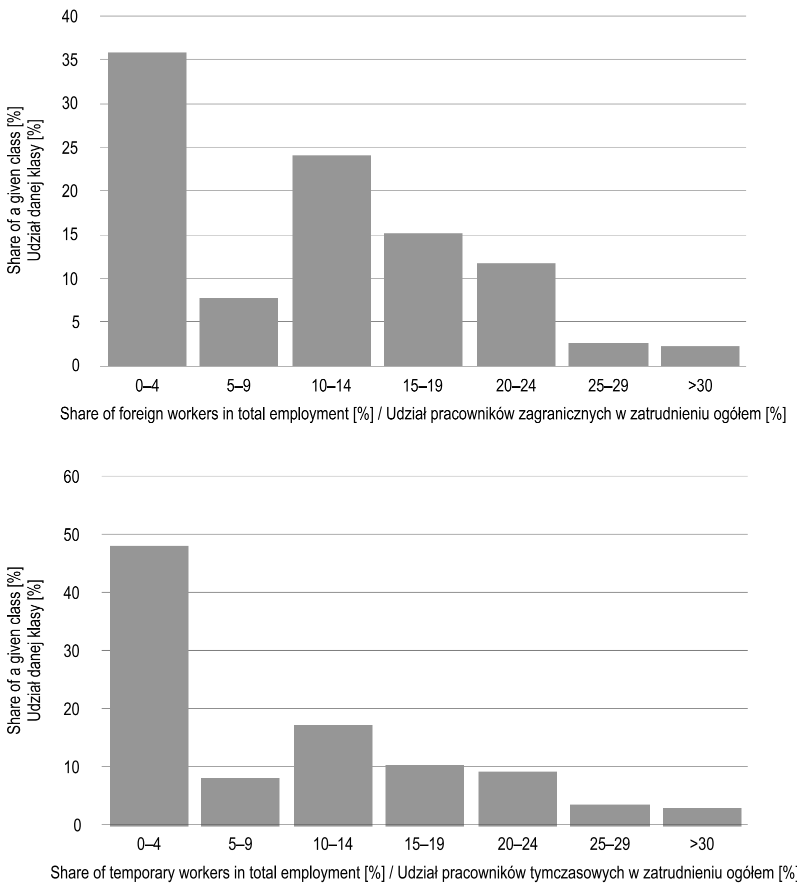

Fig. 1. Distribution of the share of foreign and temporary workers in total employment among companies

Ryc. 1. Rozkład udziału pracowników zagranicznych i tymczasowych w całkowitym zatrudnieniu wśród firm

Source: own elaboration. / *Źródło*: opracowanie własne.

The determinants affecting the use of temporary and foreign workers have been proxied by variables from the CATI research listed in Appendix 1. First, independent variables were tested for multicollinearity and a significant Pearson's coefficient was identified only in the case of two Q3 variables (change in the scale of supplier management and marketing). The results of the regression analysis reveal that large enterprises tend to hire more temporary workers; this is also true of foreign-owned companies (Tab. 2 & 3). As expected, the stronger the belief in the importance of temporary labour for a company's competitiveness, the higher the share of non--permanent workers. Surprisingly, it is also higher in enterprises that report higher competences in supply management and strategic planning, as well as an impact of

Table 2. Factors explaining the share of temporary workers in the studied companies (n=182)
Tab. 2. Czynniki wyjaśniające udział pracowników tymczasowych w badanych przedsiębiorstwach (n=182)

Independent variable / Zmienna niezależna	b	Standard error Błąd standardowy	t	p
EU environmental policy affects company's operations in Poland (Q1_4)	–6.6298	2.3539	–2.817	0.0074**
Automation and robotisation of production affect company's operations in Poland (Q1_9)	–4.0615	1.9938	–2.037	0.0481*
Introduction of Industry 4.0 solutions affects company's operations in Poland (Q1_10)	7.6283	2.5707	2.967	0.0050**
Strategic planning carried out by the company in Poland (Q2_7)	14.0070	5.5263	2.535	0.0152*
Supplier management carried out by the company in Poland (Q2_5)	–11.1580	5.1475	–2.168	0.0360*
Temporary workers are an indispensable element to maintain the company's competitiveness (Q5_5)	5.6248	2.0678	2.720	0.0095**
Number of employees (Q7)	0.0012	0.0003	3.787	0.0005**
Dominance of foreign capital in ownership structure (Q16)	3.8706	1.8122	2.136	0.0387*
Sales revenues (Q17)	0.0044	0.0013	3.157	0.0030**
Constant	0.2593	6.0017	0.0432	0.0321*
R-square = 0,6763 Akaike's information criterion = 362,9722 Bayesian Schwarz's criterion = 391,0748	Adjusted R-square = 0,5737			

