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Employment protection legislation and macroeconomic outcomes: channels of influence

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Abstract

Motivation: Employment protection legislation (EPL) plays an important role in shaping macroeconomic performance, yet its impact remains contested. Traditional analyses have focused on labour demand effects, but recent economic transformations call for a broader perspective. Globalization, technological change, and new labour market dynamics suggest that EPL may influence not only hiring and firing decisions but also productivity, innovation, income distribution and social welfare. Understanding these diverse channels is essential, as EPL can create opportunities while also generating rigidities that affect growth.

Aim: This paper systematically examines the transmission channels through which EPL affects macroeconomic outcomes. It proposes a hierarchical framework in which the effects on labour demand are supplemented by EPL's impact on productivity and resource allocation; labour supply and economic activity; well-being and social welfare. The study investigates how these channels shape key outcomes such as employment, unemployment, income structures, aggregate demand, total factor productivity, and social inequalities. The analysis relies on mixed-method approach, combining a comprehensive review of literature with an empirical assessment of relationships between EPL and economic performance.

Results: The findings confirm that labour demand is the dominant channel of EPL influence, but productivity, labour supply, and efficiency effects are also important in determining macroeconomic and social outcomes. EPL influences economic performance not only by regulating job security but also by shaping incentives for innovation, organizational change, and resources use. By integrating these wider mechanisms, the study provides a more comprehensive understanding of EPL's role in the economy. It contributes to policy debates by highlighting that EPL should be assessed not solely in terms of labour market flexibility, but also with regard to its broader implications for efficiency, equity, and welfare.

Keywords: employment protection legislation, labour market dynamics; economic efficiency; social welfare

JEL: J08; J21; J24; J38

1. Introduction

Employment protection legislation (EPL) remains one of the most contested labour market institutions in both academic research and public policy debates. While frequently assessed in terms of labour market rigidity and employment outcomes, its broader macroeconomic and social effects are far less systematically analysed. This paper addresses this gap by focusing explicitly on the multiple channels through which EPL influences macroeconomic performance.

EPL is one of regulatory tools designed to protect workers from arbitrary and possibly unfair decisions by employers, as well as to mitigate the financial repercussions of job loss. This legal framework encompasses various aspects of the employment relationship, including the duration of contracts, permissible grounds for dismissal, severance payments, and regulations of temporary employment. Effective worker protection gains increasing importance in today's dynamic and often turbulent economies. The impact of EPL on labour market variables and macroeconomic outcomes has been researched since the 1980s, yet two major problems persist. First, there is still no firm consensus on the effects of EPL and empirical results vary quite dramatically. Second, and probably contributing to the first, the detailed workings of EPL have not been studied in any comprehensive manner. Most papers focus on a chosen channel of influence (the impact firing/hiring costs have on labour demand, for example) while neglecting other mechanisms and interconnections. Similarly, outcome variables affected by EPL are often viewed rather narrowly.

The purpose of the paper is to present a systematic analysis of all significant mechanisms through which EPL influences macroeconomic variables, most notably employment, unemployment, wages and profits, factor productivity, aggregate demand and social inclusion, that were identified so far in the literature.

Hypothesised main channels of influence include, in the order of diminishing significance, the impact on labour demand; productivity and efficiency of resource allocation; labour supply and economic activity; well-being and social welfare. The main contribution of the study is development of a structured framework that maps how EPL translates into macroeconomic variables, integrating insights from a wide literature. The theoretical framework is supplemented by an empirical illustration, based on correlation analysis of OECD data to assess the relative importance of different channels.

The rest of the paper is structured as follows. Section 2 presents a detailed review of existing literature. Section 3 describes the methodological approach. Results of both theoretical and empirical research are discussed in section 4. The last section concludes.

2. Literature review

The literature on the EPL's impact on labor market and other economic variables is more than ample. However, the theoretical connections between EPL and macroeconomic outcomes are multifaceted and often yield ambiguous predictions (see (Sordyl, 2024) for a recent review). Most research focuses on a chosen channel or channels of impact on some outcome variables, while a comprehensive summary of all mechanisms of influence remains lacking. Probably the longest list of costs and benefits of EPL was provided by OECD (2004), but no attempt at systematization followed.

By far the most researched channel of EPL's impact on labor market outcomes is the effect the regulations have on hiring and firing decisions by firms (labor demand). The obvious consequence is an additional resource cost that a firm would not need to incur without the regulation (Autor et al., 2007; Kuddo, 2018; Martinez-Matute & Urtasun, 2022). Additionally, EPL creates incentives to outsource (Bertola, 1992) and to informality (Lustig & McLeod, 1997; Pages, 2003), also diminishing (formal domestic) labor demand.

A similar mechanism, working indirectly against the labor demand, is the fact that EPL diminishes the value of firms and thus negatively affects investment (Blau & Kahn, 1999; Cacciatore & Fiori, 2016). The same effect is caused by a lower share of profits in national income if regulation strengthens the bargaining power of incumbent workers (Bentolila & Saint-Paul, 2003; Bertola, 2009). In a similar vein, Ljungqvist (2002) treats EPL as an inferior production technology.

Employment measured by the number of employees becomes more stable over the cycle due to firing restrictions, but working hours become more volatile (Bertola, 1992; Addison & Teixeira, 2001; Petrin & Sivadasan, 2006). Higher volatility, in turn, may favor employment of less skilled workers (Feldmann, 2003). In addition, high-turnover firms can lose reputation and be forced to pay higher wages to recruit (Carmichael, 1989; Belot et al.,

2007). Higher costs of labor may lead to lower international competitiveness (Roy, 2021; Arestis et al., 2023). However, the increase in employment costs for firms may not reduce aggregate welfare. Some authors stress that EPL forces firms to bear full (or at least a bigger part of) social costs of cyclical or structural adjustments in employment patterns, thus easing the pressure on workers and social security systems (OECD, 2004; Clark & Postel-Vinay, 2005; Bertola, 2009).

On the other hand, a very ample literature shows no significant impact of EPL on the number of jobs (Avdagic, 2015; Duval & Loungani, 2019; Heimberger, 2021), and some studies indicate that EPL can in fact increase the demand for labor, at least under some conditions (Cacciatore & Fiori, 2016; Ferreiro & Gómez, 2020).

Almost as frequently researched channel of influence on macro variables is the effect EPL has on labor productivity and efficiency of resource use. Two main and opposing strands emerge in the literature, revealing both a positive and a negative impact on efficiency. Slower reallocation towards higher productivity means that firms are forced to keep workers who became less productive than at the time the match was created (McMillan & Rodrik, 2011; Eichhorst & Marx, 2019). A similar effect is caused by local or global shocks affecting productivity (Hamermesh & Pfann, 1996; Scarpetta, 1996; Blanchard & Wolfers, 2000). Consequently, less fluctuation of employment over the cycle (Boeri, 2011; Duval et al., 2017; Arestis et al., 2021) is observed at the cost of less efficient labor (resource) allocation (OECD, 2004; Martin & Scarpetta, 2012; Duval & Loungani, 2019).

On the other hand, labor productivity may be increased by EPL, through several channels. Investment in human capital will be higher in a more stable employment relationship, with better incentives on both sides (Betcherman, 2019; OECD, 2019; Arestis et al., 2020b). Closely related are incentives to share information with other workers and with management (Auer et al., 2004; Deakin et al., 2007; Vergeer & Kleinknecht, 2010–2011) and to cooperate in the workplace (Freeman, 2007; Storm & Nastepad, 2009; Adams et al., 2018). A special case is the employees' willingness to innovate and to share their ideas with the firm (Belloc, 2019; Sharpe & Fard, 2022; Arestis et al., 2023). More generally, EPL supports good relations in the workplace, encouraging trust and loyalty (Auer et al., 2004; OECD, 2019; Inanc & Kalleberg, 2022). However, these mechanisms may operate unevenly across different segments of the labour market, implying that productivity-enhancing effects of EPL are likely to be concentrated among workers with access to stable employment, while those in secondary jobs may not benefit to the same extent. There is also some evidence that lack of employment security for parents negatively affects educational achievements of children (Ruiz-Valenzuela, 2020; Bertoni et al., 2023) and thus lowers productivity of future worker cohorts.

The mere existence of EPL may improve on pure market outcomes if it makes up for some market imperfections; for example, by easing the bargaining process and supporting collective action (Bertola, 2009; Bartling et al., 2013; Betcherman, 2015). Regulations on firing encourage a more careful selection of workers (Scarpetta, 1996; Pries & Rogerson, 2005; Duval & Loungani, 2019). On an individual level, if EPL lengthens the average tenure, it can increase worker's productivity in the given job (Saint-Paul, 2002; Arestis et al., 2020b). On the other hand, reduced threat of layoffs may loosen the discipline and encourage shirking (Jackman et al., 1996; Holmlund, 2013).

Less research focuses on the impact of EPL on the supply side of the labor market. Again, several channels can be identified here, affecting both the size and the composition of the labor supply. Some tentative results show that EPL indirectly affects the number of (potential) workers through migration (Piasna & Myant, 2017), family formation (De Paola et al., 2021; Bertoni et al., 2023) and mental and physical health (Dixon et al., 2013; Kalleberg & Vallas, 2018; Inanc & Kalleberg, 2022). Firing restrictions have a potentially significant impact on the structure of the workforce. Making layoffs more expensive prevents them (up to a point) in downturns, lengthening the average tenure at the cost of longer unemployment spells (Calderón et al., 2007; Boeri, 2011). The net effect of less firing and less hiring in booms depends on the shape of the labor demand function and the phase of the cycle (Blau & Kahn, 1999), but – at least over the medium horizon – lower employment and increase in unemployment are to be expected (OECD, 1994; Addison & Teixeira, 2001; Nickell et al., 2005). The effect, however, is rejected by some empirical studies (OECD, 2006; Howell et al., 2007).

The most important impact of EPL on the workforce is labour market segmentation. Restrictions on firing and hiring tend to favor some groups of workers over others (Vosko, 2011; Myant & Brandhuber, 2017; Inanc & Kalleberg, 2022). EPL encourages firms to choose non-standard forms of employment (Aleksynska & Eberlein, 2016; Myant & Brandhuber, 2017; Arestis et al., 2021), leading to long term lock-in and scarring effects (Avdagic, 2015) that can be hereditary if access to social insurance depends on primary sector employment (Giesecke & Gross, 2004). However, some authors point out that deregulation might lead to even more segmentation (De Stefano, 2014; Rubery & Piasna, 2016). On the other hand, EPL may increase employment among vulnerable groups by higher economic activity (Adams et al., 2018) and more intense job search (Scarpetta, 1996; Bertola, 2009; Bertoni et al., 2023). Importantly, labour market segmentation should not be viewed as an isolated outcome of EPL, but rather as a mechanism that mediates its effects on productivity, labour supply dynamics, and welfare, by shaping access to stable employment, incentives to invest in human capital, and exposure to economic risk.

A more recently included and less researched channel connects EPL with general welfare and individual well-being. The well-being aspect that first appeared in the literature, as the obvious feature of the regulation, is increased job and income stability (Agell, 1999; Deakin et al., 2007). In other words, some risk of cyclical labor demand fluctuations is borne by employers (Rubery & Piasna, 2016). That constitutes a form of private insurance, especially in countries where access to social security is limited (Agell, 2002; Pages, 2003). This brings about the consumption-stabilizing feature of EPL, without recourse to credit (Arestis et al., 2020b), that is important in a crisis (Clark et al., 2022; Arestis et al., 2023; Bertoni et al., 2023). The access to credit itself becomes easier with EPL (Mistrulli et al., 2023), it is also more feasible to save for retirement (Piasna & Myant, 2017). Absent EPL, tax revenues would decline (Boeri et al., 2015) and social spending would increase (OECD, 2013; Bertoni et al., 2023). From a more general viewpoint, EPL can be considered a tool preventing worker exploitation (Kaufman, 1997; Kuddo, 2018; Duval & Loungani, 2019). A lighthouse effect may influence even the informal sector (Aleksynska & Eberlein, 2016). A facet also important from the equality perspective is that EPL compensates for costs of losing a job which increase with seniority (OECD, 2013).

Another feature of EPL that affects welfare is its impact on income distribution and inequalities. Some authors perceive regulations as rent-seeking by insiders (Agell, 2002; Clark & Postel-Vinay, 2005) leading to worse distribution and more inequality (Giesecke & Gross, 2004; Betcherman, 2005; Boeri et al., 2015). Others stress that more stable and secure employment does indeed increase wages (Scarpetta, 1996; Blau & Kahn, 1999; Feldmann, 2003) and the labor share of income (Deakin et al., 2014; Ciminelli et al., 2018; Arestis et al., 2023), but the effect actually improves income distribution, leading to lower inequalities (Acemoglu, 2003; Boeri et al., 2015; Arestis et al., 2020a). This suggests that EPL, as many other labor market regulations, is in fact a redistributive measure, but this type of redistribution might lead to higher global welfare (Freeman, 2007; Adams et al., 2018).

A crucial point of EPL is avoiding many different and potentially hugely damaging social costs of employment and income insecurity, documented by a growing number of papers. These include increased poverty (Arestis et al., 2023), higher political tensions (Boeri et al., 2015; Eichhorst & Marx, 2019), psychological costs of insecurity (Piasna & Myant, 2017), as well as fairness considerations (Adams et al., 2018).

3. Methods

This paper combines a systematic literature review with an illustrative empirical exercise. The empirical part is cross-sectional in nature and is in-

tended as an illustrative complement to the theoretical framework, rather than a causal estimation of the effects of EPL. Initially an extensive study of literature was performed in an attempt to identify all channels through which EPL influences outcome variables. Some effects are documented in multiple studies; in such cases – for brevity – a maximum of three references were chosen based on relevance and the date of publication (the most recent). Some authors also find more than one effect of EPL; hence, several sources are referenced more than once. Based on literature review, a hierarchy of channels of influence was hypothesized (see Figure 1 in the appendix). To search for the existence and relative importance of the four main channels, representative proxies were selected among data available for all countries in the sample. Employment and unemployment data capture the labour demand channel; labour productivity reflects the efficiency channel; the Gini coefficient illustrates distributional effects; and adjusted national income *per capita* serves as a proxy for welfare.

As shown in the literature review, empirical confirmation of the effects of EPL is very difficult, for reasons that merit a separate analysis and are omitted here. However, it is important to note that the aim of the paper is not to estimate precisely the effect of EPL on output variables; rather, to look for confirmation or rejection of the intuition on the importance of the main impact channels identified above. To empirically assess the strength of the mechanisms discussed, a matrix of Pearson correlation coefficients was calculated. Three measures of EPL were used: OECD EPL Index, a leximetric measure reflecting *de iure* regulations; Cambridge Labour Regulation Index (CBR-LRI, subindex C: Regulations of dismissal, variables 16–24), another leximetric measure but used jointly with the Rule of Law index to capture enforcement (Adams et al., 2018); and World Economic Freedom index (Area 5: Regulations, B. Labour market regulations, (ii) Hiring and firing regulations) provided by the Frasier Institute and based on opinion surveys. Since the WEF awards higher scores to countries with 'more freedom' (less regulation), its values were multiplied by – 1 before computing correlations. The dataset covers 38 OECD countries for which the OECD EPL index is available. Output variables were drawn from the World Bank's World Development Indicators for comparability; the data on labor productivity are from OECD database. The year chosen for the exercise was 2019 – the most recent for which the OECD EPL index was available.

4. Results

The results of the literature review indicate a rather complicated net of channels through which EPL affects macroeconomic variables. Table 1 summarizes the main channels of impact, as identified in the literature, and serves

as a reference point for the subsequent discussion. The impact of EPL on labor demand works through costs of jobs, value of firms, investment, and competitiveness. Stronger protection leads to lower (if more stable) employment, higher and more persistent unemployment, higher wage share and lower profits, more stable aggregate demand and more equality. The impact on resource efficiency is uncertain because slower reallocation in response to shocks is at least partially recompensed by higher individual productivity in more stable jobs.

Workers' productivity itself is affected by EPL through several main mechanisms. First of all, both sides of a match have stronger incentives to invest in human capital; longer average tenure also supports learning. Workers are more prone to share their ideas, including new inventions, with management. Cooperation is easier with more stable employment relations. The resulting increase in productivity might compensate for higher labor costs and increase profits.

EPL impacts the size and structure of labour supply. High barriers to entry to the primary sector might lead to persistent segmentation and low-quality jobs for some worker groups, especially those most vulnerable (younger and older workers, women, migrants). In this sense, labour market segmentation acts as a transmission mechanism through which EPL influences both aggregate labour supply and longer-term productivity and welfare outcomes. On the other hand, for those who manage to achieve a formal sector job, income stability seems an important factor in family creation, educational achievements of children, as well as workers' physical and mental health.

It seems that the most important effects of EPL on individual and societal welfare work through income security and distribution, provision of social insurance, the distribution of political power and social conflict, and changes in public revenues and spending. It also affects factors difficult to measure but important for wellbeing, as the feeling of fairness and inclusion.

Table 2 reports Pearson correlation coefficients between alternative EPL measures and selected macroeconomic and social outcome variables for a sample of 38 OECD countries. Consistent with previous research, theoretical assumptions about the workings of EPL are not easy to confirm. The results indicate that EPL is significantly negatively correlated with economic activity and employment and positively (albeit weakly) with self-employment, unemployment and youth unemployment – all to be expected from theory. These patterns are consistent across the OECD and WEF indices, and align with the hypothesis that EPL primarily operates through the labour demand channel. The results on CBR-LRI, however, almost always present the opposite sign, even on the significant correlations. EPL does seem to coincide with lower income inequalities, but the relation with the level of income (represented by average wage and average national income *per capita*) is negative for most indices. This points to a puzzling trade-off between

wage levels and distributional outcomes. The relationship between EPL and productivity is weak and not robust across measures: the WEF index shows a negative coefficient, while the OECD and CBR-LRI results are close to zero. This suggests that, within the OECD sample, EPL is not significantly correlated with productivity gains, even though theory identifies several potential mechanisms linking the two.

GDP-related measures show mixed results. Correlations with GDP growth are negligible for all indices. GDP *per capita* is negatively correlated with EPL when using the OECD and WEF indices, but positively and significantly correlated with CBR-LRI. These differences reflect the sensitivity of results to the choice of indicator. Overall, the empirical analysis confirms that the strongest and most consistent associations of EPL are found in the labour demand and supply. The evidence for productivity, wages and growth is weaker and more ambiguous. These findings, however tentative, show the importance of considering multiple channels and cautiously choosing institutional measures when evaluating the macroeconomic effects of EPL.

5. Conclusion

This paper has offered a comprehensive examination of the channels through which EPL influences macroeconomic outcomes. It has highlighted some of the underappreciated interactions with productivity, efficiency of resource allocation, labour supply dynamics, and welfare. The analysis demonstrates that while EPL may reduce flexibility in hiring and firing, it can also enhance investment in human capital, foster cooperation, and contribute to social stability by reducing inequality and income volatility. It needs to be stressed, however, that even if broad in scope, the theoretical analysis lacks enough detail to do justice to the importance of the topic. Further research is necessary to reveal the nuances in the main channels of impact and in their interrelations, possibly allowing for less uncertainty in empirical results which cannot be treated as other than exploratory.

The empirical findings are consistent with theoretical expectations in some areas, particularly with regard to the effects of EPL on employment and unemployment. However, the results also reveal the inherent difficulties in quantifying the broader impacts of EPL, especially when relying on measures of regulation that may not capture the realities of labour markets. The weak and sometimes contradictory correlations underscore the need for caution in drawing general conclusions, and they point to the importance of context, especially institutional and structural differences between countries.

Future research should address these limitations by developing more nuanced measures of EPL that reflect not only the content of legislation but also the degree of its enforcement and the extent of informality in labour markets. Incorporating other institutions into the analysis – such as minimum wage

laws, unemployment insurance, and collective bargaining – would allow for a more realistic assessment of how EPL operates within a broader policy system. Greater attention should also be paid to how EPL interacts with demographic and technological changes, particularly in shaping access to stable employment and its implications for productivity.

A key implication of the analysis is that many of the observed effects of EPL operate indirectly, through interactions between labour demand, segmentation, productivity, and welfare, rather than through a single dominant channel. Ultimately, EPL should not be viewed in binary terms as simply restrictive or protective. Its macroeconomic effects are shaped by complex trade-offs between efficiency, equity, and stability. A more integrated and multidimensional understanding of these trade-offs is essential for designing labour market institutions that are both economically sound and socially inclusive.

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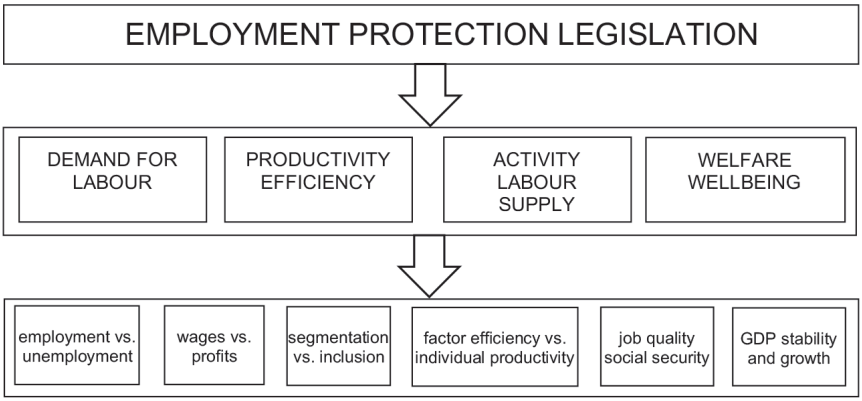
Appendix

Figure 1. The main channels through which EPL affects macroeconomic variables



Source: own preparation.

Table 1. The impact of EPL on output variables

Main channel	Subchannels	Effects
Labour demand	costs of jobs value of firms investment in physical capital competitiveness	lower employment*, higher unemployment*, higher wage share, lower profits, slower reaction to shocks, less efficient resource allocation, less output and employment volatility over the cycle
Productivity & efficiency	resource allocation investment in human capital innovation cooperation	longer average tenure, more persistent segmentation, slower resource reallocation, less efficient resource allocation, higher human capital accumulation, more innovation, better incentives, better cooperation, information sharing, higher individual productivity, higher-quality jobs
Labour supply & activity	market segmentation search activity family formation health	more search activity, more persistent segmentation*, lack of access for some groups, employment security supports family formation, lack of security negatively affects health
Welfare & wellbeing	income stability/insurance inequalities social inclusion social norms	more stable income, improved income distribution*, more stable consumption, less debt, more savings, better access to credit, fairness and trust, avoiding risks of deregulation

* Results that have not been strongly confirmed in the literature
Source: own preparation.

Table 2. Correlations between EPL measures and output variables

Output variable	OECD index	WEF	CBR-LRI
Labor force participation rate % of total population ages 15+	-0.420***	-0.382**	0.028
Employment ratio % of total population ages 15+	-0.364**	-0.401**	0.047
Waged and salaried workers % of total employment	0.068	-0.155	0.077
Self-employed % of total employment	0.141	0.347**	-0.598***
Unemployment rate % of total labor force	0.153	0.187	-0.161
Youth unemployment rate % of total labor force ages 15–24	0.102	0.229	-0.090
Gini index	-0.176	0.087	-0.474***
Average annual wage USD (2023), PPP	-0.267	-0.130	-0.032
Adjusted national income per capita GNI minus fixed capital consumption and resource depletion, current USD	-0.218	-0.584***	0.474***
Labour productivity GDP per hour worked, USD (2020), PPP	-0.061	-0.129	-0.053
GDP per capita USD (2015), PPP	-0.145	-0.559***	0.490***
GDP growth %	0.034	0.068	0.021

Pearson correlation coefficients. Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Source: own calculations based on publicly available data.

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Relocation preferences in the Era of Work From Home: Theoretical Framework

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Abstract

Motivation: The COVID-19 pandemic catalysed an unprecedented global expansion of work-from-home (WFH) arrangements. While the prevalence of remote work has receded from its peak, it has stabilized since 2022 at levels well above those observed before the crisis. This shift indicates that WFH has evolved into a lasting feature of contemporary labour markets rather than a temporary disruption. Beyond transforming how work is organized, remote work influences daily routines, professional interactions, and social engagement. One domain where these effects are particularly salient is residential choice. By altering preferences regarding both housing attributes and location, WFH has the potential to reshape urban spatial patterns, reinforce suburbanization, and stimulate development in peripheral or rural areas.

Aim: This paper aims to develop a multidisciplinary theoretical framework to examine how WFH shapes relocation processes. Building on neoclassical economics, relocation theories such as life-cycle and life-course approaches, and Stress-Threshold Model, it conceptualizes WFH as a distinct trigger of migration. The paper adopts a conceptual framework-building approach, synthesizing interdisciplinary theoretical perspectives through a systematic review of the literature.

Results: The proposed framework emphasizes that WFH may significantly reshape stated residential preferences regarding both dwelling attributes and location, yet these shifts do not automatically translate into actual relocation. Whether preferences result in moves depends not only on individual dissatisfaction, as outlined in the Stress-Threshold Model, but also on market conditions and structural constraints. Relocation decisions therefore often reflect compromises rather than straightforward adjustments. The framework also suggests that short-distance mobility will remain central in hybrid work contexts, though broader spatial effects may emerge over time. These findings highlight avenues for future research, particularly qualitative studies on how preferences are negotiated across life-course stages and housing markets, and under what conditions WFH operates as a meaningful relocation trigger.

Keywords: Work-From-Home; Remote work; Relocation, Residential mobility; Housing preferences

JEL: R30; R23; R21; J61

1. Introduction

The COVID-19 pandemic triggered an unprecedented surge in work-from-home (WFH)[1] arrangements worldwide. Although the prevalence of remote work has declined since the peak of the pandemic, it has not returned to pre-pandemic levels. Instead, since 2022 it appears to have stabilized at a new equilibrium: lower than during the crisis but substantially higher than before. Despite notable cross-country variation in its intensity (Aksoy et al., 2025), it seems that remote work has become an enduring feature of modern labour markets rather than a temporary disruption.

This structural transformation extends beyond the reorganization of work. It affects employment and daily routines, reshapes professional relations, and alters how individuals engage with their social and physical environments. Among the many domains influenced, residential preferences stand out. WFH may shape housing choices at multiple scales, encompassing both the attributes of the dwelling itself and the selection of residential location. These shifting preferences can have direct implications for urban spatial structures, potentially accelerating suburbanization while also creating new opportunities for peripheral or rural development. This policy context is further shaped by the EU Work–Life Balance directive (Directive 2019/1158), which provides a formal regulatory framework for flexible

1 This paper uses "telecommuting" exclusively in the context of pre-pandemic literature, where this term was dominant. "Working from home (WFH)" and "remote work" are used interchangeably throughout the paper, although it is acknowledged that these terms may carry distinct meanings in other contexts — the former referring specifically to home-based work, the latter encompassing broader location-flexible arrangements.

work arrangements, including working from home, thereby reinforcing the institutional conditions under which WFH has expanded across European labour markets.

In light of the above, this paper seeks to develop a multidisciplinary theoretical framework that identifies and explains how the spread of WFH may influence relocation processes. To this end, the paper adopts a conceptual framework-building approach (Jaakkola, 2020; Whetten, 1989), synthesizing three theoretical traditions: neoclassical economics, life-cycle and life-course perspectives on residential mobility, and the Stress-Threshold Model developed by Brown and Moore (1970). Drawing on these foundations, the paper conceptualizes WFH as a potential trigger of migration, initiating a two-step process that helps to explain the dynamics of relocation.

The theoretical contribution of this paper is threefold. First, it explicitly positions WFH as a distinct life-course trigger of residential relocation — a role that existing frameworks acknowledge in general terms but have not systematically elaborated in the context of flexible work arrangements. Second, by integrating the Stress-Threshold Model, the paper specifies the psychological mechanism through which WFH translates into relocation intentions, explaining why exposure to WFH does not automatically produce residential moves. Third, the framework incorporates structural constraints — resources and restrictions, including housing market conditions, affordability, and access to financing — as a necessary mediating layer between intention and actual relocation behavior. Taken together, these elements extend the classical life-course model of residential mobility (Mulder & Hooimeijer, 1999) by introducing a novel trigger and deepening the explanatory architecture of the relocation process.

The paper is structured as follows. Section 2 reviews the literature on relocation and remote work, beginning with definitional clarifications of relocation. Section 3 discusses residential preferences and housing choices. Section 4 develops the theoretical conceptualization of remote work and residential mobility, first by modelling the residential decision-making process and then by proposing a conceptual framework that treats WFH as a potential relocation trigger. The final section concludes with a summary and broader implications.

2. Relocation and remote work – literature review

A worthwhile attempt to construct a theoretical model of the impact of remote work on relocation preferences should first be preceded by a definitional clarification and an elaboration of the concept of relocation, as well as an attempt to answer the question of which types of relocation may be affected by the possibility of remote work and to what extent.

In the academic literature, relocation is typically defined as a form of spatial mobility or the physical movement of individuals involving a change in one's usual place of residence, either over short or long distances (Yarina & Wescoat, 2023). This broad notion can be categorized into two primary forms: international (or foreign) and internal (domestic) relocation. In much of the academic and policy literature, both of these forms are frequently referred to under the umbrella term migration (King et al., 2008; Weisheit, 2018), however, the term "migration" itself is fraught with ambiguousness, and the economic literature abounds with multiple and inconsistent uses of this term (Zax, 1994).

The fact that one can draw a meaningful line between short – and long-distance internal relocations is widely acknowledged in the economic literature (Coulombel, 2010). However, there is still no consistent or universally accepted threshold for this boundary, and definitions often vary depending on contextual criteria such as political or administrative jurisdictions, the co-occurrence of job changes, commuting thresholds, or metropolitan zones (Morrison et al., 2004). Short-distance mobility is often referred simply to residential mobility, typically occurring within metropolitan zones, where housing and labor markets are spatially integrated. These moves primarily involve adjustments in housing consumption (such as size, house type, tenure, or location preferences) (Coulombel, 2010). As such, residential mobility is often confined to intra-metropolitan dynamics, including phenomena like suburbanization or gentrification, where commuting remains feasible within daily travel practices (Kryczka et al., 2025; Zukin, 1987). In contrast, long-distance internal mobility typically involves a shift across distinct housing and labor markets and is frequently associated with broader life-course transitions (Spring et al., 2024).

Despite the conceptual and practical significance of these different forms of relocations, scholarly attention has been highly uneven. As shown in Chart 1 (Appendix), researchers have devoted far more attention to international migration than to internal mobility or residential relocation, which is reflected in the substantially higher number of publications — a disproportion that underscores the importance of the research problem addressed in this article.

Although the COVID-19 pandemic brought an unprecedented surge of interest in remote work, the concept itself is not new: early discussions of "telecommuting" date back to Nilles (Nilles, 1975), and since the 1990s scholars have explored its potential consequences for commuting and residential location. In the first phase of research, studies concentrated mainly on short-distance effects, as telecommuting opportunities were tied to large metropolitan areas and remained relatively limited often tested through pilot initiatives such as the California Telecommuting Pilot Project (Kitamura et al., 1990; Nilles, 1991). This project represents what appears to be the first

systematic empirical verification of the impacts of telecommuting on both residential and commuting decisions. Its results showed a substantial reduction in vehicle trips and commute distances among participants, confirming the immediate transportation benefits of remote work. However, the project also concluded that telecommuting did not induce significant relocation or long-distance residential moves: most participants retained their existing homes, suggesting that early telecommuting mainly altered daily travel patterns rather than reshaping broader residential location choices. At the same time, authors did not rule out the possibility that, over a longer time horizon, greater adoption of telecommuting could eventually influence residential relocation decisions. This notion has been theoretically substantiated in subsequent studies for instance, Lund and Mokhtarian (1994), modified the classic Alonso "Monocentric City Model" (Alonso, 1960) to explicitly account for telecommuting. Their analysis demonstrated that a reduction in commuting frequency may lower the effective marginal cost of distance, thereby shifting the residential equilibrium outward and suggesting that telecommuting may foster longer-distance relocation. Similar conclusions have been derived from other theoretical elaborations (Kim, 1997; Rhee, 2009; Shen, 2000).

Although these theoretical considerations suggested that telecommuting could reshape residential choice, empirical evidence has been mixed. For example Ellen and Hempstead (2002) using data from the 1997 Current Population Survey, examined both the prevalence of telecommuting and its relationship to the residential location patterns of white-collar workers. Their results showed little support for the decentralisation hypothesis: telecommuters were not disproportionately located in suburban or rural areas but were often concentrated in large metropolitan regions, suggesting that telecommuting has not systematically undermined the demand for urban living. Ory and Mokhtarian (2006) found that the relationship between telecommuting and residential relocation is bidirectional. Their analysis showed surprisingly that workers who were already telecommuting and then moved tended to relocate closer to their workplace, while those who moved farther away were more likely to adopt telecommuting afterward as a way to cope with longer commutes. Overall, they concluded that telecommuting is more often a response to relocation decisions than a cause of sprawl, thus helping to mitigate rather than exacerbate the negative transportation impacts of residential moves. Similarly (Muhammad et al., 2007), analysing Dutch data, found no strong evidence that telecommuting systematically affects residential relocation decisions, suggesting that its role in shaping urban spatial structure is weaker than often assumed. In line with this, Ettema (2010) also detected no overall relocation effect, but his latent-class analysis revealed distinct subgroups: some telecommuters were highly sensitive to commuting distance and more likely to consider moving, while others used telecommuting precisely to tolerate longer commutes, thereby reducing their relocation

propensity. However, Zhu (2013), analyzing U.S. household travel surveys, found that telecommuting households consistently had longer commutes than non-telecommuters, with the gap widening between 2001 and 2009. In two-worker households, the added distance was driven by the telecommuter, suggesting that telecommuting enables moves to more distant or amenity-rich locations rather than prompting relocation closer to workplaces. By contrast, Kim (2016) using path analysis with cross-sectional travel survey data from the Seoul Metropolitan Area found that job location, rather than the option to telecommute, was the decisive factor shaping residential choices. Telecommuting was typically adopted afterward as a strategy to cope with long commutes, rather than serving as a driver of relocation. However, because the analysis was based on cross-sectional data, the causal interpretation remains tentative.

After the pandemic shock, interest in remote work grew rapidly, extending into many areas, including its potential impact on residential location. Beyond studies indicating suburbanization processes, often described as the "donut effect" (Ramani & Bloom, 2022) or "urban exodus" (Fukuda, 2024; Rowe et al., 2023) again, with inconclusive results (Ilham et al., 2024; Woźniak-Jęchorek et al., 2024) researchers suggested additionally that the spatial impacts of increasingly blurred labour market boundaries were likely extending well beyond urban areas and its surroundings (Braesemann et al., 2022). Several studies investigated the possibility of the WFH to encourage long-distance internal migrations especially to rural areas. As remote work reduces the importance of proximity to the workplace, households increasingly prioritize residential preferences such as housing affordability, quality of life, and access to amenities (Bolter et al., 2024; Chekmarev et al., 2021; Gonzalez-Leonardo et al., 2022; Vij et al., 2024). Recent evidence from Germany confirms this trend: during the pandemic, rural areas attracted more young and highly skilled migrants, supported by the rise of remote work. However, overall migration volumes declined, suggesting only a relative, not absolute, shift toward rural living (Knuepling et al., 2025). Moreover, an emerging body of research has begun to explore the potential impact of remote work on international migration, particularly through the lens of so-called "digital nomads," individuals who work remotely while moving across borders (Mancinelli & Germann Molz, 2024). However, empirical investigations of this trend in EU countries (Albinowski, 2024) conclude that, although digital nomads became visible in labor market statistics after the pandemic, their numbers remain relatively small, not exceeding 0.2% of the domestic workforce in host countries – indicating rather limited impact on potential international mobility.

In an attempt to review the potential evidence on remote work and relocation, it should also be noted that some empirical studies suggest remote work may foster residential immobility rather than relocation, as reduced

commuting requirements can encourage individuals to remain in their current homes while accepting longer home–work distances (Macias et al., 2025). Moreover, as telework reduces the frequency of commuting, it may also encourage "two-home living", a phenomenon where individuals maintain a primary residence while acquiring a secondary dwelling closer to their workplace to use occasionally—highlighting the complex spatial arrangements enabled by flexible work (Hostettler Macias et al., 2022).

Summing up, pre-pandemic empirical studies on telecommuting and relocation were limited in scope, focused mainly on its effects on commuting and short-distance residential mobility, and provided little evidence that telecommuting played a decisive role in shaping relocation decisions. After the pandemic, there has been a huge increase in studies examining the impact of remote work on relocation, mainly with regard to short-distance moves, but also considering potential impacts on long-distance internal and even international migration. However, given that remote work is now predominantly implemented in hybrid formats (Aksoy et al., 2025) and that most empirical studies suggest that its strongest potential effects are likely to be found in short-distance relocation the following discussion will focus on residential preferences and choices analyzed through relevant theoretical frameworks on mobility and relocation behavior.

3. Residential preferences and choices

As indicated above, the spread of remote work may most strongly affect short-distance relocations, or, as it is more commonly defined, residential mobility. Before attempting to answer how remote work may impact this type of relocation, short explanation related to residential or housing preferences and choices related to them is needed, especially that in related literature the terms "choice" and "preference" are often used interchangeably (Wildish, 2015). However, there are important differences between them which affect the theoretical and practical applications of the research in this field.

In general, residential preferences can be regarded as factors and attributes that individuals consider important when choosing a place of residence, often referred to as desires for particular characteristics of the "housing bundle" (Clark, 1992). Most commonly, this "bundle" includes not only the physical characteristics of the dwelling, such as type, size, condition, tenure – but also the locational and neighborhood attributes. Locational attributes typically refer to proximity to central business districts (CBDs), access to infrastructure (public transport, roads and highways) and environmental quality (access to green spaces, air and noise pollution, landscape), while neighborhood attributes encompass factors such as safety, social cohesion, demographic composition, and availability of local amenities (Coulombel,

2010; Kain & Quigley, 1970; Shlay, 2012). In discussions of residential location, a further distinction is sometimes made between the site and the situation of a place: site refers to the internal qualities of the location and dwelling itself, whereas situation concerns its spatial relation to other important destinations such as workplaces, schools, and services places that must fall within individuals' daily activity spaces (Mulder & Hooimeijer, 1999).

It is important to emphasize that residential preferences are primarily shaped by underlying needs, which evolve in response to changing household and life-course circumstances. Consequently, demographic and socioeconomic characteristics constitute the principal determinants of these preferences (Rossi, 1980).

Choices, on the other hand, represent the observable actions through which these preferences are expressed, and are assumed to reflect them (Molin et al., 1996). Yet, this correspondence does not necessarily hold in the context of residential decision-making. The choice of a particular dwelling with its bundle of characteristics depends not only on the needs and preferences of households but also on what is practically possible. Namely, the choice set shaped by household resources, restrictions, and the opportunities and constraints of the housing market (van Ham, 2012). Very often the actual dwelling a household live is not always the one that fully meets all of its needs and preferences. Because most households face limited options and because housing adjustments are costly, many remain in dwellings that are suboptimal given their situation. In this context, the term "real housing choice" has been coined. Real choice is defined as being able to choose a preferred option from a set of distinctive alternatives (Brown & King, 2006).

Some complication in this definitional puzzle lies in the distinction between stated and revealed housing preferences, which has become a fundamental conceptual framework in the study of residential behavior (Timmermans et al., 1994). The differentiation between these two was first systematically articulated in economics by Samuelson (Samuelson, 1938), where he introduced the concept of revealed preferences as an empirical approach to understand consumer choice based on observed behavior, rather than introspective utility. In the context of residential decision-making, stated preferences can be understood as previously defined as residential preferences, which are hypothetical in nature, whereas revealed preferences as actual residential "decisions" or "choices" made under real-world constraints and conditions (Li et al., 2020; Tanaś et al., 2019). Stated preferences are thus aspirational and are unlikely to consider competing priorities or constraints, whereas decisions to move to another or stay in the current neighborhood are revealed preferences that have been matched to realized opportunities.

The revealed choice approach has been successfully applied in many different housing preference and housing choice studies. Yet this approach has a fundamental methodological problem: the assumption that revealed choice

reflects underlying preferences. In reality, choices are influenced by the prevailing market conditions. Hence, it is very difficult, if not impossible, to disentangle preference from disequilibrium conditions in the marketplace.

4. Remote work and residential mobility – theoretical conceptualization

This section develops the theoretical framework in two steps. Section 4.1 establishes the analytical baseline by modelling the residential decision-making process through a neoclassical lens. Section 4.2 builds on this foundation to propose a conceptual framework that treats WFH as a potential relocation trigger, integrating life-course theory and the Stress-Threshold Model.

4.1. Modelling residential mobility

Residential location decisions rank among the most consequential choices in the life course of individuals and families. Beyond shaping personal well-being, these decisions hold significant implications for local governments, urban planners, policymakers, and other stakeholders. For this reason, residential choice has long constituted a central field of inquiry across the social sciences, particularly in economics, human geography, sociology, and psychology.

Although this paper focuses specifically on WFH as a potential relocation trigger, the neoclassical framework presented below serves as a necessary analytical baseline: it formalizes the logic of housing utility maximization and moving costs that underlies all subsequent theoretical steps, including the Stress-Threshold Model and the life-course perspective. The choice of this starting point is deliberate — while alternative perspectives, such as behavioural economics or institutional approaches, offer valuable insights, the neoclassical model provides the most parsimonious formal representation of the core trade-off between housing utility and mobility costs. Behavioural and life-course dimensions are incorporated in Section 4.2, where the Stress-Threshold Model and the life-course framework extend and enrich this baseline by accounting for psychological mechanisms, household trajectories, and structural constraints that the neoclassical approach does not capture.

The roots of this tradition reach back to the discipline's beginnings. Adam Smith made several perceptive observations that remain relevant to contemporary debates, noting that proximity to employment is a fundamental determinant of residential location — "every individual endeavours to employ his capital as near home as he can" (Smith, 1776, p. 110) — while also acknowledging the inherent difficulty of human mobility: "a man is, of all sorts of luggage, the most difficult to be transported" (Smith, 1776, p. 590–592). With the growing dominance of the neoclassical approach, housing came to

be treated as a composite good and residential decisions were subsequently modelled through utility-maximization theory (Coulombel, 2010; Jansen et al., 2011; McFadden, 1977; Tiebout, 1956). Although such frameworks are not without limitations — including questions about whether utility can be meaningfully measured (Sen, 1977) — they offer a simplified yet insightful way to model residential location behavior. A simplified example, based on Coulombel (2010), is presented below.

Consider Agent M., a recent university graduate who, upon arriving in a city of his choice, obtains employment in the central business district. Seeking proximity to his workplace, he chooses to reside in Residentialia a diverse and expansive housing complex offering options ranging from luxurious villas with landscaped gardens to modest single-room accommodations. Agent M., however, has relatively modest preferences, which can be represented by a Cobb-Douglas utility function U:

$$U\,(h,\,c) = h^{\varepsilon}\,c^{1-\varepsilon} \tag{1}$$

where h denotes housing services (broad measure of the quality and quantity of a housing conditions), c is composite good reflecting for all other goods consumed by Agent M. and ε [0;1] reflects the relative preference for housing compared to other goods and may change at any moment, according the preferences toward housing services. Assuming that Agent M. can freely change rooms, and its goal is to maximise the U, this simple model indicate, that M. would do so every time ε varies: this might be a single bedroom when he works late or a deluxe villa for a weekend with friends. Transposed to the real world, residential mobility is primarily a response to a change in residential preferences being a response to a change in housing needs. Assuming mobility were costless in all regards, one would expect people to constantly adjust their housing consumption, as happens in this tale. However, mobility is not costless, and staying in one place often yields increasing advantages over time. These increasing returns to staying and disutility from moving can be formally captured by introducing a mobility cost term, lets denote it as δ. In contrast to frictionless models of continuous adjustment, the introduction of moving costs (represented by a disutility parameter δ) fundamentally changes the behavior of economic agents like Agent M. Formally, a move is only made if the gain in utility from switching housing bundles exceeds the cost of moving:

$$U\,(h_1,\,c_1) = U\,(h_0,\,c_0) > \delta \tag{2}$$

where is the optimal consumption bundle of housing and other goods given the current value of ε, and () his current consumption. Considering that M. has a budget constraint giving c as a function of h and income, his decision

to move or not depends on whether the gain in utility from switching bundles exceeds the moving cost δ. In this simplified framework, a move occurs whenever the utility gain from relocating is greater than δ. However, in the real world, this is often too simplistic. A more realistic and behaviorally accurate approach is to assume that moving decisions follow an (S, s) rule (Caplin & Leahy, 2010). Under this rule, individuals tolerate small mismatches between current and optimal housing in both directions, and only decide to move when the discrepancy becomes sufficiently large:

$$h_1 \notin [h_0 - \mathrm{m}, h_0 + \mathrm{M}] \tag{3}$$

where m and M define the lower and upper thresholds of tolerance for deviation from the current housing. Both m and *M* depend on several factors such as the degree of preference for housing ε the moving cost or disutility of relocation income constraints δ, and psychological or social inertia. The introduction of moving costs causes housing adjustments to occur only when the mismatch between the current and optimal residence exceeds a stress threshold, making changes discrete rather than continuous. This may explain why housing decisions are typically infrequent, clustered, and sometimes delayed, even when preferences or circumstances change.

Despite its simplicity, the proposed model highlights a fundamental aspect underlying the residential mobility process: its inherently two-step nature. This sequential structure also represents the most widely shared assumption among conceptualizations of residential mobility, as numerous scholars argue that individuals first decide whether to move and only then determine where to relocate (Brown & Moore, 1970; Mulder & Hooimeijer, 1999; Wong, 2002). Brown and Moore (1970) underline that, relocation process may be induced by stress, which arises when a mismatch develops between a household's needs and the characteristics of its current residential environment. This stress may stem from changes in the household itself (e.g., size, income, employment), or from external environmental conditions (e.g., neighborhood decline, accessibility issues, economic situation) sometimes referred to as micro – and macro-level factors. When such stressors surpass the household's tolerance threshold, the decision process enters Phase I, where the household considers relocating. If a suitable alternative dwelling is not found during the search (Phase II), the household may decide to stay and either adjust its needs or modify the current dwelling or its use to restore satisfaction. In this context some studies have refined the model by conceptualizing residential mobility as a three-stage process: the decision to consider moving, the search for a place to move to, and the final choice between moving or not moving to that particular place (Mulder, 1996).

From the above considerations, it follows that the key drivers of the residential mobility process are the factors that alter housing preferences and

create a divergence between the current and the desired dwelling. In the literature, these factors are most commonly referred to as triggers, sometimes also as push factors; however the latter term being more frequently used in the context of international migration studies.

4.2. Work from home as relocation trigger – conceptual framework

Building on the presented understanding of residential mobility as a sequential process, the next question concerns what actually sets this process in motion. Triggers can be understood as the specific events or conditions that create dissatisfaction with the current dwelling and generate a gap between existing housing circumstances and desired living arrangements (Mulder, 1996).

Since the seminal work of Rossi from 1955, triggers of residential relocation have been a central theme in mobility research. In Why Families Move, Rossi linked these triggers primarily to stages of the family life cycle, with changes such as marriage, childbirth, or children leaving home prompting a demand for more or less space (Rossi, 1980). Although this perspective revealed strong regularities in mobility patterns, it has been criticized for its deterministic and normative assumptions (Pickles & Davies, 1985; Wildish, 2015) and was gradually replaced in the course of the 1990s by a more flexible life-course framework. This approach situates relocation decisions within the broader trajectories of individual and household development. From the life course perspective, mobility can be instigated by events across several domains or "careers" in domains such as family, education, labor, and housing each of which may alter housing needs and preferences (Mulder & Hooimeijer, 1999). While later work has noted that the life-course approach can be too event-focused and less attentive to issues of inequality and immobility (Coulter et al., 2016), it remains the dominant framework in mobility studies.

Building on this theoretical foundation and treating changes in work arrangements as a potential trigger that reshapes relocation preferences, Scheme 1 (in appendix) proposes a conceptualization of the residential mobility process. The scheme integrates insights from the life-course framework, the Stress-Threshold Model, and behavioral decision-making theories to illustrate how remote work may influence residential relocation. At the core of the model lies the recognition that remote work, by altering spatial constraints tied to employment, can act as a triggering factor initiating a re-evaluation of housing needs and preferences. These preferences may be particularly affected in the domain of dwelling and location, as remote work alters both the way people use their homes and how they perceive residential location. With reduced commuting requirements, proximity to the workplace becomes a less dominant factor, potentially shifting attention toward

housing quality, available space, and local amenities.

It is important to underline that this trigger does not directly cause relocation but rather may generate a stress or dissatisfaction with the current living situation. In line with the Stress-Threshold Model, this perceived mismatch between current conditions and emerging needs may prompt the formation of relocation intentions. If the stress threshold is surpassed, the process enters this stage, where the household develops a predisposition to move that remains contingent on structural and economic conditions, including housing market availability, affordability, and access to financing. Here, psychological, economic, and structural constraints come into play. These include mobility costs, market conditions, and available housing alternatives, all of which can either enable or hinder the translation of intention into action.

The conceptual scheme, therefore, presents residential mobility as a contingent and dynamic process, initiated by changes in work patterns but mediated through evolving preferences, contextual constraints, and individual decision-making. It highlights the non-linear and probabilistic nature of relocation, providing a comprehensive lens through which to study the spatial consequences of remote work in the post-pandemic era.

5. Conclusion

The aim of this paper was to propose a multidisciplinary theoretical framework for understanding how the spread of WFH may influence relocation dynamics. While earlier research has produced valuable insights, its findings remain inconclusive and often focus narrowly on short-term residential mobility. This emphasis is understandable, as hybrid work arrangements suggest that short-distance moves will likely continue to be the most relevant domain.

The framework developed here, summarized in Scheme 1, makes three interrelated contributions. First, it explicitly conceptualizes WFH as a distinct life-course trigger of residential relocation, extending the classical framework of Mulder and Hooimeijer (1999) to account for the structural transformation of work arrangements. Second, by drawing on the Stress-Threshold Model, it specifies the psychological mechanism linking WFH to relocation intentions — underscoring that dissatisfaction must accumulate and exceed a tolerance threshold before intentions to move are formed. Third, the framework integrates structural constraints in the form of resources and restrictions, capturing the conditions under which relocation intentions may or may not translate into actual moves. This highlights that residential choices frequently involve compromises and trade-offs rather than straightforward adjustments, and that market conditions mediate the relationship between WFH-induced preferences and revealed relocation behavior.

These observations carry implications beyond academic research. For urban planners and housing policymakers, the framework suggests that the spatial consequences of WFH are unlikely to unfold uniformly: they will be conditioned by local housing market structures, affordability constraints, and the life-course stage of households. In contexts where structural constraints are binding, WFH may reshape stated preferences without producing observable relocation flows, a distinction that should inform both research design and policy intervention.

These observations also point to important avenues for future research. In particular, qualitative investigations could shed light on how preferences are negotiated in different life-course contexts and within diverse housing markets. Such studies would deepen our understanding of how WFH operates as a relocation trigger and under what conditions it meaningfully alters residential dynamics.

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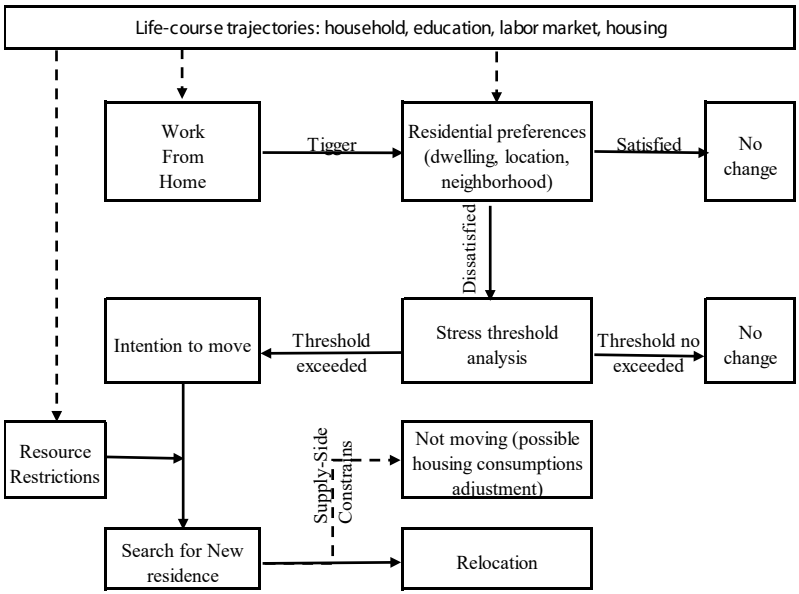
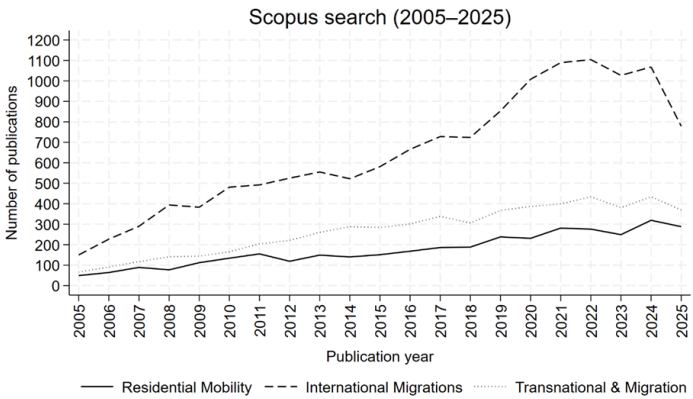
Appendix

Scheme 1. Remote work and residential preferences



Source: Own preparation.