Note: *, ** statistical significance at α=0.05 (0.01) level.

Source: own elaboration.

Źródło: opracowanie własne.

Table 3. Factors explaining the share of foreign workers in the studied companies (n=182)
Tab. 3. Czynniki wyjaśniające udział pracowników zagranicznych w badanych przedsiębiorstwach (n=182)

Independent variable / Zmiennna niezależna	b	Standard error Błąd standardowy	t	p
Customer quality requirements affect company's operations in Poland (Q1_2)	–3.6964	1.7517	–2.110	0.0402*
The policy of the entire corporation affects company's operations in Poland (Q1_3)	5.7452	2.2539	2.549	0.0141*
Automation and robotisation of production affect company's operations in Poland (Q1_9)	–4.8307	1.6221	–2.978	0.0046**
Product design carried out by the company in Poland (Q2_1)	–8.8040	3.1822	–2.767	0.0081**
Process design carried out by the company in Poland (Q2_2)	17.0495	4.9381	3.453	0.0012**
Supplier management carried out by the company in Poland (Q2_5)	–12.6445	4.08231	–3.097	0.0033**
Marketing carried out by the company in Poland (Q2_6)	7.6252	1.6778	4.545	0.0000**
Number of employees (Q7)	0.0007	0.0003	2.719	0.0092**
Share of exports (Q18)	–0.0471	0.0239	2.052	0.0457*
Constant	14.9905	4.6766	3.205	0.0024**
R-square = 0,6611 Akaike's information criterion = 364,3240 Bayesian Schwarz's criterion = 386,9889	Adjusted R-square = 0,5890			

Note: *, ** statistical significance at α=0.05 (0.01) level.

Source: own elaboration.

Źródło: opracowanie własne.

Industry 4.0 solutions on their operations. Conversely, this share decreases with the growing role of automation and robotisation as well as the EU environmental policy in a company's strategy. Hence, we argue that managerial strategies and factors (Q1) and the scale and scope of non-production activities in Poland (Q2), are significant for employing temporary staff. Surprisingly, there is also a positive correlation between managers' opinion on the introduction of Industry 4.0 solutions affecting a company's operations in Poland and the share of temporary workers. This possibly reflects the belief in the general importance of new digital technologies in large companies, which are characterized by broader use of temporary labour (Tab. 2).

The employment of foreign workers also proves to be related to company features and strategies, as well as the scope of their non-production activities. A higher

Table 4. The share of temporary workers depending on location
Tab. 4. Udział pracowników tymczasowych w zależności od lokalizacji

Location Lokalizacja	Share of temporary labour / Udział pracowników tymczasowych					
	Three industries / Trzy branże			Automotive companies / Firmy motoryzacyjne		
	N	Mean Średnia	Standard deviation Odchylenie standardowe	N	Mean Średnia	Standard deviation Odchylenie standardowe
Urban agglomerations	140	8.36*	9.736	105	8.50*	9.386
Non-agglomerations	90	5.89*	7.436	75	5.72*	7.368

Note: *, ** statistical significance at α=0.05 (0.01) level.

Source: own elaboration.

Źródło: opracowanie własne.

number of foreign employees is typical for large enterprises and those characterized by a stronger impact of corporate policy. Their share is lower in firms with higher quality requirements, greater automation and robotisation, broader product design and supplier management competences, as well as in more export-oriented ones. However, process design and marketing competences are positively correlated with the use of foreign labour (Tab. 3).