Chart 1. Residential mobility vs. international migrations in Scopus database



Searches were conducted on 18/08/2025. The search was limited to articles indexed in Scopus Social Sciences. Searches were carried out on the title, abstract, and keywords fields, and the results were restricted to articles within Social Science disciplines.
Source: Own preparation based on Scopus database.

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Have State Institutions Converged Globally? Tracing the Legacy of the "End of History"

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Abstract

Motivation: More than thirty-five years ago, Francis Fukuyama published his influential essay "The End of History", in which he argued that liberal democracy had emerged as the final and most advanced form of political organization. According to this thesis, the ideological evolution of humanity had reached its endpoint, and states around the world would inevitably converge toward democratic governance. Since then, the Berlin Wall has fallen, the Soviet Union has collapsed, new states have been established, and numerous peaceful transitions of power – as well as coups – have taken place. These developments raise a fundamental question: was Fukuyama right? Have we indeed witnessed the "end of history," or do recent global trends suggest a more complex and contested trajectory?

Aim: The main objective of this article is to empirically examine the validity of the "end of history" thesis by assessing whether a global convergence of state institutions toward the model of liberal democracy has occurred.

Results: Between 1991 and 2024, sigma-convergence of state institutions was observed across all five dimensions analysed: Electoral Democracy, Liberal Democracy, Participatory Democracy, Deliberative Democracy, and Egalitarian Democracy. The decreasing dispersion of institutional indicators suggests that countries have become more similar in terms of democratic structures. However, this reduction in dispersion does not confirm Fukuyama's

"end of history" thesis. Since 2012, all democracy indexes have shown a consistent downward trend, indicating a global decline in the quality of democratic governance. While decreasing dispersion is evident, it is not accompanied by a universal shift toward liberal democracy. Instead, the data suggest that states are converging toward weaker or more limited forms of democracy (often hybrid or illiberal in nature) challenging the notion of an inevitable ideological endpoint.

Keywords: Institutional Convergence, Democratization, Political Regimes, Sigma-Convergence

JEL: P16, H11, O43

1. Introduction

Approximately 2,500 years ago, Heraclitus of Ephesus introduced the concept of *panta rhei* – the idea that everything flows and that change is the only constant. This notion has been reflected not only in philosophical thought but also in the evolution of political systems, which have historically transitioned through various forms such as city-states, monarchies, autocracies, and modern nation-states. In stark contrast to this dynamic view of history, Francis Fukuyama proposed in 1989 a thesis suggesting that the ideological evolution of governance had reached its final stage. According to Fukuyama, liberal democracy had decisively defeated alternative political systems (absolute monarchy, fascism, communism, and authoritarianism) and had emerged as the ultimate and most advanced form of government.

The aim of the article is to subject Fukuyama's "end of history" thesis to empirical scrutiny by investigating whether a global convergence of state institutions toward the model of liberal democracy has occurred. Specifically, the analysis focuses on the reduction of institutional dispersion across countries, interpreted as evidence of sigma-convergence. Using data from the *Varieties of Democracy* project, a comprehensive assessment has been conducted for all countries worldwide over the period 1991–2024. The study encompasses five dimensions of democracy: electoral democracy, liberal democracy, participatory democracy, deliberative democracy, and egalitarian democracy.

The article is structured as follows. Section two presents a literature review, addressing both the arguments in favour of and against the expectation of an "end of history." Section three outlines the data sources, methodological framework, and stylized facts. Section four discusses the empirical results and their implications. The final section offers concluding remarks and identifies directions for future research.

2. Literature review

Economic and political systems have undergone continuous transformation, evolving from quasi-state structures and city-states, through monarchies, to modern nation-states (Klima, 2009). At the end of the 20th century, Francis Fukuyama, an American economist and political scientist, proposed in his 1989 essay "The End of History" the thesis that humanity had reached the end of ideological evolution (a moment he termed the "end of history"). According to this claim, liberal democracy and market capitalism represent the final form of social organization, with no viable ideological alternatives. Drawing on Hegelian philosophy and Alexandre Kojève's interpretation of history as a dialectical process culminating in a "universal homogeneous state", Fukuyama argued that, following the collapse of fascism and communism, no ideology remained capable of challenging liberalism. He emphasized that although not all countries had yet adopted democratic systems, the ideological struggle had concluded – liberalism had triumphed in the realm of ideas, and its global adoption was merely a matter of time (Fukuyama, 1989). This bold and unequivocal thesis has since sparked extensive analysis, praise, and criticism.

One of the most prominent critiques of Fukuyama's argument is found in Robert Kagan's "The Return of History and the End of Dreams". Kagan notes that in the post–Cold War era – particularly after the collapse of the Soviet Union – "the optimism was understandable and almost universal (…) after the political crackdown that began in Tiananmen Square in 1989 and disturbing signs of instability in Russia after 1993, most Americans and Europeans believed China and Russia were on a path toward liberalism" (Kagan, 2008, pp. 4–5). However, this expectation did not materialize. China, Russia, several Islamic countries, and many other states did not move toward democracy; instead, they expanded their economic, political, and (importantly!) military capabilities.

Fukuyama himself later revisited his "end of history" argument, acknowledging that his initial formulation underestimated the enduring influence of nationalism, religion, and identity politics. In "Identity: The Demand for Dignity and the Politics of Resentment" (Fukuyama, 2018), he argued that the struggle for recognition and identity has become a dominant force in contemporary politics, fuelling populist movements and undermining liberal democratic norms. He warned that identity-based grievances, if left unaddressed, could destabilize democratic systems and erode social cohesion. In his later work, "Liberalism and Its Discontents" (Fukuyama, 2022), he conceded that liberal democracies face internal challenges stemming from economic inequality, institutional weakness, and polarization. He noted that

liberalism has been attacked from both extremes: neoliberalism, which prioritized market freedoms at the expense of social stability, and identity-driven politics, which fragmented civic unity.

It is therefore essential to ask the questions: should we (not) expect the "end of history"? Are there mechanisms by which the world will (not) inevitably move toward liberal democracies? The answers and arguments are varied.

2.1. Why might the end of history be expected?

The triumph of liberal democracies over autocratic systems has been particularly evident in Central and Eastern Europe, where, following the collapse of the Soviet Union and a wave of systemic transformations, many states chose the path of democracy and shifted from centrally planned economies to market-based systems (Schimmelfennig & Sedelmeier, 2004; Piątek, 2016). Concurrently, the global diffusion of the rule of law has been observed.

The rule of law, understood as a normative framework that constrains arbitrary power and ensures individual rights, has increasingly been adopted across diverse political systems, particularly in post-authoritarian and transitional societies (Godłów-Legiędź, 2017). This diffusion has not occurred randomly but has followed identifiable patterns of global norm transmission. Dobbin, Simmons, and Garrett (2007) argued that legal and institutional reforms are often driven by international models and pressures rather than purely domestic needs. The rule of law has thus become a global benchmark for legitimacy, governance, and development. Tamanaha (2004) emphasizes that despite its conceptual ambiguity, the rule of law has attained near-universal rhetorical endorsement, further reinforcing its status as a cornerstone of modern statehood. Moreover, Srokosz (2014) suggests that the rule of law reflects an objective progression of social order.

The role of international organizations in promoting liberal democratic norms and the rule of law can also be interpreted as a force contributing to the global convergence of political systems. Institutions such as the European Union, the International Monetary Fund, and the World Bank have exerted sustained pressure on states to adopt legal and economic frameworks aligned with liberal democratic[1] principles (Simmons & Elkins, 2004). This pressure has been applied through mechanisms of conditionality, norm diffusion, and

[1] This process is neither necessarily linear nor unconditional, as illustrated by the example of natural resource abundance. Numerous studies (see: Schmoll & Swenson, 2024; Narh, 2025) have indicated that the possession of natural resources may support convergence toward liberal democracy, but only under the condition that strong institutions are in place to impose constraints on those in power. In contexts where institutional strength is lacking, the influence of elites and interest groups tends to increase (Dymitrowska, 2024), resulting in the stagnation or even reversal of democratization processes.

reputational incentives, which have incentivized governments to liberalize their economies and strengthen rule-of-law institutions (Growiec, 2005).

The processes of globalization and the liberalization of trade also support "end of history" thesis by promoting the global diffusion of liberal democratic and capitalist norms. As transnational economic integration has deepened, sovereign states have increasingly adapted their legal and institutional frameworks to accommodate the demands of international trade and investment regimes (Ip, 2010). This transformation has been particularly evident in the proliferation of foreign direct investment, which has not only facilitated economic modernization in developing countries but has also contributed to the diffusion of institutional norms associated with liberal market economies (To, 2024). FDI inflows, especially from developed economies, have exerted a positive influence on host country institutional quality, including improvements in regulatory frameworks, rule of law, and anti-corruption measures (Fon et al., 2021). These developments indicate a convergence toward liberal institutional models, driven not by coercion but by the perceived benefits of integration into the global economy.

All of this makes the expectation of the "end of history" justified, and democratization has been and continues to be the dominant systemic trend (Fukuyama, 1992; Świeca, 2008).

2.2. Why might the end of history not be expected?

On the other hand, there are numerous arguments indicating that the "end of history" has not occurred and is unlikely to occur. There is no single, universal mechanism for the implementation and evolution of state institutions. Despite empirical evidence supporting the long-term benefits of democracy and free markets (Przeworski, 1991; Barro, 1996; Acemoglu et al., 2019), countries reform their institutions in different directions and at varying speeds. Even when states formally adopt similar institutional frameworks, their practical functioning often diverges significantly (Rudolf, 2017). Institutions are not easily transferable between countries (Acemoglu & Robinson, 2012) and are frequently locally embedded (North, 1990), which complicates or slows down institutional adaptation (Jedlińska, 2010). Even despite similar processes, such as the post-socialist transformation in Central and Eastern Europe, significant differences in political and economic structures between countries persist (Hall & Soskice, 2001)., and some states exhibit a tendency toward divergence (Totleben & Piątek, 2025).

Huntington (1996) argues that civilizations, defined by deep-rooted cultural, religious, and historical identities, remain the primary fault lines of global conflict. Rather than converging toward a homogeneous liberal-democratic model, societies continue to assert distinct civilizational logics, often incompatible with Western norms. This view is reinforced by Beckert

(2010), who critiques the dominant paradigm of institutional isomorphism in sociological theory. While early institutionalist frameworks emphasized convergence through mimetic, normative, and coercive pressures, Beckert demonstrates that these same mechanisms can – and often do – produce divergent institutional outcomes. Societies adapt global models in ways that reflect local cultural repertoires (Botcheva & Martin, 2001) and historical trajectories (Pierson, 2000; Gerschewski, 2021).

The persistence of political and ideological conflicts are also identified as a major challenge to Fukuyama's "end of history" thesis. Liberal democracy, as the proposed final stage of political evolution, has been critically reassessed in light of ongoing global tensions and competing ideological frameworks. As Wawrzonkowski (2013) notes, Fukuyama's vision tends to overlook the complexity of historical processes and the role of cultural and philosophical diversity. Similarly, Kucukozer (2005) emphasizes that movements such as political Islam illustrate how alternative models of governance and identity continue to emerge, resisting the universalization of Western liberal values. These observations suggest that history remains dynamic and contested, rather than concluded.

3. Data, stylized facts, and methods

Although measuring state institutions is not a trivial task[2] (Ostrom, 2005), there exist indices that enable meaningful comparisons across time and space. This analysis draws on data from the *Varieties of Democracy* project (Coppedge et al., 2025) which provides measures of various dimensions of political systems, such as indexes of: *electoral democracy* (responsive governance through clean elections and broad political freedoms), *liberal democracy* (limited state power and protected individual rights), *participatory democracy* (active citizen engagement beyond voting), *deliberative democracy* (decision-making through public reasoning and inclusive dialogue), and *egalitarian democracy* (equal access to rights, resources, and political influence across social groups). Moreover, these measures allow for the classification of countries into one of four regime types: *Liberal Democracy*, *Electoral Democracy*, *Electoral Autocracy*, and *Closed Autocracy*.

Liberal Democracy is defined by the presence of free and fair elections, alongside strong protections for civil liberties and institutional checks on executive power. Political competition is open, and governance is constrained by transparent legal and judicial systems. *Electoral Democracy* ensures mean-

[2] Difficulties in the empirical study of institutions have been noted by, among others, Gandhi and Przeworski (2016). They argue that authoritarian regimes sometimes adopt institutional features typical of democracies—such as the existence of multiple political parties, but this constitutes a mere illusion. In reality, no political power is distributed, and authority remains concentrated in the hands of the autocrat.

ingful electoral competition through free and fair elections, but lacks comprehensive safeguards for individual rights or effective limitations on executive authority. While democratic procedures are in place, liberal principles may be inconsistently upheld.

Electoral Autocracy maintains the formal structure of multiparty elections, yet these contests are neither genuinely competitive nor free. Political power is often concentrated, and democratic norms are routinely undermined despite the appearance of electoral legitimacy. *Closed Autocracy* is characterized by the absence of multiparty elections, with access to political power tightly controlled and concentrated in the hands of ruling elites. Public participation in governance is minimal, and opposition is typically suppressed.

Between 1991 and 2024, significant shifts were observed in the number of people living under different regime types. In the 1990s—partly as a result of the collapse of the Soviet Union—an increase was recorded in the population living under both Liberal and Electoral Democracies. This trend continued until 2012, when over 1,157.7 million people resided in liberal democracies and 2,564.3 million in electoral democracies (see Chart 1). A major turning point occurred in 2017, when India was reclassified from an electoral democracy to an electoral autocracy, contributing substantially to the decline in the global population living under democratic regimes. By the end of the study period, in 2024, the number of people living in liberal democracies had declined to 939.2 million, a figure comparable to that of 1993.

Given that fertility rates are significantly lower in wealthier, democratic countries (OECD, 2024), the share of the global population living under democratic regimes has been decreasing (see Chart 2). After an initial rise (peaking in 1996, when 17.59% of the world's population lived in liberal democracies) a steady downward trend has persisted. Currently, only 11.57% of the global population resides in liberal democracies, and 16.64% in electoral democracies. This indicates that even if the number of countries classified as democratic is increasing (Acemoglu et al., 2019; Boese et al., 2022), both the absolute number and the global share of people living in democratic regimes are declining (Angiolillo et al., 2024). Thus far, Fukuyama's "end of history" seems not to have occurred.

The verification of institutional convergence of the state is most commonly conducted through sigma-convergence analysis (Pérez-Moreno et al., 2021), although beta-convergence (Savoia & Sen, 2016) is also employed. Fukuyama referred to the process of the 'universalization' of state institutions (Fukuyama, 1989, p. 4), which provides a theoretical rationale for the application of the sigma-convergence approach in the empirical section of this study. This method is particularly useful, as sigma-convergence captures changes in the dispersion of the examined variable over time. Formally, the standard deviation (as a measure of dispersion) of institutional indicators was estimated for each year t according to the following formula:

$$\sigma_t = \sqrt{\frac{1}{N}\sum_{i=1}^{N}\left(INST_{i,t} - \overline{INST_t}\right)^2} \qquad (\#1)$$

where: – the standard deviation, t – time, N – the number of countries, INST – the measure of state institutions.

Subsequently, the parameters of the equation were estimated using the Ordinary Least Squares (OLS) method, in accordance with the following formula:

$$\sigma_t = \alpha + \beta \cdot t + \varepsilon_t \qquad (\#2)$$

A negative and statistically significant β coefficient indicates a decreasing dispersion of state institutions over time, which, in effect, implies the presence of sigma-convergence. Conversely, a positive coefficient suggests the occurrence of divergence.

4. Results

At the initial stage, standard deviations were calculated for the five democracy indexes (see: Chart 3): Electoral Democracy (*ElecDem*), Liberal Democracy (*LibDem*), Participatory Democracy (*PartDem*), Deliberative Democracy (*DelibDem*), and Egalitarian Democracy (*EgalDem*). A clear downward trend in the dispersion of all variables is observable, although the rate of decline varies. The *LibDem*, *PartDem*, *DelibDem*, and *EgalDem* indexes exhibit relatively stable downward trajectories, with the exception of the COVID-19 period. Interestingly, the dispersion of *ElecDem*, after an initial decline, has been steadily increasing since 2019.

In the next step, linear regression equations (#2) were estimated for each of the indexes under study. The results are presented in Table 1. The sigma-convergence parameter was negative and statistically significant at the 99% confidence level for all indexes, indicating that institutional convergence occurred between 1991 and 2024. The models demonstrated a high degree of fit to the empirical data, with R^2 values ranging from 0.7026 to 0.8993.

However, these results do not allow for a definitive conclusion regarding the realization of the "end of history" thesis. While countries around the world are indeed becoming more similar in terms of how various aspects of democracy are assessed (as dispersion declines), this does not imply the triumph of liberal democracy as envisioned by Fukuyama. On the contrary, the data reveal a significant deterioration in the quality of democracy since approximately 2012. Chart 4 shows that after initial improvements, all indexes have been declining, suggesting that convergence is occurring not toward

the ideal of liberal democracy, but rather toward its weaker or more flawed manifestations.

This paradoxical trend suggests a form of convergence that is structural but not normative. To clarify, structural convergence is understood as the increasing similarity in formal institutional frameworks across countries, as reflected in the declining dispersion of democracy indexes. Normative convergence, by contrast, is associated with the alignment of these frameworks with liberal-democratic principles, including strong civil liberties, effective checks and balances, and adherence to the rule of law. Based on the results, it can be observed that structural convergence has occurred, whereas normative convergence has not been achieved and may even be reversing, given the global deterioration in democratic quality. In this context, convergence reflects homogenization in form, but not necessarily in democratic function.

Importantly, while the observed decline in democratic quality challenges the assumption of an inevitable triumph of liberal democracy, it does not necessarily falsify the thesis in its entirety. The data may indicate that convergence is occurring, but toward a different configuration of democracy: potentially more limited, hybrid, or illiberal in nature. This suggests that the nature of democracy itself might be evolving rather than disappearing, and convergence could reflect adaptation to new global conditions rather than a reversal of historical progress. Consequently, the interpretation of these trends requires caution: sigma-convergence confirms increasing similarity among states, yet the substantive meaning of this similarity appears to be changing.

Moreover, the observed decline in the share of the global population living under democratic regimes – despite an increase in the number of democratic states – suggests that demographic dynamics also play a role. Lower fertility rates in democratic countries, combined with population growth in autocratic regimes, have shifted the global balance, further complicating the interpretation of convergence trends.

These findings underscore the limitations of relying solely on dispersion metrics to assess institutional development. While sigma-convergence captures the narrowing of differences across countries, it does not account for the direction or desirability of change. The results suggest that institutional convergence may be occurring, but not in a way that supports the normative assumptions of the "end of history" thesis. Rather than indicating progress toward liberal democracy, the observed convergence reflects a homogenization of institutional forms that may coincide with democratic backsliding. It appears that political and historical processes are not universally pushing states toward liberal democracy. Instead, institutional convergence may be more pronounced within specific regions or among culturally or historically similar countries, rather than at the global level. This interpretation highlights the need for more nuanced analytical approaches that go beyond

global averages. In particular, the concept of convergence clubs (see: Phillips & Sul, 2007; Glawe & Wagner, 2021) offers a promising framework for identifying distinct groups of countries that follow divergent institutional trajectories. Applying such methods could reveal whether convergence is occurring within certain clusters, while divergence persists across the broader international landscape.

5. Conclusion

This study set out to evaluate the empirical validity of Francis Fukuyama's "end of history" thesis by analysing whether state institutions have globally converged toward liberal democracy. Drawing on data from the *Varieties of Democracy* project and applying sigma-convergence methodology, the analysis revealed a statistically significant reduction in institutional dispersion across five key dimensions of democracy between 1991 and 2024. These results suggest that countries have become more similar in terms of democratic structures, at least in formal terms.

However, the observed convergence does not equate to the triumph of liberal democracy. Since approximately 2012, all democracy indexes have exhibited a consistent downward trend, indicating a deterioration in the quality of democratic governance worldwide. This paradox highlights a critical distinction between structural convergence and normative convergence. While institutional frameworks may appear increasingly aligned, their substantive functioning often diverges, with many states adopting illiberal or hybrid models that undermine democratic principles.

Moreover, the decline in the share of the global population living under democratic regimes—despite an increase in the number of democratic states—underscores the complexity of interpreting convergence trends. Demographic factors, such as lower fertility rates in democratic countries and population growth in autocratic regimes, further complicate the picture. These dynamics suggest that convergence, where it occurs, may be regional or clustered rather than global.

The findings of this study challenge the notion of an inevitable ideological endpoint and call for more nuanced approaches to analysing institutional change. Future research should consider the concept of convergence clubs, which allows for the identification of distinct trajectories among groups of countries. Such an approach would provide deeper insight into the mechanisms of institutional development and the conditions under which liberal democracy may (not) emerge as a dominant global model.

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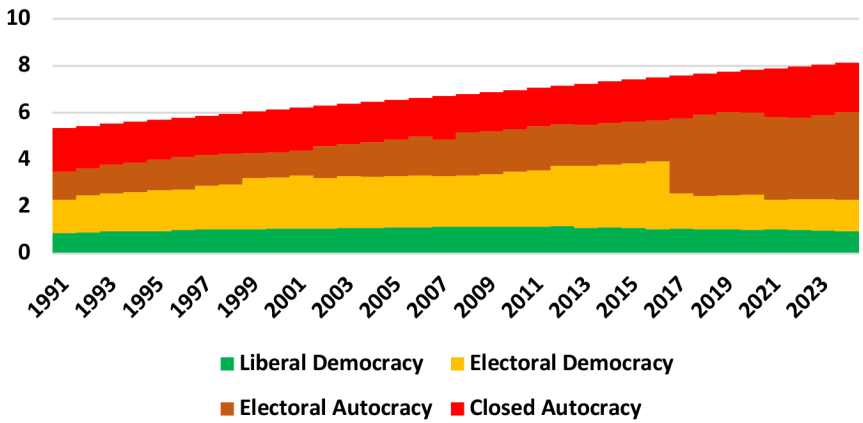
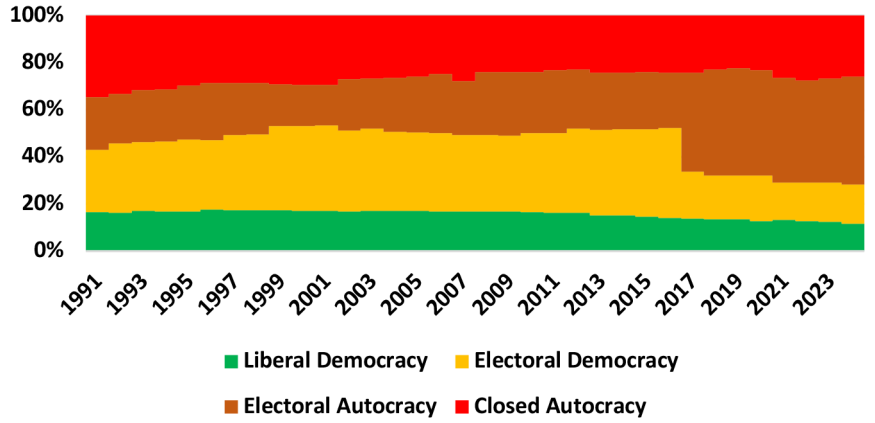
Appendix

Chart 1. Global population by type of political regime, 1991–2024 (in billions)



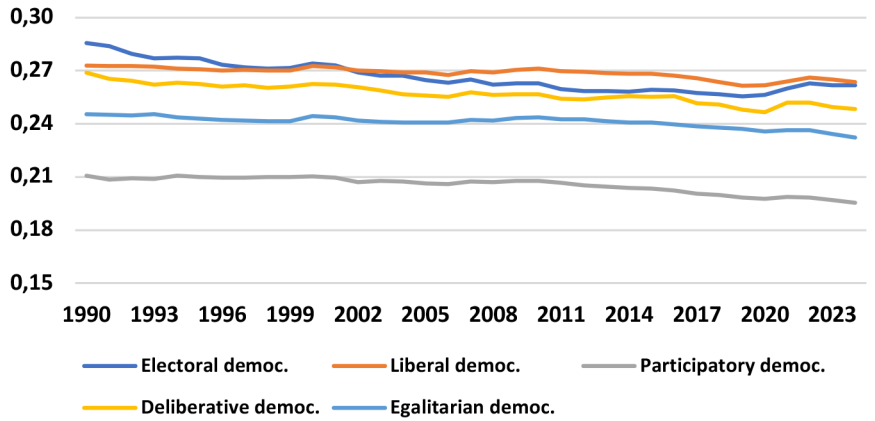
Source: Own preparation based on Varieties of Democracy (2025) and World Bank (2025) data.

Chart 2. Share of global population by political regime type, 1991–2024



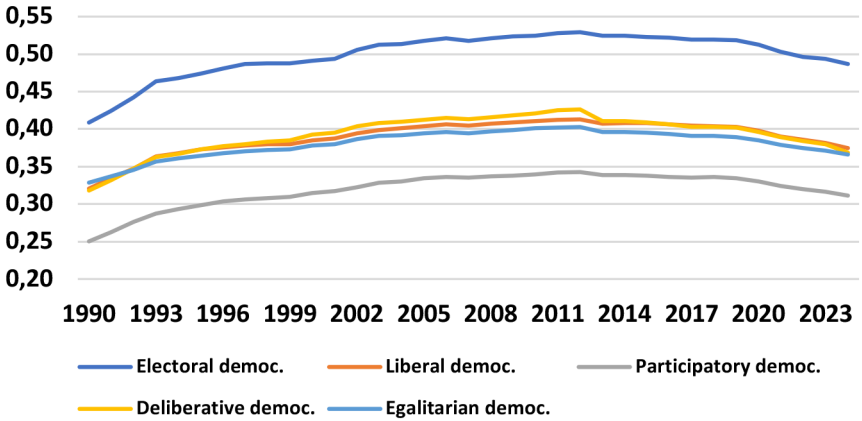
Source: Own preparation based on Varieties of Democracy (2025) and World Bank (2025) data.

Chart 3. Standard deviation of democracy indexes, 1991–2024



Source: Own preparation based on Varieties of Democracy (2025) data.

Chart 4. Average of democracy indexes, 1991–2024



Source: Own preparation based on Varieties of Democracy (2025) data.

Table 1. Estimated coefficients for sigma-convergence regressions

Measure	α	β	R^2
Electoral democracy	1.7368*** (0.1196)	-0.0007*** (0.0001)	0.8208
Liberal democracy	0.7992*** (0.0542)	-0.0003*** (0.0000)	0.7439
Participatory democracy	1.0232*** (0.0619)	-0.0004*** (0.0000)	0.8409
Deliberative democracy	1.2531*** (0.0580)	-0.0005*** (0.0000)	0.8993
Egalitarian democracy	0.7661*** (0.0595)	-0.0003*** (0.0000)	0.7026

Standard errors in parenthesis; *p <0.10, **p<0.05, ***p<0.01
Source: Own preparation based on Varieties of Democracy (2025) data.

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Migrants from Ukraine as an answer to the needs of the Polish labour market – the perspective of border enterprises

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Abstract

Motivation: Russia's war against Ukraine triggered a sharp rise in cross-border mobility across Europe. Neighbouring states at the EU's periphery absorbed substantial inflows, offering safety and socio-economic stability to displaced Ukrainians. For host economies, this coincided with acute labour shortages, enabling employers to stabilise staffing while host states gained predominantly working-age residents.
Aim: The main objective of the study was to determine whether the employment of migrant workers, especially from Ukraine, contributes to closing gaps in the labour markets in specific industries in Poland's border regions/voivodeships.

Results: We developed an original dual profile capturing (1) the migrant/refugee entering the labour market and (2) the employer hiring them given sectoral needs and organisational capacity. Descriptive evidence shows that over half of firms operate locally, one-third nationally, 10% within the EU market, 5% across Europe, and 2% are globally oriented. Migrants are most frequently employed in construction, hospitality, retail/wholesale, and services. In over 50% of firms, migrants work more than 40 hours per week. 76% of employers expect an improved output-to-input (productivity) ratio following recruitment. The most salient enablers are economic instruments, notably greater access to national and EU funding – subsidies, tax relief, co-financed training. These results add value by providing firm-level evidence from border regions—an under-researched context—linking employers' demand with migrant integration and highlighting institutional infrastructures – qualification recognition, skills databases as decisive complements to short-term administrative simplification.

Keywords: empirical analysis; labour migration; industry characteristics; labour shortage

JEL: C40; D22; F22; J21; J23

1. Introduction

The dynamics of the labour market is influenced by a number of economic, including the rate of economic growth affecting the size and structure of employment, and non-economic, technological progress, social and cultural changes, factors. The influence of demography, which determines the size and structure of the labour force and employment trends, is also significant. The situation is also shaped by state policies: fiscal, tax, educational, social (Piekutowska & Fiedorczuk, 2018), programmes supporting entrepreneurship or wars and geopolitical crises destabilising economies.

Given these conditions, labour shortages are becoming an increasingly serious problem. This is strongly felt by entrepreneurs (mainly in the IT, medical, engineering, construction and agricultural sectors) (PARP, 2024). In order to ensure business continuity, they are increasingly employing migrants.

The issue of migration in the context of the labour market is gaining importance, also in Poland. Poland's accession to the EU in 2004 opened access to the Single Market and EU funds while intensifying competitive pressure. These shifts—amplified by the pandemic and the 2022 inflow of Ukrainian citizens—compelled firms to adjust employment structures. In this context, Ukrainian migration unfolded in distinct waves: 2004 (EU entry; predominantly labour migration), 2014 (annexation of Crimea; mixed refugee–labour flows), 2017 (visa-free travel; labour migration), and 2022 (full-scale war; >1.5 million refugees). The interest of entrepreneurs in migrants is due to the deficit of employees with relevant competences, unfavourable demographic changes and emigration after accession to the EU (1.4–2.3 million people

left Poland) (SP, 2023; SP, 2024a). Migrants, especially from Ukraine, are becoming an opportunity to fill the labour shortage; their contribution to gross domestic product (GDP) in 2023 was estimated at 0.7–1.1% (UNHCR, 2024).

Poland's integration policy environment can be assessed using the Migrant Integration Policy Index (MIPEX). The latest update of the MIPEX 2025 index indicates a slight improvement to 44/100 (Yavçan & Gorgerino, 2025) from 41/100 in 2015 (Huddleston et al., 2015) and 40/100 in 2020 (Solano & Huddleston, 2020). This trajectory suggests incremental progress but continued structural gaps that shape labour-market matching and employers' integration capacity.

The main objective of the study was to determine whether the employment of migrant workers, especially from Ukraine, contributes to closing gaps in the labour markets in specific industries in Poland's border regions/voivodeships. Throughout the article, we use "region" interchangeably with "voivodeship" (NUTS 2); in Poland, NUTS 2 generally corresponds to voivodeships.

Therefore, the following revised research hypotheses were formulated:

H1: Enterprises employing Ukrainian migrants not only expect to fill employment gaps and improve financial results, but also anticipate long-term stabilisation of their workforce structure, increasing resilience against demographic decline.

H2: The creation and systematic development of databases on migrants' qualifications and educational backgrounds will strengthen strategic human resource planning in enterprises, allowing employers to match skills with sector-specific needs and facilitate labour market integration

H3: Institutional and financial support (from the state and EU) acts as a decisive factor not only for the short-term employment of migrants, but also for enhancing innovation and competitiveness of enterprises in the long run.

In order to achieve the main goal and verify the hypotheses, it was necessary to analyse migrants' characteristics and identify the needs of entrepreneurs. Therefore, an original profile was created: 1) of a migrant/refugee employee and 2) of an entrepreneur taking into account their needs when employing a migrant/refugee. It is worth noting that the issue of such professional activity of migrants (especially from Ukraine) from the employer's perspective in the economic aspect is a relatively new topic and has not been explored so far. Although the subject of professional activity of migrants from Ukraine is gaining popularity in Polish scientific works (Górny & Kaczmarczyk, 2018; Duszczyk & Matuszczyk, 2018), so far the research has not focused on the analysis of the needs of enterprises. Therefore, the authors noticed a research gap that they are trying to fill (Zabielska & Kowalewska, 2024). Migrants from Ukraine were selected for the research group, as they constitute the largest immigrant population in Poland. Additionally, a dis-

tinction was made between economic migrants and refugees. The phenomenon of migration, especially in the context of refugees, is currently global. The research process was conducted in 2023–2024, capturing employer behaviour in the immediate postshock period following the 2022 refugee inflow.

The article provides an overview of the literature on the subject, presents the research methodology used and the results of the analyses carried out, which refer to the findings of our own research and that of other researchers.

We employed quota sampling by firm size and sector, aligning sample proportions with those of the population of nonfinancial enterprises in four eastern (border) voivodeships. Quotas ensured approximate representativeness for the targeted strata. Within each stratum, units were selected without replacement (Lubelskie, Podlaskie, Podkarpackie and Warmińsko-Mazurskie).

2. Literature review

2.1. Theoretical foundations: labour mobility and migrant employment

Labour mobility has been analysed through complementary perspectives that emphasise (1) individual incentives and selection, (2) labour-market frictions and matching, (3) demand-side segmentation, and (4) institutional frameworks that govern access to work and integration. Together, these approaches provide a theoretical rationale for the three hypotheses formulated in Section 1.

From a human-capital and neoclassical perspective, migration is an investment decision driven by expected income differentials net of mobility costs (Sjaastad, 1962; Todaro, 1969). These approaches also highlight migrant self-selection and the role of transferable skills in shaping outcomes in the host country (Borjas, 1987). In practice, even when migrants possess substantial qualifications, their labour-market position may depend on whether credentials are recognised and whether skills can be effectively signalled to employers.

A second stream stresses imperfect information and matching frictions. Search-and-matching models show that vacancies and unemployment can coexist because employers and workers face costs of search, screening, and job switching (Mortensen & Pissarides, 1994). For migrants, frictions are amplified by language barriers and limited knowledge of local institutions, which can reduce the return to education and lead to occupational downgrading (Dustmann & Fabbri, 2003; Chiswick & Miller, 2009). In this framework, tools that improve information on migrants' qualifications and support

recognition pathways can reduce mismatch – providing a direct theoretical underpinning for Hypothesis H2.

Demand-side theories, most notably dual and segmented labour-market theory, explain migrant employment as a structural response to persistent labour demand in the secondary segment (Piore, 1979). Jobs in this segment are often characterised by lower wages, instability, and routine-intensive tasks, making them less attractive to native workers. This perspective predicts concentration of migrants in shortage-prone sectors and helps interpret employers' expectations that migrant labour will stabilise workforce structures under demographic decline – aligning with Hypothesis H1.

Finally, theories of cumulative causation and migrant networks emphasise that once migration corridors are established, information and social ties reduce migration costs and sustain mobility over time (Massey et al., 1993). In border regions, dense cross-border ties can reinforce circular mobility patterns, while shocks (such as war) may shift mobility toward longer-term settlement. Institutional perspectives complement this view by showing that legal channels, work authorisation, and integration support shape both the scale of inflows and the quality of labour-market matching – which is central to Hypothesis H3.

2.2. Ukrainian labour migration to Poland: empirical background

Labour migration from Ukraine has become one of the most significant socio-economic processes shaping the Polish labour market over the last decade. While earlier research on migration to Central and Eastern Europe often emphasised general mobility trends, more recent studies highlight the specific dynamics of Ukrainian migration to Poland, particularly after 2014, when political instability and conflict in Eastern Ukraine triggered an increased outflow of workers (Górny & Kaczmarczyk, 2018; Kindler & Kordasiewicz, 2019). These flows were initially dominated by temporary and circular mobility, especially in agriculture, construction, and low-wage services (Duszczyk & Matuszczyk, 2018), but after Russia's full-scale invasion of Ukraine in 2022, longer-term settlement intentions have become more prominent (Chmielewska et al., 2023).

The significance of this process becomes even more evident when placed against the background of broader demographic and labour-market challenges in Europe. Since the early 1990s, population ageing has been a defining trend in developed countries (Lee & Shin, 2021). Its effects, particularly visible in Europe, include declining productivity and a slowdown in new business creation (CORDIS, 2025). Projections suggest that by 2050 Europe may face a shortage of around 44 million workers, with Germany, France and the United Kingdom among the most affected economies (Kenny & Yang, 2021). In Poland, the shortage may reach up to 5 million workers (Piątkowski, 2018).

Estimates by the Social Insurance Institution (ZUS) indicate that to maintain the current ratio of working-age to post-working-age populations, almost 1.5 million additional workers would need to be recruited from abroad by 2027 (SP, 2024a). Already today, labour shortages are acutely felt in many industries, both in Poland and across Europe, driving employers to increasingly rely on migrants.

In this context, the influx of Ukrainian workers has become particularly significant. Between 2022 and 2024 alone, more than one million Ukrainians entered the Polish labour market, with strong concentrations in construction, agriculture, logistics and services (SP, 2024b). This illustrates the direct response of Polish enterprises to acute shortages (Craveiro et al., 2019; Cillo, 2021). Importantly, recent research highlights not only the quantitative but also the qualitative aspects of this inflow: Ukrainian migrants often bring professional competences, adaptability, and cross-border experience that can strengthen enterprises in border regions (Janicki & Ledwich, 2021), making them distinct from other migrant groups (Szaban, 2022; Weisse, 2023; Zyzik et al., 2023).

Empirical studies also confirm that Ukrainian workers often fill labour shortages primarily in secondary labour-market segments characterised by instability and lower wages, consistent with the dual labour-market mechanism described by Piore (1979). Research by the National Bank of Poland (NBP, 2024) and Baran (2021) shows that Ukrainians provide essential workforce supply in occupations unattractive to native workers. At the same time, evidence from the Institute for Structural Research (IBS) suggests that their role is more complementary than substitutional, as their employment enables firms to expand production rather than merely replace domestic labour (Kaczmarczyk, 2021).

2.3. Institutional setting in Poland and the enterprise perspective

The institutional framework has further shaped the scale and character of this migration. Since 2006, Poland has implemented the simplified "declaration system" (oświadczenia), which allowed employers to hire Ukrainians with minimal bureaucracy. These regulations were liberalised after 2014 and significantly expanded by the 2022 Special Act for Ukrainian citizens. Scholars underline that such instruments facilitated rapid adjustment of labour supply to employer demand, but also created long-term challenges for integration and employment stability (OECD, 2019; Górny & Kindler, 2023).

From the enterprise perspective, the employment of migrants is analysed through multiple lenses – economic, social, cultural and institutional. It addresses several critical needs:

1) filling shortages in hard-to-staff sectors (Dustmann et al., 2010; EC, 2024);

2) enhancing flexibility and reducing employment costs, for example by using labour from Ukraine, Georgia or Belarus to better manage seasonality and production peaks (Ruhs & Anderson, 2010; OECD, 2019);
3) introducing new competences and experiences, including technological know-how and innovative working techniques (Dustmann & Fabbri, 2003; Chiswick & Miller, 2009);
4) strengthening corporate image through diversity and equality policies, enhancing attractiveness to socially responsible partners (Poland Insight, 2025);
5) supporting internationalisation through access to a wider talent pool and cultural knowledge (Ashourizadeh & Saeedikiya, 2023);
6) accessing public support instruments, such as grants, tax breaks, adaptation subsidies or simplified employment programmes for migrants (Union of Entrepreneurs..., 2023; Zabielska & Kowalewska, 2024).

Consequently, entrepreneurs employing migrants – particularly from Ukraine – not only aim to fill immediate workforce gaps but also increasingly expect institutional and financial support to strengthen their long-term business strategies (Privara, 2025). Addressing this dual perspective of short-term adjustment and long-term structural change is essential for understanding the evolving role of migration in the Polish labour market.

The research in Table 1 shows that effective integration of migrants into the labour market requires a coordinated combination of simplified administrative procedures, language and vocational training, recognition of qualifications, and financial support for employers. Such complementary measures support sustainable use of migrant potential and stabilisation of employment, and they provide an institutional rationale for Hypothesis H3 (Tabel 2).

3. Methods

The main objective of the study was to identify the activity of migrants (divided into: economic migrants, refugees) in relation to the (sectoral) needs of entrepreneurs. To achieve it:

1) a critical analysis of the literature on the subject was conducted;
2) statistical data on enterprises in Poland was analyse (using: SP, 2024c; SP, 2024d);
3) the minimum sample size for the finite population was established. At the significance level of $\alpha=0.05$, it amounted to 384 with a permissible estimation error (equal to 5%), both for the examined border enterprises and the examined immigrants (economic migrants and refugees);
4) the enterprises were selected from registers of non-financial firms (SP, 2024c; SP, 2024d) located in four provinces in eastern Poland. This

border (peripheral) region is characterised by high demand for migrant labour, reflecting shortages associated with out-migration from peripheral to central areas (SP, 2024e).

The selection of units for the sample was made on a quota basis according to the known structure of the general population, ensuring approximate representativeness. Within each stratum, units were selected without replacement, meant that a selected element of the population participated in the draw only once. Therefore, it could not be selected again for the sample.

5) original questionnaires for entrepreneurs and migrants were created, in which they were asked to indicate, among other things:
   a. the type of migrant workers: refugees, economic immigrants or both;
   b. factors conducive to employing migrants (based on the literature; Fig. 2);
   c. expectations of entrepreneurs employing migrants (Fig. 1).

   The questionnaire was in Polish and consisted of closed-ended questions. Some questions could be answered in more than one way. The article presents the results of a selected subset of analyses from a broader research project on border enterprises employing migrants from Ukraine (the questionnaire contained 11 questions). Due to limitations in scope and volume, we focus on modules and questions directly related to hypotheses H1–H3;
6) a survey was conducted in 2023 and 2024. The choice of research period was directly related to the outbreak of the war in Ukraine and the unprecedented migration wave of Ukrainians to Poland.
7) the method used was a telephone interview (90%) and an online survey (10%). The study analyse data from 400 surveys. The fieldwork was outsourced to a specialized research company with experience in survey studies;
8) primary (survey) and secondary (statistical) data were analysed. Statistica software (Statistica 13.3 PL statistical package) and Excel (Office 365 A1 Plus for teaching staff, version 2404) were used to analyse quantitative (primary) data. The authors' own findings are presented descriptively and graphically in the form of tables and figures;
9) multivariate correspondence analysis (Fig. 3) was used to graphically represent the structures and patterns of the data collected during the study. Due to the two-dimensional nature of the graphical representation (row and column axis), we examined how well these two dimensions describe the relationship under study: fac-tors influencing migrant employment and migrant type. The first dimension explains most of the variability between columns (factors influencing migrant employment), while the vertical axis explains the variability between

rows (migrant types). This approach ensures clear and easy-to-interpret results, enabling analysis of qualitative survey data;

10) the results of data analyzes and literature review were the basis for verifying hypotheses, formulating final conclusions and recommendations.

4. Results and Discussion

Consistent with the dual/segmented labour market framework introduced in Section 2.1, drawing on the survey of 400 enterprises in Poland's border voivodeships, the evidence depicts a labour-demand landscape marked by persistent vacancies in routine-intensive segments and by differentiated market scope across enterprises. More than half of them operate locally, one-third at the national level, with 10% active intra-EU, 5% across Europe, and 2% declaring global reach. Migrant workers are most frequently employed in construction, hospitality, retail/wholesale, and services – areas where staffing gaps are chronic, task sequences tightly coupled, and production delays easily propagate (statistical data confirms this, SP, 2024b). Read through the lens of segmented and dual labour-market theory, this allocation is fully consistent with secondary-segment pull: enterprises maintain throughput by allocating migrants to time sensitive, physically demanding, or routine tasks while preserving continuity in coordination-intensive and customer-facing roles typically staffed by native workers (Piore, 1979; Duszczyk & Matuszczyk, 2018; Kaczmarczyk, 2021). In border regions (SP, 2024e) – where replacement pipelines are thin and seasonal peaks are sharper – this pattern appears less a short-term fix than a structural response to demographic decline and long-standing shortages. Aligning with macro-level evidence on the measurable contribution of Ukrainian migrants to Poland's labour supply and GDP growth (Baran, 2021; NBP, 2024).

This pattern is consistent with firmlevel evidence that migrants often complement rather than substitute native labour, enabling expansion where shortages bind (Dustmann & Fabbri, 2003; Kaczmarczyk, 2021), and with macro studies showing aggregate gains (Baran, 2021; NBP, 2024).

Qualitative accounts clarify the channel through which these gains are realised (Brunarska et al., 2016). Entrepreneurs report that assigning migrants to routine, time-bounded tasks allows a withinfirm reallocation of native staff towards coordination, higher-autonomy and client-facing functions – positions where firm-specific knowledge, language proficiency and local networks are most valuable. This task boundary is precisely where complementarity emerges: migrants anchor the execution layer, protecting quality and timeliness at the customer interface. Where firms maintain basic onboarding and standard operating procedures, time-to-productivity shortens and the risk that migrant hiring becomes a revolving-door solution recedes (Duszczyk & Matuszczyk, 2018; Kaczmarczyk, 2021). The effect is most vis-

ible in construction and logistics. In these sectors, small increases in staffing continuity translate into measurable improvements in adherence to plans, utilisation of capital equipment, and the reliability of delivery windows.

The same enterprises, however, emphasise frictions that slow or blunt integration. Three constraints recur: administrative complexity (documentation, renewals, tracking permit validity), language deficits, and difficulties in recognising prior qualifications. These hurdles elongate time-to-productivity, constrain internal mobility and risk underutilising human capital – especially in SMEs lacking dedicated HR capacity. The Polish framework has long reduced entry costs via the "oœwiadczenie" mechanism and subsequent administrative simplifications, and the 2022 Special Act further eased access for Ukrainian citizens (OECD, 2019; Górny & Kindler, 2023; OECD, 2023). Yet respondents underline that beyond simplified entry, upstream frictions persist around nostrification/recognition, targeted language/vocational provision, and routine renewals that collide with production peaks—precisely when slack is scarcest. This is fully consistent with international evidence that policy architectures solving immediate shortages may still lock in precariousness unless paired with qualification recognition and active labour-market measures (Ruhs & Anderson, 2010; OECD, 2023).

Against this backdrop, the enablers flagged by entrepreneurs become legible. The most salient instruments are economic – notably access to national/EU funds (subsidies, tax relief, co-financed training) – and institutional infrastructures that reduce information and certification frictions: skills/qualification databases, streamlined recognition pathways, and simplified information systems for reporting and monitoring permits (Eurofound, 2024; Guzi et al., 2024; Bertè et al., 2023; EC, 2024). These preferences provide supporting evidence for H2–H3. Under H2, systematic knowledge infrastructures (searchable databases, faster nostrification) should strengthen strategic HR planning and matching quality. Such tools are precisely what entrepreneurs request (Bevelander & Irastorza, 2023; Klages & Mustafa, 2023; Kowalik et al., 2023; NBP, 2024; Shelest-Szumilas, 2024). Under H3, institutional and financial support is posited to affect not only short-term hiring but also longer-run innovation and competitiveness. Although these analyses do not does not identify causal enterprises-performance effects, the combination of co-financed training, public support schemes and recognition reflects a coherent pathway from rapid recruitment to durable integration (Eurofound, 2024; Guzi et al., 2024; Privara, 2025). Importantly, this consistent with prior Polish experience: post-2006 procedural relief accelerated hiring (OECD, 2019), whereas deeper integration hinged on language, training and recognition (Górny & Kindler, 2023; OECD, 2023; Aronin & Singleton, 2025).

The multidimensional correspondence analysis adds structure to this interpretation by mapping how types of migrants align with factors encouraging employment. The association is statistically significant ($\chi^2 = 156$; $p < 0.001$), with a dominant horizontal dimension that accounts for 96.49% of

column inertia (i.e., factors influencing the employment of migrants) and a vertical dimension explaining 3.51% of row variation (i.e., differences across migrant types). The first axis captures the bulk of the instruments enterprises connect to greater feasibility of hiring, while the second distinguishes who those instruments are thought to work best for. Refugees cluster with skills databases, improved job placement, cooperation with institutions, and free language/training – a package that reduces information asymmetries and barriers to first entry (OECD & EMN, 2024; IAB, 2024; Strzelecki i in., 2022). Refugees with prior economic-migration experience align with administrative/legal assistance, cross-border cooperation, diploma nostrification, and financial/substantive support – the needs of individuals with transferable but under-recognised credentials (OECD, 2023; Klages & Mustafa, 2023; EC, 2024). Economic migrants (non-refugees) align most closely with information/service portals, consistent with profiles that can navigate job search and onboarding if market information is transparent and procedural steps are standardised (Bertè et al., 2023; EC, 2024). Substantively, the analysis demonstrates that enterprises do not treat "migrants" as a monolith. They match distinct instrument bundles to distinct migrant profiles, reinforcing the policy implication that one-size-fits-all support underperforms in border-region labour markets where constraints and capacities vary markedly across sectors, enterprises and workers.

Heterogeneity by sector, enterprise size, and market scope further qualifies these patterns. Reliance on migrant labour – and the magnitude of stability gains – is strongest in construction and logistics, where bottlenecks are most acute and workflows interdependent (Duszczyk & Matuszczyk, 2018). Larger enterprises are more likely to internalise onboarding and training, achieving shorter time-to-productivity and buffering administrative shocks. SMEs depend more on simplified procedures and external support (public employment services, NGOs, cross-border partnerships), making them especially sensitive to documentation delays or renewal backlogs (Eurofound, 2024; Guzi et al., 2024). Enterprises serving extra-regional markets report stronger incentives to lock in stable migrant staffing to protect delivery reliability, contractual performance and reputation with upstream contractors, echoing findings that migrants' linguistic and cross-cultural capital support expansion and internationalisation (Ashourizadeh & Saeedikiya, 2023). At the same time, some employers view diversity signalling as reputationally beneficial in value chains where corporate responsibility is monitored (Poland Insight, 2025), which may strengthen demand for stable integration over transactional hires.

Two boundary conditions warrant interpretive caution and shape priorities for further research. First, local-institutional variance – coverage of support programmes, practices of public employment services and the capacity of municipalities/NGOs – likely shapes recruitment frictions across

sites. This unobserved heterogeneity may amplify or attenuate the association between instrument availability and perceived hiring feasibility (OECD & EMN, 2024; IAB, 2024). Second, seasonality modifies measured work intensity and vacancy pressure, especially in agriculture, construction and HoReCa. Because fieldwork occurred in 2023–2024, the snapshot captures employer behaviour in the immediate post-shock period following the 2022 refugee inflow and amid evolving regulations, implying potential sensitivity to policy timing and the macro cycle (EC, 2024). These caveats do not overturn the core patterns but do highlight why administrative simplification alone is insufficient: without language provision, recognition of qualifications and financing for onboarding/upskilling, firms will continue to face integration bottlenecks at precisely the moments when demand peaks and slack is scarcest (OECD, 2019; Górny & Kindler, 2023; OECD, 2023; Aronin & Singleton, 2025).

The results also align with the broader migration timeline into Poland, which helps interpret employers' current stance. Earlier work documents how post-2014 inflows, initially dominated by temporary/circular mobility in agriculture, construction and low-wage services, gradually shifted towards longer-term settlement intentions after 2022 (Duszczyk & Matuszczyk, 2018; Górny & Kaczmarczyk, 2018; Kindler & Kordasiewicz, 2019; Chmielewska et al., 2023). This shift is exactly where administrative facilitation meets the limits of short-term instruments: when the modal profile evolves from short-stay, low-recognition employment to longer-horizon labour-market participation, recognition, training and databases become essential complements to basic procedures. In that sense, the border-region results here sit squarely within the literature's trajectory—from viewing Ukrainian workers primarily as a fast-moving buffer stock, to understanding them as a structural component of firm strategies under demographic decline OECD, 2023; Eurofound, 2024; NBP, 2024).

The picture that emerges from Poland's border voivodeships is one of complementari-ty rather than substitution. In environments of demographic decline, fragmented in-ternal mobility, and chronic shortages, migrant employment sustains throughput and enables incremental growth. The consistency with H1 is strongest where full-time workloads and continuity gains coincide. Support for H2–H3 is clearest in the coherent policy bundle employers demand. This is about skills databases and recognition path-ways to reduce information and certification frictions, paired with subsidies, tax relief, and co-financed training to underwrite the costs of integration (OECD, 2019; Górny & Kindler, 2023; OECD, 2023; Eurofound, 2024; Guzi et al., 2024; Klages & Mustafa, 2023; Aronin & Singleton, 2025). For policy, the implication is immediate and practical: procedural ease is necessary but not sufficient. Durable integration in border-region labour markets requires coupling simplified hiring with knowledge infrastructures (searchable databases of qualifications, fast-track recognition and nostrification), language and vocational provision aligned with sectoral task structures,

and financing mechanisms that allow firms – especially SMEs – to in-vest at the moment when it matters most (Bertè et al., 2023; EC, 2024; Eurofound, 2024). For research, the next step is to move to multi-wave panels that link survey responses to administrative records (e.g. on hours, wages, turnover and training) and regulatory changes. Only then will it be possible to quantify the long-run effects posited in H3 on innovation and competitiveness, and to rank which bundles of instruments deliver the largest productivity and inclusion gains.