The share of temporary and foreign workers does not show statistically significant relationships with variables representing changes in the scale of non-production activities (Q3) and local management autonomy (Q4). Surprisingly, the situation at the local labour market (Q5) does not affect the use of foreign workers (Tab. 2 & 3).

The comparison of the share of the two groups of workers in major urban agglomerations and in other areas (Tab. 4) confirms greater propensity for the use of temporary labour in urban agglomerations, where competition among employers is more intense. However, there is no such difference in the case of foreign workers.

Results: Qualitative analysis

Invaluable insight into the reasons for employing temporary and foreign workers is provided by the interviews. The classic argument is that immigrants allow to lower labour costs. In fact, interviews show that they earn the same wages and receive similar benefits as their domestic colleagues on the shop floor due to legal regulations. However, they are not eligible for severance pay and are willing to accept lower pay, which may curb pressure for wage increase and thus affect the general level of remuneration. According to trade union leaders, this is not the case in Poland nowadays, given the widespread difficulties in labour recruitment. A major advantage of employing labour migrants from Eastern Europe is their eagerness to work long hours and in a flexible time regime, e.g. to come to work at short notice. This is particularly useful in the case of seasonal and sudden production peaks. Therefore, numerical and time flexibility of employment are crucial here, and this may be a primary motive for using temporary agency workers in general. There are mixed views on the quality of work of foreign labour. According to many managers and trade unions representatives, foreigners are often more motivated and show lower absenteeism than the few Polish job-seekers still available at labour markets. However, some claim that the work ethics of Ukrainians is lower. Nevertheless, workers from Ukraine, Belarus and other countries not only help to fill the gap in the labour market ('we could not function without them', Interview 51; 'there is no other way than to rely on the immigrants', Interview 23), but offer other benefits to employers in terms of time flexibility and possibly greater motivation in performing simple tasks as well. Last but not least, foreign workers are more geographically mobile as they readily decide to move to new locations in search of better pay; unlike the majority of the domestic workforce, they are not confined to local labour markets in the place of their residence.

At the same time, there are significant barriers and difficulties associated with employing temporary and foreign workers for employers. The limited duration of employment and hence, high turnover generate a need for continuous training of newcomers at the workplace, which entails additional costs for the company. These costs are even higher when using foreign labour force, as it requires instruction in Ukrainian and other languages, which larger firms may be able to afford. In addition, a recent study reveals that 71% of Ukrainians working in Poland have their costs of accommodation covered by the employer, usually by the work agency (Otto Work Force 2022), which further increases the total costs of their recruitment. Moreover, the turnover of foreign workers may be higher due to the limit of their employment under the simplified procedure (nowadays extended) and their geographical mobility. The predominant financial motivation of Ukrainians and Belarusians leads many of them to seek long hours of work as temporary workers, which may be less feasible when they receive employment contracts; this may discourage some of them from seeking permanent employment within the company. Another barrier is the difficulty in the formal recognition of qualifications for using certain types of equipment by foreigners in Poland. Finally, the attitudes of Polish workers and their relations with foreigners are important. On the one hand, the argument that 'they take our jobs' does not hold in the current labour market situation, according to trade unions. On the other hand, some sort of reluctance and lack of acceptance toward ‘others’ who speak different languages may occur. Foreign temporary workers tend to stick together and may not necessarily integrate with the rest of the workforce; however, generally limited cultural barriers are emphasized in the case of Ukrainians. One issue often raised by trade unions is the complaints of local employees, team leaders in particular, who feel that they should be paid more due to the additional responsibilities they have with foreign workers on the shop floor. Thus, there is some resentment that the latter earn the same wages, despite having less duties, or that they may earn more if they work longer hours. The expectation of Ukrainians to work longer hours ‘disrupted the system’, according to one of the managers (Interview 48).

Despite the general downward trend in trade union membership in the country, unions are present in most large and many medium-sized factories in the studied sectors. There are often two or three unions in a company, which are part of national confederations such as Solidarność and OPZZ (The All-Poland Alliance of Trade Unions). By definition, they hold negative attitudes towards the use of agency workers, even though some union leaders admit it is partly ‘a must; production would have stopped without them’ in the current labour market situation (Interview 68). Some unions have signed company agreements limiting the use of temporary labour. These efforts also aim to ensure there is no differentiation between temporary workers and company employees in terms of benefits and working conditions, that avoiding competition between them. The major difference remains in the time regime of the two groups, and opposing time flexibility is one of the current priorities of trade unions in manufacturing.

The interviews reveal two general approaches to the use of temporary labour in manufacturing companies: first, as a way of selecting people who may be offered employment contracts, and second, as a permanent segment of the workforce. It is the latter approach that deserves broader analysis and discussion: what factors determine the prolonged, vast employment of temporary workers.

There is no doubt that market and technological characteristics matter here. Unstable, volatile demand for company products and/or seasonal changes in sales encourage employers to use temporary workers as a buffer during peak production periods (risk reduction). The reliance on a greater share of temporary labour is possible when manufacturing processes involve many simple tasks that can be performed without extensive training and high qualifications. This is evident in the substantially higher share of agency labour in home appliance industry, due to its lower technological complexity and greater changes in sales, and the lowest share in aircraft production. The situation in the automotive sector varies greatly, however, according to work agencies, more and more firms treat the use of temporary workers provided by the agencies as a trial period, offering them training and employment contracts within a few months or a year. This suggest that agencies serve as mediators in the labour selection process.

The outbreak of the Covid-19 pandemic in 2020 clearly showed that agency workers serve as a buffer, the use of which is terminated in the case of market turmoil. interestingly, the increase in production in 2021 occured without the return of vast temporary employment in many companies. A contrasting example is a large manufacturer of truck components that incurred substantial costs of 12-month severance pay when laying off part of its employees at the onset of the pandemic, and later decided to rely more on agency workers. Thus, managerial strategies and practices, both at the corporate and local levels, are no less important. The more a company pursues low costs, the more likely it is to use a large number of temporary workers. This has a twofold impact. First, lower costs may be achieved by longer working hours and greater time flexibility, which is easier to obtain with agency workers than with regular company employees. Second, limited wage increases lead to difficulties in recruitment and retaining the employees in the company, so temporary workers become the only option, even though the direct costs of their use are not necessarily lower. Therefore, contrary to popular belief, the widespread use of temporary workers does not inherently lower the labour costs; rather, it results from a focus on cost reduction. Trade union leaders point out that the latter may stem from limited decision-making power of managers at some Polish subsidiaries of TNCs, who are not allowed to offer higher wages and/or other benefits; consequently, employees leave the company and temporary workers fill the gap. Foreign-owned firms were the first to use agency workers, and domestic firms followed suit. All of this is underscored by the generally limited supply of labour force in the country and the decreasing attractiveness of manufacturing jobs (regime of factory work) for young people. The situation at the local labour market may also matter, though it is less significant than market and technological conditions and company strategies.

Immigrants are usually overrepresented in the underprivileged segments of the labour market. To what extent is this the case in Polish manufacturing? The fact that the majority of them are temporary agency workers makes them a vulnerable group. In terms of working conditions and nominal wages, there are no differences from domestic workers in large enterprises, where non-EU citizens are mostly found. However, a clear divergence exists in terms of working hours. They are undoubtedly a more exploited group in this respect than permanent Polish employees. An important question is what positions are held by foreigners and whether these correspond to their qualifications. Most of them hold unskilled jobs. The recent EWL (2022) survey indicates that the share of Ukrainians declaring they work in Poland in roles matching their qualifications has increased to 68%. Still, language barriers and formal qualifications or certification required to perform certain tasks remain significant constraints for vertical mobility. The long-term employment prospects for those in the segment of temporary work depend on company employment policies on one hand, and the attitudes of migrant workers on the other.