In sum, in Poland's border voivodeships, the employment of Ukrainian migrants has moved beyond emergency substitution to become a structural element of firm strategies in shortage-prone sectors. The evidence is consistent with H1, indicating longer-term workforce stabilisation rather than ad-hoc gap-filling. We also find supporting evidence for H2, as employers explicitly demand skills/qualification databases and streamlined recognition to improve matching quality. Finally, we observe support for H3, insofar as firms identify institutional and financial instruments (subsidies, tax relief, co-financed training) as decisive complements that turn rapid recruitment into durable integration and, prospectively, stronger competitiveness. While causal identification awaits multi-wave panels and linked administrative records, the directional alignment with H1–H3 is robust across descriptive, relational and narrative evidence.

Limitations: The representativeness of the sample is limited to four border provinces and their sectoral and size composition, which makes it impossible to draw direct generalisations about other regions (e.g. those with higher high-tech intensity). In addition, institutional heterogeneity at the local level (scope of support programmes, PUP practices, activity of local governments/NGOs) may introduce systematic variation that we do not identify. Finally, the seasonality of employment (agriculture, construction, HoReCa) and the 2023–2024 measurement may distort the estimates of the effects; stronger identification requires a multi-wave panel with control for seasonality and the business cycle.

5. Conclusion

Based on empirical research and literature analysis, the authors propose a new approach to the phenomenon of migration from Ukraine – treating migrants not only as an integration challenge, but as a strategic response to the needs of entrepreneurs to fill staff (industry) shortages. In conditions of depopulation and competence deficits, migrants can provide effective support for the labour market, especially in border regions. They can revive local markets and stimulate the development of companies (increased financial and operational efficiency) by increasing employment, professionalizing activities and gaining new markets.

In response to the needs of the labour market, the authors developed two related profiles: an entrepreneur employing migrants and a migrant employee, demonstrating their partial compatibility – especially in terms of expected qualifications.

The verification of hypotheses supported (with noted causal limits): (1) the significant influence of institutional support, especially financial, on employment decisions, (2) motivations such as staff shortages and the need to simplify procedures and, as a result, increase the financial result, and (3) the need to create an information system on migrants. The main objective of the research was also achieved.

The authors' recommendations include: simplifying the legalization of work, language and training support, developing digital recruitment platforms, candidate databases and data protection. Such actions will help migration become an element of development policy, not just integration. Especially since migrants meet the needs of low-skilled professions, but do not solve the problem of the lack of highly qualified specialists. Therefore, the authors postulate the continuation and expansion of research to better recognise the needs of local (national) entrepreneurs and the conditions/opportunities for employing migrants.

This study demonstrates that labour migration from Ukraine to Poland has evolved into a structural and transformative factor shaping the national labour market. Earlier research already highlighted the increasing significance of Ukrainian mobility (Górny & Kaczmarczyk, 2018; Kindler & Kordasiewicz, 2019; Duszczyk & Matuszczyk, 2018), but our analysis provides additional evidence from a microeconomic perspective, particularly in border regions where the intensity of inflows has been greatest. By combining firm-level data with broader demographic and institutional analyses, the study bridges the gap between macro-level findings (Baran, 2021; NBP, 2024) and the underexplored perceptions of employers themselves.

The findings provide strong support for the first hypothesis (H1), indicating that Ukrainian workers contribute not only to filling immediate shortages but also to stabilising workforce structures in the long run, thereby enhancing firms' resilience to demographic decline. This resonates with Piore's (1979) dual labour market theory, which explains the concentration of migrants in secondary segments, but extends it by showing that migrant labour can also strengthen long-term business continuity. Complementarity rather than substitution, as emphasised by Kaczmarczyk (2021) and IBS reports, appears to be a defining feature of Ukrainian migration.

The second hypothesis (H2) is also confirmed. Our results show that the absence of systematic databases on migrant qualifications hampers effective human resource planning. International evidence (OECD, 2023; Aluchna et al., 2024; NBP, 2024;) supports the claim that knowledge infrastructures and recognition mechanisms are essential to reduce inefficiencies in labour

market matching. Importantly, this study contributes by documenting employer demand for such tools, highlighting a gap in the Polish institutional framework.

The third hypothesis (H3) is validated by evidence on the importance of institutional and financial support. While simplified mechanisms such as the declaration system and the 2022 Special Act for Ukrainian citizens facilitated rapid responses to labour demand (OECD, 2019; Górny & Kindler, 2023), our findings confirm that employers also expect more sustainable instruments: subsidies, tax incentives, and EU co-financed programmes that support vocational adaptation and innovation (Eurofound, 2024; Guzi et al., 2024; Prvara, 2025). Without such complementary policies, there is a risk that migrant employment remains precarious, undermining long-term integration.

From a theoretical perspective, this research contributes by integrating segmented labour market theory, human capital approaches, and institutionalism into a coherent framework for understanding Ukrainian migration. It highlights that the dynamics of migrant employment cannot be fully explained by demand-supply mechanisms alone but require attention to institutional arrangements, recognition of qualifications, and employer perceptions at the firm level.

From a policy perspective, the results underline the need for comprehensive frameworks that go beyond short-term administrative simplification. Effective integration requires:

1. simplified but reliable legal procedures,
2. structured databases on migrant qualifications and competences,
3. systematic recognition of skills and vocational training opportunities, and
4. targeted financial instruments to support employers.

Finally, the study opens new avenues for further research. While our evidence is based on border regions, future work could explore sectoral differences, long-term career trajectories of migrants, and the interplay between public policies and firm-level strategies. Comparative analyses across Central and Eastern Europe would also enhance understanding of whether the Polish case is unique or reflects broader regional trends.

5.1. Scenarios for migrant labour in Poland's border voivodeships

Scenario A – Consolidation and integration upgrade.

Sustained inflows of Ukrainian workers are complemented by stronger integration instruments (faster recognition of qualifications, language and vocational training, and support for SMEs). In the analysed voivodeships, this would likely reduce turnover and gradually increase migrants' presence in more skilled roles, consistent with the mechanisms behind H2-H3.

Scenario B – Status quo / patchwork governance.

Recruitment remains fast through simplified procedures, but knowledge infrastructures (skills databases, recognition pathways) and financing instruments remain fragmented. As a result, migrants stay concentrated in secondary segments with persistent mismatch and limited upgrading, reinforcing the dual labour market logic behind H1.

Scenario C – Restriction and volatility.

Greater regulatory uncertainty or restrictions on entry/support reduce the availability of migrant labour. Border-region SMEs face larger vacancy pressures, rising costs and higher risks of informal employment, weakening long-run integration and competitiveness.

In sum, Ukrainian migration to Poland is no longer a temporary response to labour shortages but a transformative process with implications for theory, policy and practice. Only an integrated approach – combining administrative, institutional and financial instruments – will allow Poland to fully harness this potential while contributing to the resilience and competitiveness of its labour market in a rapidly changing European context.

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Appendix

Table 1. Areas of business support when employing migrants – in light of the literature

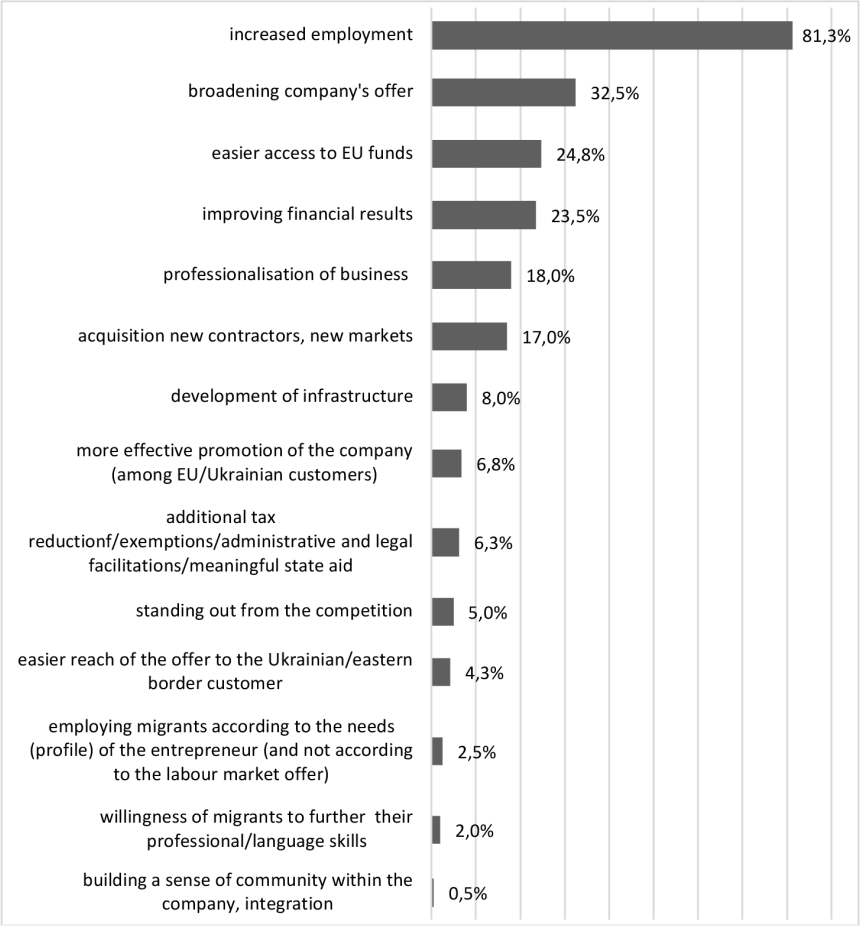
Institutional and policy enablers of migrant employment		References
legalisation of employment, procedural support, counselling	difficulties related to documentation and administrative procedures – the need to facilitate recruitment and legalization processes	OECD&EMN (2024); IAB (2024); Kubiciel-Lodzińska et al. (2024); Strzelecki et al, (2022)
language and adaptation courses	lack of language skills – the need to organize language courses and adaptive adaptations	Aronin&Singleton (2025); Guzi et al. (2024)
vocational training and courses	on-the-job training, career counseling, onboarding programs – financing/co-financing by the state/EU	Adamczyk et al. (2022); Aluchna et al. (2024)
recognition of professional qualifications	migrant workers (from Ukraine) with education and professional experience not recognized in Poland – need for support in the process of nostrification of diplomas, recognition of qualifications	OECD (2023); Klages&Mustafa (2023); Weisser (2023)
adaptation of job offers to the specific characteristics of migrants	the possibility of adapting the job offer to the competences of migrants (possibility of retraining)	Shelest-Szumilas (2024); Bevelander & Irastorza (2023); Kowalik et al. (2023)
simplified information system	the ability to quickly report the employment of foreigners and track permits and their validity dates	Bertè et al. (2023); EC (2024)
systems financial support	subsidies/tax relief for companies employing migrants, access for entrepreneurs to professional activation programs (e.g. through labor offices)	Eurofound (2024); Guzi et al. (2024); Prvara (2025)
databases	regarding migrants ready to work in various sectors	NBP (2024)

Source: own work based on a literature review.

Table 2. Theoretical lenses and their links to hypotheses H1–H3.

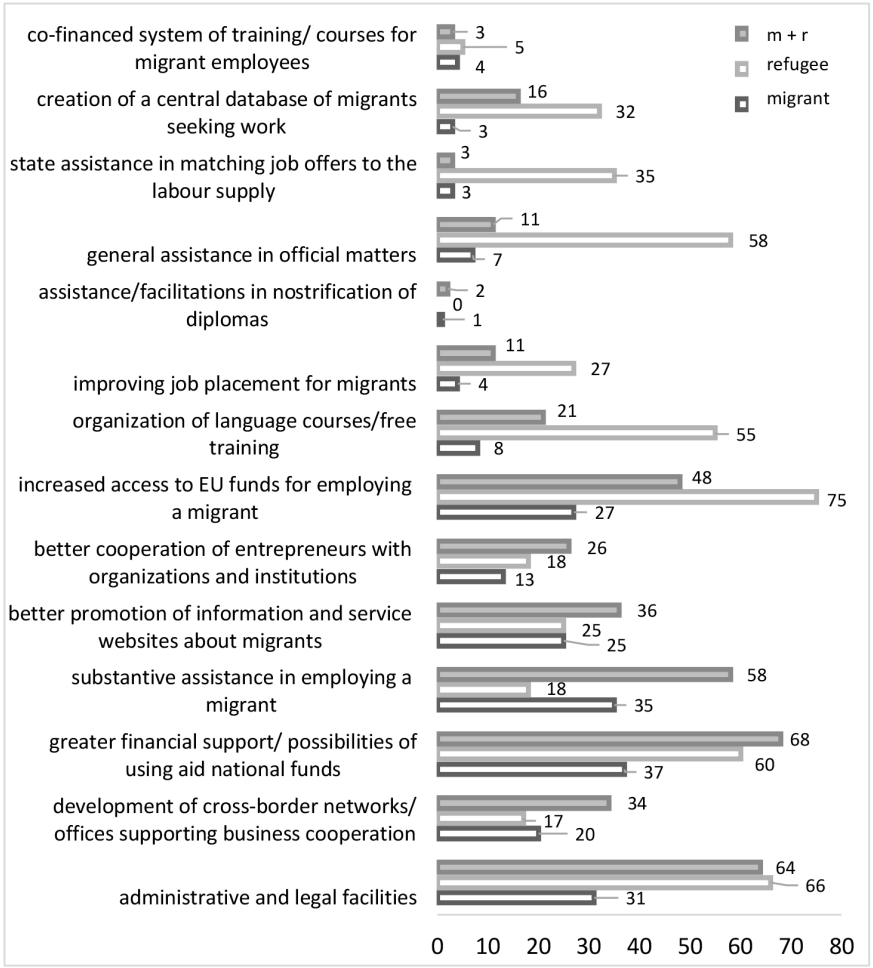
Theoretical lens	Key mechanism for migrant employment	Link to hypotheses (expected patterns)
Dual / segmented labour market (Piore, 1979)	Structural demand for labour in secondary segments; migrants concentrated in routine, time-sensitive and physically demanding tasks.	H1: migrant employment stabilises firm operations in shortage-prone sectors; complementarity with native workers in primary segments.
Human capital + search/ matching frictions (Sjaastad, 1962; Mortensen & Pissarides, 1994)	Imperfect information, credential non-transferability and language barriers raise mismatch and underutilisation of skills.	H2: databases of qualifications + recognition pathways reduce frictions, improving HR planning and matching quality.
Institutionalism / migration regime	Entry channels, work authorisation, and public co-financing shape both the scale of inflows and the sustainability of integration.	H3: institutional and financial instruments (subsidies, tax relief, EU co-financing) complement simplified procedures and enable durable integration.

Figure 1. Expectations of entrepreneurs from employment of migrants by type of migrant – entrepreneur's perspective



Source: Own preparation.

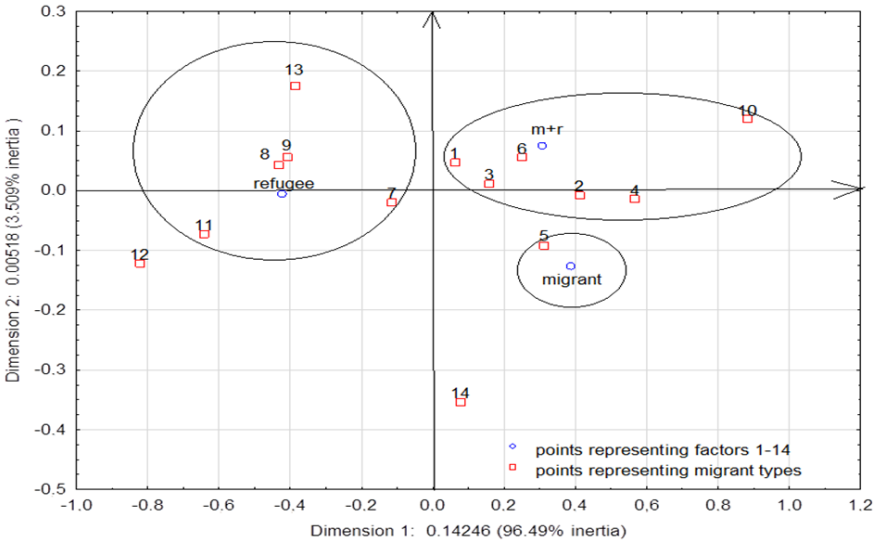
Figure 2. Factors contributing to the employment of migrants – the entrepreneur's perspective



Migrant types: migrant; refugee; migrant+ refugee (m+r)

Source: Own preparation .

Figure 3. Correspondence analysis



Migrant types: migrant ; refugee; migrant+ refugee (m+r)

Factors:1 – administrative and legal facilities; 2 – development of cross-border networks/ offices supporting business cooperation; 3 – greater financial support/ possibilities of using aid national funds; 4 – substantive assistance in employing a migrant; 5 – better promotion of information and service websites about migrants; 6 – better cooperation of entrepreneurs with organisation and institutions; 7 – increased access to EU funds for employing a migrant; 8 – organisation of language courses/free training; 9 – improving job placement for migrants; 10 – assistance/facilitations in nostrification of diplomas; 11 – general assistance in official matters; 12 – general assistance in official matters; 13 – creation of a central database of migrants seeking work; 14 – co-financed system of training/ courses for migrant employees

Source: compiled on the basis of own research using the statistical package Statistica 13.3 PL.

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ESG and AI competences in Polish enterprises during the twin transition

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Abstract

Motivation: The dynamically changing needs of the labour market lead to the emergence of new approaches to career development and management. This is due to rapid technological changes and adaptation requirements imposed by the European Union (in particular the Corporate Sustainability Reporting Directive (CSRD) of 16 December 2022). The niche nature of ESG (E – Environment, S – Social Responsibility and G – Corporate Governance) specialisations has created a demand for specialists who are currently lacking in the market. In addition, technological changes and developments in artificial intelligence have accelerated. It is therefore worth determining which skills are currently most in demand.

Aim: This article aims to examine what employee competences in modern technologies and in the area of ESG (E – Environment, S – Social Responsibility and G – Corporate Governance) are needed and critical for companies.

Results: The analysis was conducted on data from a pilot survey based on the author's own questionnaire. The sample was selected using the quota sampling method, taking into account the dominant type of activity according to the Polish Classification of Activities (PKD). The survey was developed based on guidelines from the EU, including the European Sustainability Competence Framework (GreenComp), the European Digital Competence Framework (DigComp), as well as the Global Skills and Competency Framework for a Digital

World. This facilitated the identification of key competences needed in today's turbulent environment. These competences become the basis for choosing a path for upgrading or changing the competences of employees. This is necessary in order to adapt to change and remain competitive on the market. Further research should focus on young adults entering the labour market in order to improve their digital and green skills.

Keywords: competences, ESG, digital transformation, green transformation

JEL: J24, L29, Q56

1. Introduction

In today's turbulent environment, employees who can take on a job and perform tasks in accordance with the requirements of their employer on the one hand, but also in line with their qualifications and competences on the other, play an important role. The educational process is inherently long, and it is not uncommon for employers' competence requirements to change between the start and end of the process. This is where the problem lies – how to attract and retain competent employees. Entrepreneurs emphasise the importance of well-trained staff and aim to hire employees with meta-competences, which ensure the use of key competences for the company and allow for the development of new ones.

The growing interest in the topic of competences is from the increasing instability of the environment for example COVID-19, the war in Ukraine, the progress and dynamic digital and ecological transitions (Zwolińska, 2024).

Bearing in mind the instability of competences, on 5 March 2025 the European Commission officially launched and adopted a package Union of Skills to support the development of skills for high-quality jobs, upskilling and reskilling (European Commission, 2025). Its actions are based on four pillars:

- investing in education and skills development,
- supporting retraining and upskilling processes,
- encouraging educational and professional mobility,
- making the EU more attractive to talent from outside the EU.

Many organisations point to the need to develop skills, such as the Digital Poland Foundation (2019), which conducted research showing *that graduates, however, lack technical experience and soft skills and it will take some time for them to mature as AI experts. In this context, the lack of human capital may be a major constraint in the growth of the Polish AI sector in the long run.*

AI business usage is also accelerating: 78% of organizations reported using AI in 2024, up from 55% the year before. Meanwhile, a growing body of

research confirms that AI boosts productivity and, in most cases, helps narrow skill gaps across the workforce (Artificial Intelligence…, 2025).

According to the OECD report (2018), *societies are changing rapidly and profoundly. A first challenge is environmental: e.g. climate change and the depletion of natural resources require urgent action and adaptation.* A second challenge is economic: e.g. unprecedented innovation in science and technology, especially in bio-technology and artificial intelligence, is raising fundamental questions about what it is to be human.

As stated by the European Commission, there is a synergy effect between digital and green transition, i.e. the 'twin transition', which refers to the simultaneous transition towards more environmentally friendly and digital solutions (Rehman et al., 2023). It should be taken into account that digital technologies can play an important role in reducing pollution and achieving climate neutrality, and that the green transition can lead to greener technologies. This transition will give rise to new products, services, markets and business models. New types of jobs will emerge, requiring skills that we do not yet possess. Therefore, it can be concluded that the competences implied by the megatrends of today's labour market are the development of artificial intelligence and the ESG revolution (which forms the basis for analysing and reporting on sustainable development).

Based on a literature review, it was decided to examine which employee competences in the field of modern technologies and ESG (E – Environment, S – Social responsibility and G – Corporate governance) are necessary and crucial for companies.

Key competences should be understood as those that are important and valuable from the perspective of the company, as they are what allow it to gain a competitive advantage. Due to the limited scope of this article, attention was focused on two types of competences, i.e. those related to modern technologies (understood as advanced tools and solutions, including artificial intelligence, machine learning, Blockchain) and those related to sustainable development, and more specifically ESG. The following research questions were posed:

– Will entrepreneurs train their employees in modern technologies and ESG in the next three years?
– What competences in modern technologies and ESG are most desirable in the surveyed companies?

In addition to a systematic literature review, this article also uses the results of primary research conducted among managers and specialists in companies, taking into account the dominant type of activity according to the Polish Classification of Activities.

The second section of this article provides a literature review on the nature of competences and their division. The third section presents a brief description of the research conducted and specifies where the information on the competences included in the survey questionnaire was obtained. This

is followed by a discussion of the research results (in section four), and references to other authors' studies are included in section five. The article concludes with a summary (section six).

2. Literature review

There is no consensus in the literature on the definition of competence itself, e.g.: Filipowicz (2004), Kwiatkowska-Ciotucha et al. (2021), Hecklau et al. (2016, p. 2) defined competence as *a set of skills, abilities, knowledge, attitudes and motivation that a person needs to effectively cope with tasks and challenges related to work.*

Another definition (Katinienė et al., 2021) indicates that *a competence is a set of demonstrable personal abilities, skills and professional knowledge required to select the necessary operational methods and perform activities/functions/work of a specific type.*

Ali & Qureshi (2021) show that the use of competency frameworks is often hindered because of conceptual ambiguity of methodological rigor in the development of such systems, and psychometric issues.

Such a discrepancy in the definition of the concept of competence may result from, for example, attempts to clarify the concept by scientists specialising in different fields of science. However, a common tripartite division of the concept of competence into knowledge, skills and attitudes (social competences) that enable the effective performance of a task is widely accepted (Mulder, 2014; Wesselink et al., 2010).

In the literature on the subject, attempts have been made to divide competences, with Kannan and Grant (2021) distinguishing between technical skills, methodological skills, social skills and personal skills.

In their publication, Januszko-Szakiel and Korycińska (2022), as part of a typology distinguishing between professional and personal competences, as well as conceptual and operational competences, identified the following:

- cognitive competences – knowledge, i.e. conceptual and professional competences;
- functional competences – skills, i.e. operational and professional competences;
- meta-competences – readiness to learn, i.e. conceptual and personal competences;
- social competences – attitudes, i.e. operational and personal competences.

The divisions of competences result from differences in how the term is understood, the desire to classify competences into general ones that are needed to take up a job, those resulting from the profession, i.e. industry-specific ones, and behavioural competences.

In addition to the concept and division of competences, the authors distinguish between key competences, which represent collective knowledge and learning instruments within an organisation, manifested in the ability to provide additional benefits to customers (Żukowska, 2017).

A noteworthy source of information on key competences is the Future of Jobs Report 2025. This report identifies key competences in 2025 and skills on the rise by 2030 (Table 1).

Managers facing global change are faced with the need to develop and retain employee talent in order to tackle global climate change and organisational sustainability (Brougham & Haar, 2018; Li et al., 2020; Nirino et al., 2020). Therefore, based on a review of the literature, Plum et al. (2017) characterise seven key competences for sustainable development:

1. Systemic thinking competences
2. Utilising diversity and interdisciplinary competences: the ability to shape relationships, detect problems and recognise the validity of other points of view in business decision-making processes, whether in environmental, social and/or economic issues.
3. Foresighted thinking competence – the ability to collectively analyse, assess and create 'images' of the future in which the local and/or short-term decisions have an impact on environmental, social and economic issues
4. Normative competence: the ability to map, apply and reconcile sustainable development values, principles and objectives with internal and external stakeholders, without adopting any norms, but based on the good nature of those involved in sustainable development issues.
5. The ability to actively engage in responsible actions to improve the sustainability of socio-ecological systems
6. Interpersonal competences: the ability to motivate, enable and facilitate cooperation and participatory sustainable development and research
7. Strategic competences: the ability to jointly design projects, implement interventions, transformations and strategies for sustainable development practices.

On the one hand, researchers present a whole range of key competences derived from the literature on the subject, but on the other hand, they conduct empirical research on the importance of competences in the field of sustainable entrepreneurship. Their considerations combine competences 5 and 7 into one competence.

Therefore, the importance of ESG is constantly growing, which is why entrepreneurs recognise the value of investing in human resources with the right competences to effectively implement business processes. These activities allow companies (those that have already developed diversity and inclusion policies) not only to attract talent but also to retain it, thereby contributing

to greater flexibility and creativity in the implementation of processes. This translates into real business success.

It is worth noting that 40% of Polish companies want to invest in developing their employees' ESG skills (Zielona Gospodarka, 2024). Research on ESG-related competences can already be found in the literature, e.g. 'Report on sectoral competences supporting sustainable finance and ESG investments' (Sienkiewicz, Mikołajek-Gocejna et al., 2023).

Cabral and Dhar (2019) showed that environmental competences can be divided into green knowledge, i.e. knowledge of facts, concepts and relationships relating to the natural environment and the entire ecosystem. The authors consider this from the perspective of companies, as it acts as a stimulus to improve environmental scepticism and purchasing intentions, and from the perspective of employees, as it enables them to receive environmental education.

Among the 'deficient' competences identified by Sienkiewicz, Mikołajek-Gocejna et al. (2023) were issues related to new legal regulations, including international ones, on reporting on sustainable development issues.

Symela and Stępnikowski (2021), on the other hand, believe that competence management, especially digital competence management, is becoming one of the key instruments of human resource management in companies in a knowledge-based economy. The authors further note that as a society we face challenges such as personalised universal education, digital illiteracy and technological unemployment.

Bremer & Maertens (2021) compared ten studies on future competences from different countries, using the ESCO classification (European Skills/Competences, Qualifications and Occupations), which contributed to the use of this classification for our own research.

Based on the above, the following hypothesis was adopted: Artificial Intelligence competences are more important for employers than ESG competences.

3. Research methodology

This research was conducted in three stages. The first stage consisted of developing the concept, research assumptions and research tools. The second stage consisted of desktop research and research using an electronic questionnaire supported by telephone. The third stage consisted of empirical research, which was conducted in the fourth quarter of 2024. The method used was Computer-Assisted Web Interview (CAWI). The research tool consisted of 18 substantive questions and 11 questions concerning the characteristics of respondents (enterprises). The survey response rate was 100%, and all forms were completed correctly. The respondents were predominantly

business owners, senior and middle management, accounting for 83% of the total. The remaining respondents held specialist positions in the companies surveyed.

The surveyed group of companies included 100 entities – 50 small and medium-sized enterprises (subgroup 1) and 50 large enterprises (subgroup 2). The most important information about the surveyed companies presented in Table 2. For financial and organisational reasons, the selection for the sample within each subgroup was based on quotas, taking into account the dominant type of activity according to the Polish Classification of Activities. This means that the sample (within each subgroup) reflects the structure of the general population of small, medium-sized and large enterprises operating in Poland, taking into account this particular characteristic. For the purposes of this article, three survey questions were selected and presented in relation to the topic under discussion.

Considering that the aim of this article is to identify which employee competences in the field of modern technologies and ESG are necessary and crucial for companies, three key questions were taken into account for the analysis.

The questions contained in the survey questionnaire concerning competences were developed based on the Future of Jobs Report 2025 World Economic Forum(2025), Artificial Intelligence Index Report (2025), Stanford University Human Centered Artificial Intelligence as well as European and global competence frameworks, i.e.

1. The ESCO classification, which is part of the Europe 2020 strategy and aims to increase mobility across Europe. This classification defines, groups and presents the systemic links between skills, competences, qualifications and occupations relevant to the EU labour market as well as education and training. Competences are divided into four sections, i.e. K – knowledge, L – language skills and language proficiency, S – skills, T – general skills and competences. Section S includes the following skills: S5 – working with computers, T1.3 – working with digital devices and applications, and T6.2 – applying skills and competences related to the environment (ESCO, 2025).
2. DigComp (2022) – The Digital Competence Framework for Citizens (The DigComp 3.0 guidelines) it incorporates recent and emerging digital technological trends and their implications for digital competence, while maintaining the overall framework stability and technology neutrality (European Commission, 2026). Digital competences are defined by five areas of competence: information and data, communication and collaboration, digital content creation, security, and problem solving (Vuorikari et al., 2022).
3. GreenComp (2022) – contains four interrelated areas of competence in the field of sustainable development, namely: 'realising the value of sustain-

able development', 'accepting the complexity of sustainable development', 'visualising a sustainable future' and 'acting for sustainable development' (European Commission, Joint Research Centre, 2022).

4. The Global Skills and Competency Framework for a Digital World (SFIA-9) – in contrast to DigComp, which describes general digital skills, SFIA defines the skills and competences required by professionals who design, develop, implement, and manage data and technology(Burtscher et al., 2024, p. 20–21). As a rule, SFIA (currently in version 9) describes professional skills and competences at seven levels of responsibility, i.e. general attributes, autonomy, influence, dependency, business skills/behavioural factors and knowledge. These levels have been developed to represent increasing knowledge and responsibility in the workplace.

The above competence frameworks provide a kind of roadmap for actions to support the population in the era of dual transformation.

4. Results

As part of the survey, respondents representatives of the surveyed companies, were asked to identify five competences related to technological development and sustainable development (known as the twin transition) that are currently most desirable or crucial in their company (Chart 1). The responses were expressed on a Likert scale (from 1 – not useful to 5 – useful).

The distribution of responses is as follows (number of responses/100 possible responses): Communication and collaboration using digital technologies (59), ability to use digital information and data (50), security: for the protection of devices, content, personal data and privacy in digital environments (43), creation and editing of digital content (41), identification of needs and problems in digital environments (29), solving conceptual problems and problem situations in digital environments (28), concern for the short – and long-term impact of business activities on the environment (27), awareness of the impact of digital technologies and their use on the environment (25), ability to take local conditions into account when solving problems and exploiting opportunities related to sustainable development (20), critical thinking (18), ability to anticipate alternative scenarios for the future of sustainable development (16), knowledge of the principles of responsibility for environmental damage (e.g. the 'polluter pays' principle) (15), ability to create transparent, socially inclusive processes (14), ability to respond quickly, even in the face of uncertainty and unforeseen events (11), ability to synthesise information and data on sustainable development from different disciplines (9).

It can be observed that digital competences are the most important from the perspective of the surveyed companies, followed by those related to sustainable development.

The second question concerned the growing importance of ESG competences, i.e. company activities carried out with care for the environment, society and corporate governance. The responses were expressed on a Likert scale (from 1 – not useful to 5 – useful). From among 11 competences, the respondents identified the following (in over 50% of responses): knowledge of ESG regulations, norms and standards, ability to implement ESG regulations, norms and standards, ability to introduce changes in the field of ESG, knowledge of market trends related to ESG, and building relationships with suppliers in the field of ESG. It should be noted that on 17 June 2025, the Council of Ministers adopted a deregulatory solution concerning ESG (Environmental, Social and Governance) reporting for companies. This obligation for small and medium-sized companies listed on the stock exchange has been postponed from 2027 (for the 2026 financial year) to 2029 (for 2028). Therefore, small and medium-sized companies are not obliged to have employees with these skills.

The above results should be treated as examples of competences that play an important role in building and maintaining human capital in a company.

Taking into account the ongoing digital and green transition, respondents were also asked which training courses are being implemented or planned in the companies surveyed. The responses were expressed on a Likert scale (from 1 – We will not be providing training to 5 – currently being implemented). This question was intended to examine the commitment of companies to the development of employee competences, and the results are as follows (Table 3):

- Sustainable development (ESG) manager training – 46% and ESG carbon footprint calculation training – 45% within the next year.
- Training in carbon footprint reporting and monitoring is being implemented or planned within a year in 31% of companies. Surprisingly, exactly the same number of companies indicated that they do not plan to provide any training in this area.
- 47% are conducting or planning training within a year in the field of artificial intelligence (AI) in practice, data analysis and AI-based conclusion drawing, or AI training for the supply chain.
- Interestingly, the same number (47%) of managers indicated the need for training to prepare for tasks at work after technological changes within the next year.

On the other hand, companies will not train their employees in (equally and above 30% responses): selected AI tools and platforms (e.g. TensorFlow, PyTorch, Azure AI) – 35%, business process automation with AI and RPA (Robotic Process Automation) – 37%; energy-efficient buildings (implementing changes to reduce CO2) – 35%.

According to the survey, respondents indicated digital competences as key for the company, followed by competences related to sustainable devel-

opment. This corresponds to the conclusions of the study by Sienkiewicz, Mikołajek-Gocejna et al. (2023) on self-assessment of competences, which were identified by the respondents as the least developed, i.e. requirements for reporting, conducting ESG risk assessment processes, and obtaining reliable up-to-date information on legal changes in the field of sustainable development. On the other hand, the respondents rated their knowledge of changes in sustainability reporting under the Corporate Sustainability Reporting Directive, sustainability assessment criteria in accordance with the EU Taxonomy, non-financial reporting requirements, and reliable current information on legal changes in the field of ESG sustainability as the lowest among the general competences.

Employees' knowledge and skills should be verified on an ongoing basis and any shortcomings should be addressed through appropriate training. Such training will enable employees to improve their skills on an ongoing basis, as noted by Cabral and Dhar (2019) *Specifically, the findings advocate that managers must nurture an ecosystem of creating green competences in the organisation by providing adequate green training on a regular basis.*

5. Conclusion

The considerations and analyses of studies on the ESG competences and AI competences (the twin transition competences) allowed to achieve the adopted goal.

As noted by the Digital Poland Foundation, 59% of Poles believe that we do not learn enough throughout our lives and are not prepared to retrain. In addition, 67% say that employers do not invest enough in the development and qualifications of their employees.

Nowadays, there is an increasing focus on sustainable development. Although this is not a new concept, it is becoming more prominent due to climate change and growing customer awareness. The topic discussed analyses the presence of 'future skills' with a focus on the increasingly widespread use of artificial intelligence and ESG regulations, which have an impact on the skills required.

- There is no consensus on the use of the term 'competence', as also pointed out by Bratianu, Hadad and Bejinaru in their 2020 study.
- The pace of change in the labour market is very rapid, particularly in areas such as IT and digital technologies, where demand is growing faster than the capacity to provide training.
- Artificial Intelligence competences are more important for employers than ESG competences (which confirmed the hypothesis).
- As noted in the World Economic Forum (2025, p. 73) 65% of employers anticipate challenges in recruiting employees by 2030, so there is

no doubt that the twin transition is leading to changes in employee competency requirements.

The Author is aware of the limitations of her work, which include the adopted methodology and number of companies that took part in the research.

It is necessary to repeat the research presented in this article in order to carry out a comparative analysis and expand the base of analysed studies, either by including additional scientific publication databases or by changing the research criteria. Another area for further research is the study of young adults' competences in the area of twin transition. The author shares the conclusions drawn by Rehman et al. (2023), that there is a lack of research focusing on aspects of the twin transition, as well as a lack of geographical diversity and a narrowing of methodological approaches in the study of the twin transition phenomenon as defined by the EU.

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Appendix

Table 1. Core skills in 2025 and skills on the rise by 2030

Core skills of 2025	Skills of increasing use by 2030
Analytical thinking	AI and big data
Resilience, flexibility and agility	Creative thinking
Curiosity and lifelong learning	Networks and cybersecurity
Leadership and social influence	Resilience, flexibility and agility
Technological literacy	Technological literacy

Source: World Economic Forum, Future of Jobs Survey 2025.

Table 2. Characteristics of the surveyed companies (Subgroup 1 – small and medium, Subgroup 2 – large)

Type of company:	Subgroup 1	Subgroup 2
production	30%	50%
trade	24%	14%
services	46%	36%
Geographical coverage	Subgroup 1	Subgroup 2
domestic	82%	46%
international	18%	42%
global	0%	12%
The predominant type of business activity:	Subgroup 1	Subgroup 2
Industrial processing	30%	50%
construction	12%	2%
trade	24%	14%

Type of company:	Subgroup 1	Subgroup 2
transport and storage	8%	8%
other services	26%	26%
Annual net turnover [EUR]		
<0–2 m>	11%	
(2–10 m>	31%	
(10–50 m>	40%	
(50 m and more)	18%	

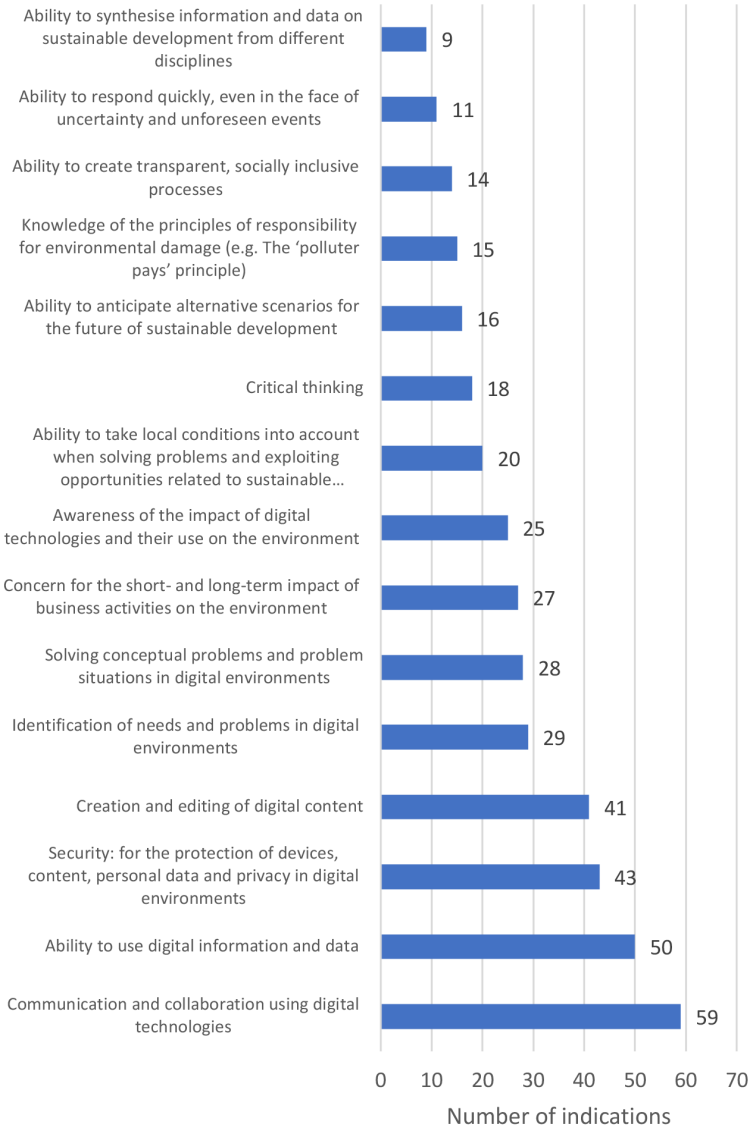
Source: Own preparation

Table 3. Distribution of responses regarding training courses and the time/period of their implementation (in percentages)

Type of training	Currently being implemented	Within six months	Within a year	Within the next three years	We will not be providing training
Training in carbon footprint reporting and monitoring	4	4	23	38	31
Training in ESG carbon footprint calculation	6	7	33	25	29
Training for sustainability managers (ESG)	6	7	32	26	29
Training in sustainable supply chain management	6	13	25	25	31
Artificial intelligence training – AI in practice	10	14	23	28	25
Data analysis and AI-based inference training	3	12	32	27	26
AI training for the supply chain	3	18	26	26	27
Machine learning training for businesses	2	11	24	32	31
Training in selected AI tools and platforms (e.g. TensorFlow, PyTorch, Azure AI)	1	6	23	35	35
Training in business process automation with AI and RPA (Robotic Process Automation)	2	3	24	34	37
Low-carbon economy planning (assumptions, plan creation, monitoring, financing sources)	4	8	26	40	22
Preparation for performing tasks at work after a technology change	3	6	38	30	23
Training in renewable energy sources	3	11	29	26	31
Training in energy-efficient road transport and logistics	3	10	30	28	29
Training in energy-efficient buildings (implementing changes to reduce CO2)	0	5	29	31	35
Training in servicing – for new technologies	1	6	29	31	33
Training in eco-driving	3	3	31	34	29
Training in 'resource efficiency'	3	4	32	29	32

Source: Own preparation.

Chart 1. Competences currently most desirable or crucial in the surveyed companies



Source: Own preparation.

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Evolution of internal regulations of public cultural institutions in relation to the organizer's strategic documents

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Abstract

Motivation: previous research on the external and internal conditions of the functioning of public cultural institutions inspired the analysis of conditions resulting from the organizers' strategic documents.

Aim: Aim of this study is to answer the following questions: whether, do the organizer's strategic regulations influence the internal organization of public theaters in Poland? Can these regulations influence the creation of formal conditions for co-management?

Results: The lack of clear procedural and subjective requirements influences the dependence of public cultural institutions' performance on individual, internal organizational solutions, suggesting the need for statutory unification of these processes and the issuance of implementing regulations. The current legal framework results in significant regulatory divergence across the country. Organizers, acting independently but in an uncoordinated manner, are crearors the management of public cultural institutions. The lack of uniform strategic documents causes discrepancies in management models.

Keywords: public cultural institutions; cultural governance; New Institutional Theory

JEL: G28; H77; K48

1. Introduction

In Poland, cultural policy is shaped and implemented by three levels of public authority: the state, the regions (self-governing voivodeships) and municipalities (urban communes) (Szulborska-Łukasiewicz, 2012). These entities are referred to as organisers. The principal legal framework is provided by the 1991 Act on Organising and Running Artistic Activity (Ustawa, 1991), which defines this process only in broad terms. Each of these public authorities – state, region or municipality – may establish a cultural institution as organiser. For municipalities, however, this constitutes a statutory obligation. The majority of cultural institutions in Poland are administered by regional and municipal self-governments, while only a small number are directly overseen by the state.

Organisers are responsible for founding, equipping and financing institutions, while also granting them the ability to generate their own income. Cultural institutions enjoy formal legal and operational autonomy and are directed by appointed managers. An agreement is concluded between the director – who bears overall responsibility for the institution – and the organiser, specifying the mutual obligations of both parties.

This study explores the evolution of these arrangements through the lenses of agency theory, stewardship theory, New Public Management (NPM), institutionalism in organisational analysis, and collaborative governance. The central hypothesis is that Polish public theatres embody a model aligned with new institutionalism, in which change is gradual and evolutionary, while local authorities assume the role of political actors in the cultural sphere. This produces organisational divergences not only between regions but sometimes within them, depending on the identity of the organiser. Such a pattern resonates with the Reform Driver Model articulated by Pollitt and Bouckaert (2017).

The empirical focus is on public theatres in Poland, most of which are overseen by municipal or regional self-governments. The theatre represents a prime example of a Performing Arts Organisation (PAO): an artistic and creative cultural institution. It is marked by a distinctive organisational dynamic and managerial profile, shaped by its performative character and the prominent role of creative individuals such as actors and directors. In contrast to museums or libraries, theatres operate through cycles of producing ephemeral events whose quality and reception depend heavily on the interaction between the artistic ensemble and the audience. Consequently,

the theatre emerges as a complex organisation in which management must integrate institutional, artistic and emotional logics. Public theatres in Poland are administered in ways broadly comparable to their counterparts elsewhere in Europe, with particularly strong similarities to the organisational models prevailing within the European Union.

2. Literature review

The governance of cultural institutions is strongly shaped by their founding bodies and by overarching strategic frameworks at municipal, regional, or national levels. In Poland, public theatres provide a particularly illustrative field of study for analyzing the interplay between strategic cultural policies and organizational practices. Drawing on theories of New Public Management (NPM) and cultural governance (Gray, 2000; Vestheim, 2009; Hadley & Gray, 2017), this analysis examines how different organizers – cities versus regional self-governments (voivodeships) – influence theatres' transparency, participatory practices, and internal regulations.

It is also worth noting the debates on agency theory and stewardship theory in public organisations. Most scholars view these theories as complementary rather than mutually exclusive (Davis et al., 1997; Dicke et al., 2002; Van Slyke, 2007; Lambright, 2008; Grundei, 2008; Bjurstrøm, 2020; Schillemans & Bjurstrøm, 2020).

Central to analysis is the work of March and Olsen (1989), which highlights the importance of institutional norms and rules in shaping the evolution of public administration. Their study emphasises that change occurs when formal frameworks are altered, either through legislative reform or reinterpretation. It also stresses the dependence of organisations on their institutional environment, as formal rules are invariably 'filtered' through operational processes.

The issue of institutional change has been widely explored. Mahoney and Thelen (2010), for instance, examine the dynamics of slow, evolutionary transformation, showing how institutional rules tend to change incrementally rather than through sudden rupture. They underline the role of formal regulations and their interpretation, especially under conditions of ambiguity. Crucially, their work draws attention to the role of political actors, a perspective particularly relevant to this research. They argue that organisational change often stems from adaptive responses to external pressures. A similar perspective is offered by Christensen and colleagues (Christensen et al., 2007), who provide a broad survey of organisational theories applied to public administration, including evolutionary and institutional approaches. They demonstrate that change in the public sector is not only a matter of rational choice, but also of adaptation to myths and cultural norms, with reforms driven by formal control mechanisms such as audit, budgeting, or

regulatory shifts. Public organisations must therefore adjust continuously to changing formal requirements of state, law and policy, with legal reform being the most common trigger for change.

Pollitt and Bouckaert (2017) likewise analyse how public sector reforms have evolved across countries, emphasising the slow and adaptive character of change, contingent upon institutional context. They show how top-down governmental policies and reforms affect organisational transformation in the public sector – not strictly through institutional theory, but by stressing the role of formal, systemic impulses for change. They argue that reforms are neither uniform nor universally applicable; rather, they are hybrid and context-specific, with their success depending more on process and implementation than on reform design itself. Their work contends that public authorities should act reflectively and adaptively rather than dogmatically, as there is no single 'best' model of public management (such as NPM). Pollitt and Bouckaert offer an analytical framework which demonstrates that reform depends on the interplay of reform ideas, institutional capacity and the external politico-economic environment. They also characterise the NPM era as the 'Age of Austerity', followed by cutback management and the gradual move towards more hybrid, integrated governance models.

In a similar vein, Bingham and colleagues (2005) advocate an evolutionary approach to public management based on participation, experimentation and iterative improvement, while Ansell and Gash (2008) present collaborative governance as a mode of adaptation and collective learning – an evolutionary model of institutions built on dialogue and consensus.

3. Methods

This article employs a multiple case study approach, which is particularly valuable for examining complex and dynamic processes that cannot easily be separated from their context. Case study research is ideally suited to the analysis of institutional interactions, implementation challenges, and public management reforms.

Theatres were selected as examples of organisations – public cultural institutions established by two types of self-government: municipal authorities (cities with county rights – i.e. large cities) and regional authorities (self-governing voivodeships). The selected theatres operate at the local and regional level in Polish creative cities: Warsaw, Gdańsk, Gdynia, Łódź, Katowice, Chorzów, Poznań, Toruń, Wrocław, Lublin and Kraków. The only exception is Chorzów, which does not belong to the group of "creative cities"; its theatre is managed by the Silesian regional government and is included here as a point of comparison with the theatre administered by the city of Katowice in the same region.

Creative cities were identified according to three main criteria:

1. Cities that have held or will hold the title of European Capital of Culture up to 2028, or have been shortlisted for the title up to that year;
2. UNESCO Creative Cities;
3. Cities that organise at least two regular international cultural festivals.

The research process consisted of two stages.

The first stage was the examination of strategic documents: national cultural policy, development strategies, and cultural strategies at the level of cities and regions. I analysed all strategic documents produced by the organisers – nine regional governments and ten municipalities. The key features assessed were: the role of culture within strategic documents; the role of teams and/or directors; openness and transparency; the model of governance; and participatory or democratic mechanisms referenced in the documents.

The second stage focused on the documentation of cultural organisations – including statutes, internal policies, and artistic and organisational programmes. This stage involved the analysis of the websites of 26 theatres, with particular attention to the Public Information Bulletin. The same elements were assessed as in the strategic documents: the role of teams and/or directors; openness and transparency; the availability of internal documents such as remuneration regulations, codes of ethics, catalogues of good practice or similar instruments; and the presence of a defined governance model and/or participatory or democratic mechanisms. The theatres included in the study are presented in Table 1.

4. Results

At the national level, the *National Strategy for Cultural Development* highlights the "high degree of dependence of cultural institutions and their directors on the organisers." It is the organiser who determines the budget and, through the grant mechanism, can indirectly shape the institution's activities. In practice, this may involve, for instance, making additional subsidies conditional on the achievement of specific objectives, requiring detailed reporting, or initiating amendments to statutes. At the same time, cultural policy documents promote a socio-missionary model: they stipulate that the organiser appoints a director on the basis of a programme designed to realise the mission defined in the institution's statute, ensuring that its offer primarily reflects the preferences of citizens. According to the Act on Organising and Conducting Cultural Activity, organisers may not interfere arbitrarily in every programme detail of an institution. Statutorily, they do not have direct authority over expenditure or the substantive content of programming, though their influence remains substantial through financing and contractual supervision.

At the regional level, culture is explicitly recognised as a strategic element in four of nine of the voivodeship strategies examined: those of Mazovia, Greater Poland, Lesser Poland and Lublin. In addition, two further voivodeships – Silesia and Kuyavian-Pomerania – have separate strategic documents dedicated to cultural development.

The *Mazovia Regional Development Strategy 2030+* (2022, pp. 33–35) identifies cultural potential, citing 28 theatres and designating Warsaw as the primary hub of cultural attractiveness. Culture and heritage are included among the five strategic objectives of the Mazovia region, framed as leveraging cultural and tourism potential for regional development and improved quality of life. However, within the measures proposed, no activities relating to the management of cultural institutions are specified; the language is limited to general slogans such as "developing infrastructure," "supporting development," and "promoting potential."

The *Greater Poland 2030 Strategy* (2022) defines its vision and mission as strengthening the region's national and European position in social and economic terms, while safeguarding the natural environment and cultural heritage. Within its operational objectives, Objective 2 addresses social development, identifying as key directions of intervention the strengthening of cultural potential and cultural infrastructure, with explicit recognition of culture as a factor of social capital. "A number of initiatives are foreseen related to the development of, inter alia, museums and theatres in Greater Poland" (p. 69). Objective 4 refers directly to governance, framed as: "increasing the effectiveness of Greater Poland institutions and the efficiency of regional management." Within this objective, one of the detailed goals is to enhance managerial capacity, with interventions aimed at improving the competencies of public sector staff and developing co-governance through participatory methods. These activities, however, are not further elaborated in relation to cultural institutions.

Some voivodeships do not have separate cultural strategies, but instead include cultural programmes within their regional development strategies. For example, the *Cultural Development Programme for the Łódź Region 2014–2020* makes reference to both "good governance" and "modern governance," without explaining what these terms entail. The *Łódź Regional Development Strategy 2030* (2021) notes, in its diagnosis of the region's situation, an insufficient level of engagement with cultural offerings and leisure activities. All of the elements analysed in the voivodeships under study are presented in Table 2.

The analysis of internal documents of the regional theatres under study revealed, in general, a lack of participatory mechanisms, a limited number of published documents, and a widespread absence of adopted and publicly available codes of ethics, catalogues of good practice, or remuneration regulations. In some cases, statutory publication requirements are not fulfilled.

For instance, in the case of the Musical Theatre in Toruń, managed by the Kuyavian-Pomeranian region, only the most essential information is published and even the statute is not accessible. By contrast, the Polish Theatre in Wrocław has published all necessary documents, including a code of ethics. However, financial and substantive reports are missing – a very common practice across Polish cultural institutions.