Finally, we can address an issue of the relationship between the employment of temporary and foreign workers and the further development of manufacturing. There is a common opinion among managers and trade union leaders that such employment does not affect the quality of products, which has to meet high standards in export--oriented production. Nonetheless, several company managers and some union representatives point to a fundamental link between process and product upgrading and labour policy of the company. 'There are companies that want to invest in the employees and keep them, while others take people from work agencies without being attached to the plant' as one of the automotive trade union leaders explained (Interview 33). It is emphasized by numerous interviewees that qualified staff is the main strength of firms in Poland. The training of employees takes a long time, so maintaining a stable workforce is important; this can be achieved through higher wages, additional benefits, personal development prospects and good industrial relations. In fact, the current difficulties at the labour market mean that employees are becoming more and more important to company success.

There are evident differences in this respect among the studied sectors. The importance of a 'high road' is articulated in almost entire aircraft industry, where 'there is no room for temporary workers' (Interview 82), and in some automotive companies. In the home appliance industry, two manufacturers of premium segment products stand out; one of them stated that if you rely on low-cost temporary and immigrant labour, then 'in the medium- and long-term, you are preventing yourself from developing more automated and sophisticated production' (Interview 14). Broader automatization, robotisation and Industry 4.0 have been declared as necessary responses to labour shortages, which will also reduce demand for unskilled temporary workers. Such an attitude is more frequently observed in German-owned companies and family-owned businesses.

All this confirms the existence of both a 'high road' and 'low road' in terms of company/sector development in Polish manufacturing; the former is based on the stable employment of permanent staff and broader implementation of new technologies, and the latter relies on the extensive use of temporary workers.

Conclusions

Temporary labour used to be a marginal group in Polish manufacturing till 2010. The use of agency workers gained importance in the following decade when labour shortages emerged but begun to decrease in 2017. The mixed impact of the pandemic may be identified, though a greater emphasis on permanent employees and a reduced role for temporary workers predominates. Foreign labour has become an important element filling the gap in the Polish labour market, extensively as temporary labour. The use of temporary workers provided by agencies is increasingly treated as a trial period for the selection of people who are then offered company training and employment.

Temporary and, especially, foreign workers are undoubtedly a vulnerable group. They are largely employed in unskilled positions with insecure employment contracts and thus may be regarded as part of the 'precariat', plagued by easy substitutability, following Standing's (2011) sixfold classification of labour market segmentation. The research has revealed that their exploitation in the Polish manufacturing is particularly evident in terms of long work hours and time-related flexibility. However, contrary to the argument concerning emerging economies found in the literature, there is hardly a race to the bottom concerning wages and working conditions. This is primarily due to the pressure exerted on employers by the general labour scarcity, which requires them to compete for the workforce; the activity of the trade unions is an additional factor here. The situation in the labour market makes it also necessary for work agencies to provide free housing for labour migrants recruited from abroad. The area of conflict between domestic and foreign workers is not so much competition for jobs but rather wages, scope of responsibility and time regime. The upward mobility of temporary labour force means joining the core manual workers with full-time company contracts.

Temporary and foreign employees are found primarily in large enterprises. Three groups of factors underlying the broad reliance on temporary workers may be identified:
1. production and/or market conditions,
2. company and managerial strategies,
3. local labour market condition.

Production and market characteristics, especially unstable demand, seasonal changes, and the presence of many simple tasks and operations, appear to be major determinants encouraging the greater use of agency labour as a buffer through numerical flexibility and finds expression in clear differences among industrial sectors. Furthermore, large enterprises can afford additional costs of training and safety instruction for foreign workers. Individual company strategies matter here as well. Temporary workers may serve as a means of coping with labour shortages and rising wages, as they allow companies to reduce costs by increasing hours of work and time flexibility. The typical explanation is that the pursuit of low costs results in low wages. However, the cause – effect relationship may also work in the opposite direction, namely limited wage increases within the company lead to difficulties in retaining and recruiting permanent employees, and thus, leading to a broader use of temporary workers. This may sometimes be related to the limited decision-making power of local managers in foreign=owned subsidiaries in Poland. The impact of trade unions in curbing the employment of agency labour may also be significant in large companies. The local labour market situation proves to be less important than expected, as it did not appear significant in regression models. This may be explained by the widespread nature of labour shortages across both metropolitan and peripheral areas where large companies operate.