Occasionally, as in the case of the New Theatre named after Izabella Cywińska in Poznań, more extensive documentation is available online, including the statute, the artistic and organisational programme, and even links to interviews with the director from 2013. This theatre has numerous internal regulations, explicitly declares openness and artistic freedom, and highlights the importance of the ensemble and democratic processes of co-governance. In 2021, the director introduced an internal regulation establishing an ethics charter, which forms an integral part of every contract concluded by the theatre. The aim of this charter is to safeguard artistic and creative freedom while ensuring responsible, ethical and lawful working conditions.

The artistic and organisational programme for 2024–2028 is based on the vision of a "co-responsible, interactive, supportive and empathetic theatre." It clearly emphasises the role of human capital – the entire ensemble. Specific tools are mentioned, including managerial control as a means of diagnosing and shaping proper interpersonal relations, collaboration with a psychologist, the ethics charter, an ethics committee, and designated "persons of trust." However, of these commitments only the ethics charter has been implemented – and that already in 2021. According to this document, reports of misconduct were to be submitted to the Director, the Deputy Director or the Ethics Officer, although the latter does not appear to have been appointed, as there is no reference to such a role on the theatre's website. No child protection policy is in place, and no financial or substantive reports are published.

This theatre is the most advanced among those administered by regional governments in terms of internal regulations, expanded co-governance, transparency, and openness. The presence of the examined elements across all regional theatres is presented in Table 3.

The analysis of the strategic documents of the cities revealed a more favourable picture for cultural policy than that emerging from the regional documents. All the cities examined have developed comprehensive strategic development documents as well as documents specifically addressing cultural policy. Although national legislation in Poland has defined substantive and procedural requirements for municipal development strategies since November 2020, no changes have been made regarding the planning of governance for subordinate entities. In general, municipal strategic documents do not directly address management processes. In areas such as director contracts, contract registers, codes of ethics, or regular team consultation mechanisms, city strategic documents typically do not specify requirements.

Warsaw's strategic documents include the largest number of cultural policy elements supporting the autonomy and independence of cultural institutions. The Code of Good Practice for cultural institutions in Warsaw was introduced in 2021, and the city has maintained a Civic Cultural Council as an advisory body to the Mayor for two consecutive terms. Warsaw's strategic documents for culture define fundamental principles such as partnership and cooperation, neutrality, transparency, open communication, and responsible organisation and public patronage. It should be noted that the city's cultural policy aligns with that of the region, which also highlights culture as a strategic element and emphasises preference for democratic governance (Mazovia Regional Development Strategy 2030+. Innovative Mazovia, 2022).

The second city symbolically adopting a stewardship-oriented approach in its strategic documents is Poznań. The assumptions of the *Poznań City Development Strategy 2030* and the *Poznań Cultural Programme 2019–2023* included defining and specifying "a new role for the City Hall in the area of cultural policy." In this context, there was an expectation of "management based on ongoing dialogue with the environment," along with openness and a move away from "national templates." Autonomy is mentioned as an area of intervention, but in relation to creators rather than managerial staff. In terms of governance, most proposals are directed at the city itself – introducing systemic solutions defining rules of cooperation, predictability and transparency of decision-making processes, dialogue and public consultation, and the creation of a code of good practice. However, this document was valid only until the end of 2023, and not all proposals were implemented. Cultural strategic documents are now continued through city programmes under Poznań's strategy.

The issue of theatre management is particularly interesting in the strategic documents of Wrocław. Only the city of Wrocław highlights the exceptional role of directors of cultural institutions, emphasising their strong position more as a potential risk than as a value. This emphasis suggests a departure from the classical NPM model and, consequently, from the agent-principal framework. Theatres in Poland, as in Europe, have strong individualist traditions, which remain visible in Wrocław (Dworzański, Grochowski, et al., 2016). The Grotowski Theatre and the Tomaszewski Theatre – Wrocław Pantomime Theatre – continue to occupy an active place in the city's cultural landscape. This aligns with European theatre traditions, notably with institutions such as Shakespeare's theatre (Rhine, 2006).

Gdańsk, as one of the major cultural centres, manages or co-manages, among others, the Philharmonic and six theatres. Within Strategic Goal 2 – "shared city" – issues such as increasing cultural participation, supporting artistic creativity, and developing culture as a functional system are addressed. However, no outcome indicators are provided. Spatial development directions within this goal include the protection of cultural assets as expres-

sions of the city's identity. Cultural heritage is one of the most significant elements of Gdańsk's unique identity. The city implements cultural policy through the programmes of the President's Office for Culture in Gdańsk, which are more operational than strategic, relating to projects, programmes, and city-awarded prizes.

The *Gdynia City Development Strategy 2030* (2017) have sets, at the level of priorities, Priority 1 as the quality of life of the Gdynia community, including as a goal a "creative Gdynia community." "Gdynia as a recognised city of creation" is also articulated as a goal under Priority 4 concerning leisure. Actions within this goal include offering a modern cultural programme and establishing Gdynia as a centre for cultural and artistic events. While no governance model for cultural institutions is specified, there is an expressed intention to support grassroots cultural and artistic activities and to create and develop local centres as spaces for cultural and social life.

The *Toruń City Development Strategy* to 2020, with a perspective to 2028, envisions "a modern city within the European development space, of particular significance for world cultural heritage." Thus, the city's cultural position is secondary to its broader modern development. The *Toruń Cultural Development Strategy to 2030* corresponds with the city development strategy and emphasises Toruń's role as the European Capital of Culture (ECoC) 2029. The objectives of Toruń's cultural strategy do not address the management of cultural institutions.

In the vision and developmental concept of the *Łódź City Development Strategy 2030+* (2021), the slogan "activities, not objects" appears, emphasising that the city should not be managed according to a "we provide, you consume" model. However, culture does not feature in the strategic goals and is considered only as a means of achieving Goal 5 – the development of modern human capital – and Goal 3 – Łódź responsive to stakeholder expectations. The latter includes actions relating to the development of cultural institutions, including co-managed institutions. The 2024 document *Cultural Development Policy for Łódź 2030+* states that "culture (…) should be treated as a priority of city policy," serving the "positioning of the city." These documents lack operational solutions and assign a subsidiary role to the municipality in organising cultural events. No co-creation models, such as advisory or supporting civic bodies, are specified. Think tanks are mentioned as analytical and advisory partners. The presence of the analysed elements in the strategic documents of all the cities studied is summarised in Table 4.

Analysing a randomly selected sample of theatres in the cities under study reveals a lack of consistent reporting standards. The websites have differing layouts, and even the Public Information Bulletins (BIP) do not follow a uniform structure, which complicates research. However, an analysis of theatre websites in conjunction with city strategic documents demonstrates a clear correlation between city-level cultural policy and the policies implemented

within individual institutions. A particularly good example is Warsaw, whose documents include numerous elements such as assumptions regarding the strategic importance of culture and a catalogue of good practices. All theatres examined in Warsaw (three examples) display high transparency, have internal procedures, and emphasise the role of the ensemble. The director of one theatre describes themselves as the "representative of the ENSEMBLE, serving both staff and the audience" (Teatr Rozmaitości Programme). Theatre documents also reference the city's strategic documents (Teatr Syrena Programme), underscoring their importance.

The situation in Wrocław's theatres aligns with the strategic documents: directors hold a strong position in all institutions, but they strive to implement internal procedures that provide balance. Examples of such practices include the creation of joint leadership teams (director and artistic director), introduction of codes of ethics and remuneration policies, and a high degree of transparency.

A similar situation exists in Kraków, where the directors of the examined theatres are strong personalities. However, in their programmes, they emphasise teamwork, and discussions take place regarding management models and relationships with the ensemble. Conflicts, have arisen not only in Kraków but also in other cities, including between directors and their teams, which has led to greater transparency and the introduction of remuneration and anti-discrimination policies.

Municipal theatres in Pomerania are also gradually moving towards a more open and transparent organisational structure. Gdańsk's Miniatura Theatre has implemented an anti-bullying policy, while the Shakespeare Theatre explicitly emphasises the role of the ensemble and has a supporting advisory board. The Shakespeare Theatre, however, is not fully representative as it is co-managed by the city of Gdańsk, the Pomeranian voivodeship, and a private foundation – an arrangement requiring broader discussion, which is beyond the scope here. Similarly, the Musical Theatre in Gdynia is co-managed by the city and the voivodeship.

The theatres in Silesia – in Katowice and Chorzów – operate under relatively outdated management models, a situation that may be explained by recent changes in Katowice's strategic documents.

The Municipal Theatre named after William Horzyca in Toruń demonstrates high transparency and declares openness and freedom. Internal documents emphasise the role of the ensemble and co-governance. Paradoxically, Toruń's city strategic documents address culture sparingly in operational terms, yet the city's cultural traditions remain strong.

The theatres examined in Poznań exhibit relatively high transparency. Two of the three municipal theatres studied highlight the importance of the ensemble in their documents. It should be noted that Poznań's city policy aligns with regional policy: the regional government (voivodeship) empha-

sises culture as a strategic element and a preference for democratic governance in its 2020 document. The Municipal Musical Theatre in Poznań is the only theatre whose documents do not reflect a shift from an agency model to a stewardship model. This theatre's programme, dating from 2021, is the oldest examined and defines theatre objectives in "market-oriented" terms, which is rare among public cultural institutions. It's suggesting that both the organiser and the director pursued an entertainment-focused programme.

The detailed situation in the examined theatres is summarised in Table 5.

5. Conclusion

Observations of policies implemented by regions and cities indicate that the management of cultural institutions in Poland is far from uniform.

Regional government strategies often either neglect culture or address it sporadically, usually instrumentally, in the context of social capital (Pomeranian Voivodeship), tourism, or leisure activities (Łódź Voivodeship). More frequently, emphasis is placed on cultural heritage (Lower Silesian, Greater Poland Voivodeships). At the regional level, culture is perceived primarily as a form of heritage and a marker of regional prestige, while management models remain centralised, with limited team involvement and low transparency. Some regions have no cultural strategy at all, relying only on supplementary programmes. Initiatives to achieve strategic objectives often focus on increasing cultural participation and developing cultural services as a means of enhancing social capital, emphasising collaboration with local actors and the use of digital technologies. There are also calls to strengthen the competencies of cultural personnel.

Despite their general vagueness, regional strategies show some variation, which influences institutional behaviour. Rarely do these documents address management changes, and aside from minor exceptions, they do not implement procedures to support such processes. When exceptions occur, they tend to reflect New Public Management (NPM) and agency theory rather than new institutionalism or collaborative governance. Documents usually remain at a strategic level, focusing on coordination, partnerships, and sectoral support rather than operational mechanisms. Where regional institutions exist (e.g., the Małopolski Institute of Culture, Mazowiecki Institute of Culture), organisers play a stronger coordinating role, acting as supporting bodies for principals – an indication of persistence in the NPM model. For example, in the Silesian Voivodeship, Programme Boards appointed by the organiser operate in two theatres (Teatr Śląski in Katowice and Teatr Rozrywki in Chorzów). Even where recommendations on participation, transparency, or openness exist, outcome indicators are rarely defined. Overall, regional policy does not generate new solutions within individual cultural institutions. Positive examples, such as Teatr Nowy in Poznań, demonstrate

bottom-up managerial innovation driven more by directors than organisers. Other regional theatres reflect "traditional management," with directors holding centralised authority and teams subordinate to them, without provisions for openness or creative freedom.

Cities adopt a markedly different approach. All have strategic cultural documents and recognise culture as a key element, often a central pillar, of urban policy. Some cities approach the matter in a more operationally detailed way. In Warsaw, for example, documents comply with statutory requirements and include mechanisms such as awards for outstanding artistic achievement, indicative of agency theory. The new *Strategia Rozwoju Katowic 35+* references "new management," good practice, and staff training, signalling a shift in directors' roles from "economic agents" to "social actors."

As with regional strategies, city documents define goals, priorities, and actions, but rarely provide operational mechanisms for monitoring institutional implementation, progress, or outcomes. Municipal authorities tend to focus more on cultural activities than regional authorities, likely due to their direct impact on local communities. Evidence of this is seen in Warsaw, where city and regional policies significantly influence theatre programmes. In other cities, we have examples of changes too, in ex. documents at the William Horzyca Theatre in Toruń provide directors' awareness and sense of responsibility, aligning with the collaborative governance model. Both the William Horzyca Theatre and Teatr Nowy in Poznań illustrate the evolutionary, consensus-based nature of institutional development.

In response to the research questions, it can be concluded that the lack of precise statutory and executive regulations provides an indirect opportunity to create governance based on the principles of co-governance. This indirectly influences the internal organization of public theaters in Poland. The statutory regulations, based on the principles of independence and autonomy of local governments, lead, on the one hand, to a bottom-up and autonomous evolution of management models. From another perspective, we observe unevenness in these changes. We observe variation both territorially, e.g., Warsaw vs. other cities, and particularly between regions and cities.

Overall, the study indicates a slow, evolutionary shift toward co-governance, which is consistent with previous work (Mahoney i Thelen (2010). Formal, statutory mechanisms remain crucial for ensuring institutional accountability, similarly March & Olsen (1989). National policy is pivotal, as it currently delegates much of the responsibility for formal solutions to local governments; a new law could potentially introduce updated standards. Key managerial improvements in transparency, independence, and human resources could be effectively introduced at the local level by regions and cities, standardising practices across institutions. Paradoxically, this represents a simple and cost-effective approach, but requires careful planning and decision-making.

6. Discussion

The fundamental problem identified by agency theory—namely the absence of a clearly defined "owner" and the diffusion of responsibility—remains highly relevant. If the state is conceptualised as a nexus of contracts and a network of principal–agent relationships (Jensen & Meckling, 1976), the autonomy that arises from the lack of precise procedural regulation may translate into increased monitoring costs, bonding costs, and residual loss. Vague legislative provisions in the 1991 Act, combined with the absence of detailed regulations, standardised procedures, and explicit evaluation criteria, create the appearance of autonomy and independence for cultural institutions. In practice, however, this leads to significant variation in managerial approaches across organisations. In the public sector, where no ownership structure exists, substitutes for property rights must be sought—such as transparency, clearly defined and performance-related remuneration systems, and forms of institutional competition or benchmarking. Although the Act on Organising and Running Artistic Activity (1991) appears to grant directors substantial authority, it does not provide sufficiently developed managerial frameworks or procedural safeguards. The consequence is a lack of standardised mechanisms governing the operation and funding of cultural institutions. As a result, local and regional governments tend to shape cultural policy largely according to their own interpretations and administrative practices.

Similarly, Fama and Jensen (1983) emphasised the importance of internal control mechanisms and institutional architecture. Their conclusions remain pertinent: the design of governance structures and systemic solutions is more consequential than good intentions. Collegial decision-making bodies serve an important function, protecting organisations from particularistic interests and from the cognitive biases of individual decision-makers. The problem of control and potential abuse is particularly salient in public finance, where the salaries of officials and directors are typically not linked to organisational performance. The absence of financial incentives weakens direct efficiency pressures and increases reliance on institutional oversight.

This study is also justified in light of Eisenhardt's (1989) assessment that no single model of control is universally optimal. Control mechanisms must be adapted to organisational characteristics and task complexity, and agency theory provides a conceptual toolkit for such adaptation. The subsequent development of stewardship theory, as an extension and partial corrective to agency theory, demonstrated that when managers identify strongly with their organisation and are motivated by its success rather than by individual gain alone, performance outcomes may improve. This opens space for discussion

about designing systemic procedural frameworks that combine increased genuine managerial autonomy with formalised conditions for co-governance in public cultural institutions. Pollitt and Bouckaert (2017) likewise show that organisational reforms in the public sector are uneven and context-dependent. Selected municipal strategic documents—such as the Poznań 2030 Strategy and the Poznań Cultural Programme—advocate the introduction of systemic solutions establishing clear principles of cooperation, predictability, transparency in decision-making processes, structured dialogue, public consultation, and codes of good practice. Some of these measures have already been partially implemented.

It may therefore be timely to initiate a broader discussion at the national level on the introduction of concrete procedural frameworks that would standardise governance principles while preserving creative and organisational autonomy within public cultural institutions.

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Appendix

Table 1. Theaters examined by location

Voivodeship	City	Theater name
Lower Silesia	Wrocław	Capitol, Contemporary Theatre, Polish Theatre
Kuyavian-Pomeranian	Toruń	Musical Theatre, William Horzyca Theatre
Lublin	Lublin	Christian Andersen Theatre, Juliusz Osterwa Theatre
Łódź	Łódź	Pinocchio, Powszechny Theatre, Stefan Jaracz Theatre
Lesser Poland	Kraków	Bagatela Theatre, Ludowy Theatre, Juliusz Słowacki Theatre
Masovian	Warszawa	Studio Theatre, Syrena Theatre, Rozmaitości Theatre, Masovian Musical Theatre
Pomeranian	Gdańsk, Gdynia	Musical Theatre, Miniature Theatre, Shakespearean Theatre
Silesian	Katowice, Chorzów	Silesian Wyspiański Theatre, Entertainment Theatre
Greater Poland	Poznań	Polish Theatre, Musical Theatre, Eighth Day Theatre, Izabela Cywińska New Theatre

Source: Own preparation.

Table 2. Comparison of Strategic Documents in Selected Local Government Voivodeships

Voivodeship	Culture as a Strategic Element	The Role of Teams in Cultural Institutions	Openness/Transparency	Participatory/ Democratic Processes	Notes
Lower Silesia	-	-	-	-	There is an entity supporting the organizer (principal) – the Culture Council, which strengthens the organizer's position
Masovian	Separate "Cultural Development Strategy in the Masovian Voivodeship 2023–2027"	-	-	-	There is an entity supporting the organizer (principal) – the Masovian Institute of Culture, which strengthens his position
Lesser Poland	Culture included in the "Małopolska 2030" Strategy and by the Małopolska Institute of Culture (MIK)	-	-	-	There is an entity supporting the organizer (principal) – the Małopolska Institute of Culture, which will strengthen his position.
Greater Poland	The regional strategy ("Wielkopolska 2030") includes goals related to culture and heritage	-	-	Indication of co-governance and democratic management	

Voivodeship	Culture as a Strategic Element	The Role of Teams in Cultural Institutions	Openness/Transparency	Participatory/ Democratic Processes	Notes
Łódzkie	-	-	-	Mentions both good governance and modern governance	Cultural Development Program in the Łódź Voivodeship for 2014–2020
Pomeranian	-	-	-	-	Cultural issues appear sporadically, and when they do, they are associated with social capital and cohesion
Kuyavian-Pomeranian	The regional strategy "Strategy 2030+ / Acceleration Strategy 2030" includes culture in development goals (details in the attachments	-	-	-	
Lublin Voivodeship	Culture included in the voivodeship development strategy until 2030 (heritage, social capital)	-	Strategic documents refer to freedom and openness	-	
Silesia	There is a separate development strategy for culture (regional cultural development strategy)	Sectoral documents for culture indicate cooperation mechanisms	-	-	There are entities supporting the organizer (principal) Programming councils at cultural institutions, which strengthen the organizer's position

Source: Own preparation.

Table 3. Comparison of Strategic Documents in Selected Theatres of Local Government Voivodeships

Theater Name	Role of the team/director	Transparency/ Openness	Regulations	Participation, co-governance	Notes
Masovian Musical Theatre	director	-	-	-	Limited transparency, lack of co-governance elements
Polish Theatre in Wrocław	directors	-	+ Code of ethics	-	Limited transparency, lack of co-governance elements
Juliusz Słowacki Theatre	director	-	-	-	Very low transparency
Musical Theatre Danuta Baduszkowa	director	-	-	-	Limited transparency, lack of co-governance elements
Musical Theatre in Toruń	director	-	-	-	Limited transparency, lack of co-governance elements

Juliusz Osterwa Theatre	directors	+	+	-	Quite high transparency, many documents, no artistic and organizational program
Stefan Jaracz Theatre in Łódź	director	+	+-	-	Quite high transparency, many documents, no artistic and organizational program
Silesian Theatre in Katowice	director	-	+-	Program Council supporting the organizer	Limited transparency
Izabela Cywińska New Theatre in Poznań	Director +emphasis on the role of the team	+	+ Code of ethics	+	High transparency, many documents

Source: Own preparation.

Table 4. Comparison of Strategic Documents in Selected Local City's Government

City	Culture as a Strategic Element	The Role of Teams in Cultural Institutions	Openness/ Transparency	Participatory/ Democratic Processes	Notes
Warszawa	+	+	+	+	Creative freedom, cultural education, participation competences, social ecology
Wrocław	+	The strong position of the director as a threat	+	+	The emphasis on intersectoral dialogue and participation, which can be interpreted as the beginning of co-governance
Kraków	+	-	-	-	Operational activities (e.g., budget, reports) emerge, as does material support for creators, and the institution's openness to young artists
Gdańsk	+	Grants, open programs	-	+	Cultural heritage is one of the most important elements of Gdańsk's unique identity
Gdynia	+	-	-	+	Expressed willingness to support grassroots cultural and artistic activities
Katowice	+ General objective	-	-	New management	
Łódź	+ One of the pillars of the city's development	-	+	+	
Toruń	+	-	-	-	
Poznań	+	-	+ Increased autonomy	Shared responsibility, co-creation	Introducing effective forms of management – contracts
Lublin	+	-	-	+	

Source: Own preparation.

Table 5. Comparison of Strategic Documents in Selected City's Theatres

Theater Name	Role of the team/director	Transparency/ Openness	Regulations	Participation, co-governance	Notes
Studio Theatre	team	+	-	+	
Syrena Theatre	director	+	-	+	
Rozmaitości Theatre	team	+	+	+	Very high transparency
Capitol	director	-	+	-	
Contemporary Theatre	director	-	-	-	Limited transparency, lack of co-governance elements
Bagatela Theatre	3 directors	-	-	-	
Ludowy Theatre	director	-	-	-	
Miniature Theatre	director	-	Antymobbing policy	-	
Shakespearean Theatre	director	+	-	-	
Entertainment Theatre	director	+	-	-	
Pinocchio in Łódź	director	-	-		
Powszechny Theatre	Director /team	+	Code of ethics	+	Very high transparency
William Horzyca Theatre	team	+	+	+	
Polish Theatre in Poznań	team	+	-	+	
Musical Theatre	director	-	-	-	
Eighth Day Theatre	team	+	-	+	
Christian Andersen Theatre	director	+	Many documents	+	

Source: Own preparation.

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Natural Resource Funds and Their Stabilization Function: Methodological--Empirical Foundations

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Abstract

Motivation: Research on the stabilization function of natural resource funds (NRF) is extensive but fragmented, with diverse samples, indicators, and methods limiting comparability. A systematic synthesis and transparent research framework are needed to enable robust empirical testing.

Aim: This study aims to build a comprehensive methodological-empirical foundation for analyzing the stabilization function of NRF in counteracting the resource curse (RC). It does so by systematically reviewing existing empirical research, assessing prior methodologies and indicators, and constructing a transparent research sample of resource-rich economies and their resource funds.

Results: The study employs the Systematic Literature Review (SLR) to synthesize quantitative and qualitative research on the stabilization function of NRF, with attention to research samples, methods, and macroeconomic indicators. Based on the literature on the RC, 49 resource-rich economies were identified and classified by resource type and level of development. Within this group, 43 NRF were examined in terms of type, investment strategies, and compliance with the Santiago Principles, covering the period 2000–2023. The findings pro-

vide a transparent and replicable research sample and consolidate dispersed methodological evidence, offering a robust empirical foundation for subsequent econometric analysis.

Keywords: natural resource funds, stabilization, resource curse, economic development, resource rich countries

JEL: F21, O11, O23, Q32, Q38

1. Introduction

In the 1970s, many governments in resource-rich countries introduced a policy instrument designed to counteract the RC – the paradox of slower economic development in resource-abundant economies compared to those with limited natural endowments (Dymitrowska, 2023). This instrument took the form of natural resource funds (NRF)[1], established primarily to stabilize domestic economies heavily dependent on resource exports and to shield them from fluctuations in global commodity markets.

Over time, the role of these funds evolved significantly. Today, they are created not only to fulfill stabilization objectives but also to serve investment, savings, and diversification purposes. The design, management, and objectives of NRF have become increasingly sophisticated, with a growing number of such funds established in developing and emerging economies. Given the persistent volatility of commodity prices, it remains essential to examine whether NRF – considering their varying types and structures – continue to perform their stabilization function effectively.

Scholarly opinions on this issue remain divided (e.g., Bagattini, 2011; Ouoba, 2020; Sugawara, 2014; Taguchi & Ganbayar, 2022). Existing research is often fragmented, relying on diverse samples, indicators, and methodologies that hinder comparability. Moreover, empirical evidence remains limited. Due to the multidimensional and complex nature of the phenomenon, there is a clear need for systematic synthesis and a transparent analytical framework that can support robust empirical testing.

This study aims to build a comprehensive methodological and empirical foundation for analyzing the stabilization function of NRF in counteracting the resource curse (RC).

The research employs the Systematic Literature Review (SLR) method to critically examine both quantitative and qualitative studies addressing NRF stabilization role, with a particular focus on research design, sample selection, and macroeconomic indicators. In a subsequent step, drawing on

[1] For consistency, the term Natural Resource Fund (NRF) is used throughout the paper to refer collectively to all such funds.

the RC literature, a group of 49 resource-rich economies was identified and classified according to resource specialization and level of economic development. For each country, the existence, type, and investment strategy of NRF were verified, along with their adherence to the Santiago Principles – thereby creating a transparent and replicable framework for future econometric analysis.

The paper is organized into three main sections, framed by an introduction and a concluding discussion. The first section provides a conceptual and theoretical background to the topic and highlights the study's contribution to the existing body of knowledge. The second section presents the research design and methodology. The third section summarizes the main findings and offers a discussion of their implications.

2. Literature review

The resource curse (RC) refers to the paradox in which countries abundant in natural resources often experience slower economic development and weaker poverty reduction than nations with more diversified economic structures (Dymitrowska, 2023). This issue continues to be highly relevant, particularly amid contemporary global challenges such as the economic repercussions of the COVID-19 pandemic, rising inflation, ongoing armed conflicts, and the sustained volatility of key commodity prices.

Over recent decades, global commodity markets have shown persistent instability, constituting a key macroeconomic mechanism underpinning the RC. In response to fiscal fluctuations driven by commodity price volatility, many governments began establishing NRF in the 1970s to buffer domestic economies and stabilize revenues. Over the years, the role and structure of NRF have evolved significantly. A key turning point was the success of the Norwegian NRF, which broadened the original objective of economic stabilization to include the accumulation of financial capital for future generations. This shift contributed to the growing popularity of new types of NRF. Initially, investment funds gained traction – these aimed to accumulate revenues from resource extraction and allocate them to domestic and foreign investment projects. More recently, however, savings funds, also known as future generations funds, have become increasingly prominent. Their purpose is to invest resource revenues in long-term assets, primarily abroad, with the goal of preserving wealth for future generations.