Both quantitative and qualitative research confirms the interdependence between the use of temporary labour and industrial upgrading. The strong core of production workers appears correlated with product and process upgrading, including broader automation, as well as the expansion of non-production functions, thus representing a 'high road' of development. The substitutability of temporary workforce employed through work agencies is an element of the 'low road' and may undermine the efforts to move towards high-value added products and services, therebyweakening the long-term competitiveness of manufacturing firms. Despite differences stemming from the technological and market characteristics of industrial sectors and/or firms, there is also significant variation depending on company strategies in this respect. From the point of view of the future evolution of Polish manufacturing, the crucial question is whether the trend towards reduced reliance on temporary labour and increased integration of foreign workers into core segments of the labour market prevails.

The Polish case study reveals two puzzles concerning the determinants and effects of the employment of temporary and foreign workers, as well as their relationship with economic development. Our results suggest that a race to the bottom is not a necessary consequence of the employment of foreign migrant labour, at least in the case of manufacturing, and proves that the impact of immigrants strongly depends on broader labour market conditions. Furthermore, it demonstrates that the relationship between the pursuit of low costs and the broad use of temporary workforce may differ from common perceptions; that is, the latter may be an effect of employers' preoccupation with low wages, not just its cause. Another puzzle remains the significant share of temporary labour in an economy where industrial upgrading toward higher value-added activities is underway, even though such labour use is commonly related to the 'low road' of development. However, at the company level, the link between a 'high road' of development and a limited use of temporary labour is confirmed.

Some limitations of the authors' research have to be emphasized. First, the study did not cover all groups in the inferior segments of the labour market, focusing on temporary agency workers. Second, the studied manufacturing sectors are dominated by large and medium-sized companies, where temporary workers are more common; different kinds of precarious work with poor wages and working conditions may be found in small enterprises. Third, the questionnaire survey inquired about changes in company operations and their environment over a 5-year period, which may have been too short to grasp longer-term transformations, for example in non-production activities. More in-depth studies on Industry 4.0 are also needed, as it may affect employers' strategies, 'pushing' firms toward the 'high road' and marginalizing producers sticking to the 'low road'. Lastly, the war in Ukraine is now exerting a strong impact. It results in the reduced availability of male labour in Polish manufacturing, while a vast number of female refugees are seeking jobs primarily in the service sector.

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Appendix 1. Factors affecting the use of temporary and foreign workers and corresponding applied variables
Załącznik 1. Czynniki wpływające na wykorzystanie pracowników tymczasowych i zagranicznych oraz odpowiadające im zastosowane zmienne

Factors / Czynniki	Applied variables / Zastosowane zmienne
Managerial strategies and factors	What are the factors that have impacted company's operations in Poland in 5 years? (Q1) (increase in demand; customer quality requirements; the policy of the entire corporation; EU environmental policy; policy of the Polish government; the situation on the labor market in Poland; circular economy requirements; certification system requirements; automation and robotization of production; introduction of Industry 4.0 solutions)
The scale and scope of non-production activities in Poland and changes of their role	Which of the listed non-production activities are carried out by the company in Poland? (Q2) How has the scale of non-production activities changed in the last 5 years (Q3) (product design; process design; R&D; purchasing; supplier management; marketing; strategic planning; training)
Autonomy	Does the management of the company located in this place have the ability to allocate funds for the following activities? (Q4) (product development; employment size; executive training programs; production worker training programs; marketing)
Situation at the local labour market	To what extent do the following statements reflect well the current labor market conditions in which the company has to operate? (Q5) The lack of an adequate number of production employees limits the possibilities of increasing production The qualifications of the newly recruited employees limit the possibilities of introducing more complex products The qualifications of the newly recruited employees limit the possibilities of introducing more advanced technologies The motivation of newly recruited employees limits the possibilities of introducing more advanced products or technologies Temporary workers are an indispensable element to maintain the company's competitiveness
Company's profile	
Size of the company	Number of employees (Q7)
Age of company	Year of establishment (Q14)
Ownership	Dominance of foreign/domestic capital in ownership structure (Q16)
Economic performance	Sales revenues (Q17)
Openness toward external markets	Share of exports (%) (Q18)

Source: own elaboration.
Źródło: opracowanie własne.