Although the oldest fund of this type – the Texas Permanent University Fund – was established in 1876, over 52% of all savings funds have been created since 2005, and more than 70% of them were launched after 2010 (Dymitrowska, 2023). Notably, an increasing number of emerging and developing economies are now opting to establish this type of fund.

The establishment of NRF has primarily aimed – and continues to aim – at mitigating the effects of the RC. In recent years, growing attention from scholars, international organizations, and governments of resource-rich countries has focused on evaluating how effectively these funds address the challenges associated with the phenomenon (Ouoba, 2020; Sugawara, 2014; Taguchi & Ganbayar, 2022; Tsani, 2015). This surge of interest stems largely from the rising prominence of NRF within the global financial system. Today, they represent more than half of all Sovereign Wealth Funds (SWFs), whose combined assets total approximately USD 15.2 trillion. (SWFI, n.d.).

The question of whether NRF effectively counter the RC is complex and inherently multidimensional, intersecting macroeconomic, social, political, institutional, cultural, and historical domains. The literature encompasses both broad cross-country comparisons (e.g., Bagattini, 2011; Ouoba, 2020; Sugawara, 2014; Taguchi & Ganbayar, 2022) and detailed case studies (e.g., Baena et al., 2012; Chalk et al., 1997; Dymitrowska, 2023; Fasano-Filho, 2000; Lücke, 2011), applying qualitative (e.g., Fasano-Filho, 2000; Kalyuzhnova, 2006; Le Borgne & Medas, 2021; Usui, 2007) and quantitative (e.g., Bagattini, 2011; Ossowski et al., 2008; Ouoba, 2020; Shabsigh & Ilahi, 2007; Sugawara, 2014; Tsani, 2013, 2015) approaches. These works explore multiple aspects of fund design and performance, including fund typology (Taguchi & Ganbayar, 2022), governance mechanisms (Tsani, 2013, 2015), and primary operational objectives (Taguchi & Ganbayar, 2022).

The literature offers no unified conclusion regarding the effectiveness of NRF. Some studies confirm their success in achieving specific goals (Bagattini, 2011; Sugawara, 2014; Taguchi & Ganbayar, 2022), others emphasize that effectiveness depends on certain institutional or policy conditions (Allegret et al., 2018; Le Borgne & Medas, 2021; Usui, 2007), while some argue that they remain largely ineffective (Davis et al., 2001; Ouoba, 2016). Others express ambivalence or inconclusive findings (Barnett & Ossowski, 2021; Ossowski et al., 2008; Ouoba, 2016).

Given the importance of this issue for the economic development of resource-rich countries and the stability of the global economy, advancing detailed and methodologically sound research remains a critical priority. This paper presents an initial step in evaluating the effectiveness of NRF in mitigating the RC. It forms the first phase of a broader research project undertaken by the author, with the overall research framework illustrated in Figure 1.

Key macroeconomic drivers of the RC include commodity price volatility, the Dutch disease, and excessive dependence on resource extraction and exports. Within this context, NRF are expected to perform four core functions – stabilization, investment, savings, and diversification – each mitigating the adverse effects of the curse (Figure 1). The stabilization function primarily targets commodity price volatility by smoothing fiscal revenues and

expenditures over the commodity price cycle. Savings and investment functions address intertemporal and structural dimensions of the RC by reducing procyclicality and supporting long-term growth, while diversification aims to alleviate excessive dependence on the resource sector and related Dutch disease pressures through broader asset allocation.

This study focuses on the stabilization function of NRF in alleviating the RC, with attention to differences across fund types, forming the methodological basis for further empirical analysis.

Stabilization funds aim to smooth economic fluctuations by saving surplus revenues from resource exports when prices exceed a predefined threshold, typically determined by national macroeconomic conditions. Their assets, usually short-term and liquid, are drawn upon when prices fall to offset fiscal shortfalls. Investment funds allocate a portion of resource revenues to short – and long-term assets, domestically and abroad. Although not explicitly designed for stabilization, returns from these investments – especially foreign ones – can indirectly reduce fiscal vulnerability. Savings funds pursue long-term wealth preservation by investing resource revenues in long-term, often foreign, financial assets. They generate alternative income streams, support diversification, and accumulate capital for a post-resource economy. Over time, such funds may enable a transition from resource to capital exporting. While not directly stabilizing, their consistent returns contribute indirectly to economic stability. Given the rising prominence of investment and savings funds, particularly in emerging and developing economies, it is pertinent to examine whether these fund types also exhibit a stabilizing function.

Despite the growing body of literature on NRF, existing empirical evidence on their stabilization effects remains fragmented and inconclusive. Studies differ substantially in terms of research design, volatility measures, institutional controls, country coverage, and time horizons, which limits the comparability of results and contributes to mixed findings. Moreover, much of the literature relies on heterogeneous definitions of resource-rich countries and fund types, often without a systematic or up-to-date classification framework. These limitations highlight the need for a more transparent and structured synthesis of existing evidence, which the present study seeks to address.

3. Methods

The research was conducted in three stages. First, a comprehensive critical literature review was carried out using the SLR method to examine existing empirical studies, clarify key concepts, identify dependent, independent, and control variables, and determine the time frames adopted in prior research. Second, resource-rich countries were identified through descriptive

and comparative statistical analysis combined with a rule-based classification approach. Threshold criteria derived from the World Bank's World Development Indicators (WDI) determined country eligibility, after which countries were classified by dominant resource type (fuel or mineral) and level of economic development. Third, a structural and institutional analysis examined individual NRF, assessing their establishment timelines, evolution, and classification by fund type and investment strategy.

3.1. Systematic Literature Review

A comprehensive critical literature review was undertaken, employing the SLR method, which has gained prominence in recent years. The review covers the period from 1990 to 2025. This starting point reflects that most NRF were created in the 1980s, and reliable empirical evidence on their effectiveness could emerge only after a decade of operation. This assumption is consistent with Ouoba (2020), who argues that funds require around ten years to accumulate sufficient capital to generate observable effects. The review period ends in 2025, with data collected on March 27, 2025.

Two databases were consulted – Scopus and Google Scholar – both recognized as authoritative sources of scientific information. The first stage identified publications concerning NRF operations through Scopus searches using the keywords "resource fund", "oil fund", "petroleum fund", and "natural resource fund", restricted to the defined period and filtered by "article title, abstract, keywords" within the disciplines of social sciences, economics, econometrics and finance, and energy. Given the heterogeneity of terminology in the literature, the review was complemented by backward and forward citation tracking and thematic screening of related studies on fiscal stabilization and resource revenue management. Google Scholar searches were conducted during a defined time window using relevance-based sorting, acknowledging the inherent limitations of replicability associated with this database. This produced 211 records.

At the second stage, abstracts were screened, excluding studies that did not examine NRF effectiveness in mitigating the RC, resulting in 20 publications. A complementary search in Google Scholar was then conducted, acknowledging its broader coverage. Cross-referencing both databases yielded a consolidated list of 33 articles.

Finally, the abstracts and findings of these studies were analyzed to identify those specifically assessing the stabilization role of NRF in addressing the RC. A total of 21 studies were selected and categorized based on the following criteria:

- type of study: quantitative or qualitative,
- effectiveness assessment: effective, effective under certain conditions, ineffective, lack of effect.

At this stage, studies were excluded if they were descriptive, conceptual, or did not directly assess macroeconomic or fiscal stabilization outcomes. The results of this stage are presented in Table 1.

In the final SLR phase, eight empirical studies were analyzed in depth, of which five were identified as most representative of the research topic. The term "most representative" refers to empirical studies that explicitly estimate the stabilization effects of NRF using quantitative methods, comparable outcome variables, and clearly defined country-fund samples. Each was examined in terms of methodology – including indicators of fund effectiveness in fulfilling the stabilization function, specified dependent variables and their volatility transformations, as well as primary and control independent variables – together with data sources, research periods, findings, and recommendations. The outcomes of this analysis are summarized in Table 2.

While a formal PRISMA flow diagram is not reported due to space constraints, the sequential screening process and inclusion criteria are explicitly described in the text.

3.2. Identification and classification of resource-rich countries and NRF

The research sample comprises resource-rich countries affected by the RC, defined as economies specializing in the extraction and export of natural resources or those predominantly resource-based. Following a review of inclusion criteria in the literature, countries were classified as resource-rich if they met one of two thresholds: average annual extractive revenues exceeding 25% of GDP or natural resources constituting at least 25% of average annual exports. These benchmarks follow prior RC studies (Auty, 2004; Dymitrowska, 2020, 2023; Gelb, 1988; Stevens, 2003; van der Ploeg, 2011).

The analysis focuses on strategic resources typically linked to the RC – fuels (oil, gas, coal) and minerals (tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, phosphate). Data from the WDI (accessed 19 December 2024) cover 2000–2023, with 2000 chosen as the baseline year marking the global expansion of NRF, particularly savings funds. The 24-year period provides a robust basis for empirical assessment, with 2023 determined by data availability.

Resource-rich countries were identified using six indicators: mineral, oil, gas, and coal rents (% of GDP), and fuel as well as ores and metals exports (% of merchandise exports). Two composite indices – Total Natural Resources Rents (TNRR) and Total Natural Resources Exports (TNRE) – were then computed. Countries exceeding the threshold in at least 13 of the 24 years were included in the sample.

Subsequently, NRF operating within these countries were examined using data from the International Forum of Sovereign Wealth Funds (IFSWF), the

Sovereign Wealth Fund Institute (SWFI), and official fund or government sources.

The applied methodological approach is directly aligned with the study's objective of building a comprehensive methodological-empirical foundation for analyzing the stabilization function of NRF in counteracting the RC. By combining a SLR with the identification and classification of resource-rich economies and their NRF, the method enables a structured and transparent synthesis of existing empirical evidence. At the same time, the approach is subject to limitations inherent to secondary data analysis, including reliance on the scope, quality, and methodological diversity of available empirical studies.

4. Results

4.1. Key insights from the SLR

All studies identified in the final SLR stage (Table 2) applied econometric panel-data analysis but varied considerably in sample size. The most extensive was Sugawara's (2014) study, covering 68 resource-rich countries and 32 NRF. The second-largest and most recent, by Taguchi and Ganbayar (2022), analyzed 41 countries and 54 NRF, reflecting the marked growth in newly established funds in recent years.

Taguchi underscores the importance of classifying NRF by their intended function when assessing their effectiveness, highlighting the increasing significance of emerging fund types within the broader development policy framework of resource-rich countries.

Several studies focus exclusively on oil-exporting countries (Ossowski et al., 2008; Shabsigh & Ilahi, 2007), reflecting a broader trend in research on NRF effectiveness (e.g., Allegret et al., 2018). Given that fuel commodities constitute strategic resources, specialized analyses of this group are fully warranted.

However, the RC affects both fuel – and mineral-exporting countries. Incorporating both resource categories thus enhances the analytical depth of the study and enables a meaningful comparison between fuel – and mineral-rich economies.

All authors assumed that NRF function as counter-cyclical buffers mitigating commodity price shocks. Their analyses consistently tested whether NRF reduce macroeconomic volatility, employing either monetary (Shabsigh & Ilahi, 2007) or fiscal performance indicators (Bagattini, 2011; Ossowski et al., 2008; Sugawara, 2014; Taguchi & Ganbayar, 2022). This approach aligns with the macroeconomic perspective of RC theory.

Regarding the dependent variable, most studies assess the impact of NRF on government expenditure stability. Some extend the analysis by including

additional measures; for instance, Ossowski et al. (2008) and Taguchi and Ganbayar (2022) also examine the primary balance alongside expenditure stability.

Bagattini (2011) proposed a composite indicator – the Stabilization Fund Success Variable – based on an additive six-point scale. One point is assigned at the end of each fiscal year for meeting the following conditions:

1. a non-negative overall fiscal balance;
2. an improvement in the overall fiscal balance;
3. a non-negative non-resource fiscal balance;
4. an improvement in the non-resource fiscal balance;
5. an increase in non-resource revenues;
6. a reduction in public debt.

In contrast, the study by Shabsigh & Ilahi (2007) used a different approach to the dependent variable, focusing on indicators of monetary stability, specifically: volatility of money supply, the consumer price index (CPI), and real effective exchange rates (REER).

Although government expenditure is the most frequently used dependent variable, approaches to measuring its volatility differ. Sugawara (2014) analyses the volatility of discretionary expenditure (Table 2), while Taguchi and Ganbayar (2022) use the absolute deviation of total government expenditure from its period average, expressed as a percentage of GDP.

Sugawara (2014) also considers alternative dependent variables, including the volatility of total, investment, and consumption expenditure, as well as of the cyclically adjusted fiscal balance. He further proposes an alternative volatility measure – the five-year moving standard deviation of annual growth rates. The remaining authors did not measure volatility directly, relying instead on broader fiscal or monetary indicators to assess fund effectiveness.

Both Sugawara (2014) and Taguchi and Ganbayar (2022) contend that NRF must operate for at least five years to produce meaningful outcomes, a lag explicitly incorporated into their analyses. Other studies omit such temporal adjustments. In the broader literature on the effectiveness of NRF, a noteworthy contribution is the study by Ouoba (2016), who emphasizes that a fund should exist for at least ten years before reliable results can be expected.

When analyzing the types of funds examined, Sugawara (2014) and Taguchi and Ganbayar (2022) focus specifically on the effectiveness of stabilization funds in enhancing macroeconomic stability, whereas other authors analyze NRF more broadly without differentiating fund types. Bagattini (2011) introduces two control variables – stabilization and savings – to distinguish funds by purpose, though the study does not emphasize differences between these categories.

Across all reviewed studies, the primary independent variable is the existence of an NRF in a given country. A broad set of control variables is also

employed, including population, economic growth, inflation, resource dependence, trade and capital openness, financial development, export diversification, geography, resource prices, and export shares. All authors further emphasize institutional controls, underscoring the central role of institutional quality in evaluating NRF effectiveness.

When analyzing the main findings – namely, whether NRF fulfill their stabilization function – Bagattini (2011), Sugawara (2014), and Taguchi & Ganbayar (2022) all conclude that they do.

Bagattini (2011) finds that stabilization funds improve fiscal outcomes, emphasizing governance and fund rules as key determinants of success. Sugawara (2014) likewise reports that such funds smooth government expenditure but stresses the importance of political institutions and fiscal rules in mitigating volatility. Taguchi and Ganbayar (2022) confirm the effectiveness of stabilization funds in reducing volatility in both expenditure and the primary balance, again underscoring the role of governance quality. Shabsigh and Ilahi (2007) link oil funds to lower volatility in broad money, prices, and inflation, though they find only a weak negative relationship with real exchange rate volatility.

By contrast, Ossowski et al. (2008) find no evidence of NRF effectiveness, irrespective of the dependent variable used, yet emphasize that institutional quality remains crucial for achieving sound fiscal performance.

Observed differences across studies largely reflect design choices, institutional settings, and measurement approaches. In conclusion, the results across studies are not fully consistent, indicating the need for further empirical verification and more nuanced analysis.

The existing literature lacks an up-to-date and systematically defined identification of resource-rich countries, as well as a comprehensive classification of NRF that accounts for fund type, investment strategy (domestic versus foreign, short – versus long-term), year of establishment, and membership in the International Forum of Sovereign Wealth Funds, signaling adherence to the Santiago Principles. Addressing these gaps constitutes an additional contribution of the present study.

4.2. Resource-rich countries and NRF

In this study, a resource-rich country is defined as an economy predominantly reliant on the extraction and export of natural resources. Based on a critical review of the literature (Auty, 2004; Gelb, 1988; Stevens, 2003; van der Ploeg, 2011), it is assumed that the RC arises exclusively within such economies. Based on the methodology outlined above, the first stage of the analysis identified an initial list of 58 countries.

After conducting a detailed assessment of each country, several were excluded for various reasons. For example, Belarus and Greece, although

they met the threshold, are not major oil producers. Instead, they operate well-developed refining sectors, importing crude oil and exporting refined petroleum products such as gasoline and diesel, which may be statistically classified as raw materials.

Sudan and South Sudan were excluded due to their complex and unstable political and economic environments, the secession of South Sudan in 2011, and the lack of reliable data. Similarly, the Syrian Arab Republic was excluded due to the civil war that began in 2011, which significantly disrupted its export capacity and led to a breakdown in statistical reporting. The exclusion criteria were applied consistently across countries and aimed to ensure conceptual comparability of resource dependence and export structures within the research sample. A few additional countries were also excluded based on similar criteria. As a result, the final research sample consists of 49 resource-rich countries.

These countries were classified by: level of economic development (according to World Bank and IMF classifications), geographic region, type of extracted resources and whether they exceeded the TNRR or TNRE thresholds. The results of this classification are presented in Table 3.

In the next stage of the study, a detailed analysis of NRF operating in the identified group of countries was conducted. A total of 43 NRF were identified. These funds were classified according to: fund type (stabilization, investment, or savings), investment characteristics (domestic vs. foreign; short-term vs. long-term), and membership in the International Forum of Sovereign Wealth Funds, indicating a formal commitment to the Santiago Principles. The results of this classification are presented in Table 4.

This part of the study provides an original contribution to the literature by offering a comprehensive and up-to-date identification and classification of resource-rich countries and the NRF operating within them. The analysis establishes a coherent empirical basis for future quantitative research by combining clearly defined selection criteria with a systematic typology of countries and funds. Presenting the results in a structured tabular form enhances the transparency and replicability of the findings. This methodological groundwork not only fills an existing gap in the literature – where such classifications are often outdated or fragmented – but also creates a consistent reference framework for subsequent empirical verification of the stabilization function of NRF.

Taken together, the results presented in this chapter extend beyond a descriptive synthesis of existing findings and provide a structured analytical basis for future empirical research. The systematic comparison of quantitative studies summarized in Table 2 offers a consolidated overview of dependent and independent variables, volatility transformation methods, control variables, data sources, and research horizons used in prior analyses of NRF stabilization effects. At the same time, the identification and classification

of resource-rich countries (Table 3) and their NRF (Table 4) deliver a clearly defined and up-to-date research sample, enabling informed and consistent design choices for subsequent panel-based econometric studies.

5. Conclusion

The study aimed to build a comprehensive methodological and empirical foundation for analyzing the stabilization function of NRF in counteracting the RC. This objective has been achieved through a three-stage research design that systematically integrates literature synthesis with structured data preparation.

The first stage employed a systematic and critical review of existing empirical research, enabling the identification of dominant methodological approaches, commonly applied indicators, and key sources of heterogeneity in the assessment of NRF effectiveness. This synthesis provides clarity regarding how stabilization effects have been operationalized in prior studies and highlights the methodological choices that shape empirical outcomes.

In the second stage, a research sample of 49 resource-rich economies was identified based on rigorously defined and verifiable criteria derived from reliable data sources, including the World Bank's WDI. These countries were classified by type of resource specialization – fuel or mineral – and by level of economic development. The classification enhances the comparability of future analyses and reduces ambiguity in sample selection.

The third stage focused on identifying and analyzing 43 NRF operating within this group of countries, including their type, investment strategy, and compliance with the Santiago Principles. This structured overview captures the institutional diversity of NRF and provides essential contextual information for empirical modelling.

Taken together, the results of the three analytical stages form a coherent and operational framework that goes beyond descriptive review. The study's contribution lies in consolidating dispersed methodological knowledge, establishing a clearly defined and replicable research sample, and providing the analytical groundwork necessary to formulate specific research assumptions for econometric analysis. As such, the findings offer researchers a ready-to-use foundation for panel-based econometric studies, including guidance on country and fund selection, variable construction, data sources, and modelling strategies.

At the same time, the study is subject to limitations inherent in secondary data synthesis, including reliance on the scope and quality of existing empirical research and data availability. These limitations point to promising avenues for future research, particularly the application of the proposed framework in original econometric analyses of the stabilization effects of NRF.

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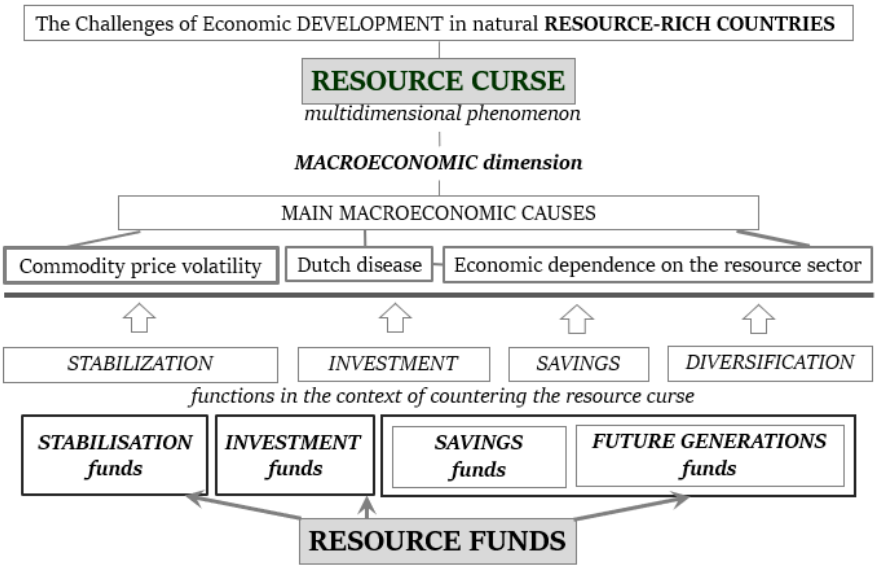
Appendix

Figure 1. Research concept



Source: Own preparation.

Table 1. Key insights from the SLR

	Descriptive Analyses	Quantitative Analyses
effective, effective under certain conditions	Engel & Valdes (2000); Fasano-Filho (2000); Hjort (2006); Le Borgne & Medas (2007); Usui (2007); Gould (2010); Lücke (2011); Dymitrowska (2020); James et al. (2022);	Shasigh & Ilahi (2007); Merlevede et al. (2009); Bagattini (2011); Sugawara (2014); Allegret et al. (2018); Taguchi & Ganbayar (2022); Dymitrowska (2023);
ineffective, lack of effect	Davis et al. (2001); Eifert et al. (2002); Devlin & Titman (2004); Villafuerte et al. (2010)	Ossowski et al. (2008)

Source: Own preparation.

Table 2. Effectiveness of NRF in performing their stabilization function – review of main quantitative studies

AUTHOR	IEE	DEPENDENT VARIABLES	Sources	Volatility Transformation Method	INDEPENDENT (Explanatory) VARIABLES		Sources	Sample	Period
					main interest	control variables			
Shabsigh & Ilahi (2007)	volatility of inflation, broad money, real exchange rate	1. Coefficient of variation of broad money 2. Consumer price index (CPI) 3. REER 4. Growth rate of CPI	WEO, IFS	Standard deviation of the broad money supply divided by its mean, expressed as a %.	Oil fund dummy variable taking a value of 1 when an oil fund in present and zero when it is not	1. A real GDP growth rate (annual) 2. Share of oil in total Ex 3. Oil price growth rate 4. Financial Depth (broad money to GDP ratio)	WEO, IFS	9 NRF, 15 oil exporting countries	1973–2003
Ossowski et al. (2008)	volatility of government spending	1. Non-oil primary balance 2. Expenditures, annual real growth rate 3. Ratio of the change in expenditure to the change in oil revenue	IMF staff calculations	none	Oil fund dummy variable taking a value of 1 when an oil fund in present and zero when it is not	1. Log (GDP *per capita* in US$, lagged) 2. Log of expenditures (% of GDP, lagged) 3. Net government wealth (% of non-oil GDP) 4. Oil revenue (as a % of total revenue) 5. Oil revenue growth (% change) 6. Oil price (lagged) 7. Inflation (lagged) 8. Oil fund net wealth 9. Non-oil primary balance (% of non-oil GDP, lagged) 10. Composite index of institutional quality (ICRG) 11. Democratic accountability 12. Bureaucratic quality 13. Government stability 14. Law and order	IMF staff calculations, ICRG	21 oil exporting countries	1992–2005
Bagattini (2011)	sustainable fiscal performance: fiscal revenues, fiscal expenditures and savings; governance	1. Stabilisation fund success variable as a 6-point indicator 2. Non-resource GDP (% of GDP) 3. Non-resource Ex (% of Ex) 4. Government revenues (% of GDP) 5. Non-resource government revenues (% of GDP) 6. Expenditures (% of GDP) 7. Government balance (% of GDP) 8. Non-resource government balance (% of GDP) 9. Public debt (% of GDP)	IMF reports, WDI, WEO and other	none	Existence of stabilisation fund	1. GDP, current prices, national currency (billions) and US$ (billions) 2. Exchange rate, national currency per US$ 3. Total Ex, f.o.b., US$ (billions) 4. Resource Ex, US$ (billions) and share of total Ex 5. Stabilisation fund purpose: stabilisation, savings 6. Stabilisation fund: incorporation into budget, earmarking of resources 7. Stabilisation fund assets, US$ (billions), % of GDP 8. Non-negative, annual improvement of fiscal balance, non-resource 9. Annual reduction of public debt 10. Annual increase of stabilisation fund assets 11. Annual success of stabilisation fund 12. Political rights, civil liberties, freedom status, index of economic freedom, Polity IV, bureaucratic quality, government effectiveness, rule of law, control of corruption 13. Human development index	IMF reports, WDI, WEO and other	12 countries with stabilization funds	1992–2007

AUTHOR	IEE	DEPENDENT VARIABLES	Sources	Volatility Transformation Method	INDEPENDENT (Explanatory) VARIABLES		Sources	Sample	Period
					main interest	control variables			
Sugawara (2014)	volatility of government spending	1. Volatility of discretionary government expenditure (in logs)	WEO	The log of 5-year moving standard deviation of the residuals from the IV estimation of Equation. The estimation is done by country and excludes country specific business cycle effect.	Dummy variable taking a value of 1 if a stabilization fund exists in a given year (assumption that the operation of the fund starts in the following year)	1. Government expenditure (% of GDP, in logs) 2. Population (in logs) 3. GDP *per capita*, PPP (constant 2005 international $, in logs) 4. Diversification of Ex products (Theil index: higher, less diversified) 5. Real GDP growth volatility (5-year moving standard deviation, in logs) 6. CPI inflation (%) 7. Liquid liabilities (% of GDP, in logs) 8. Volatility of liquid liabilities (5-year moving standard deviation, in logs) 9. International financial remoteness (distance to financial center, km, in logs) 10. Capital account openness (higher, more openness) 11. Political freedom (higher, less freedom) 12. Political regime (higher, more democratic) 13. Sub-soil resource rents (% of GDP) 14. Number of fiscal rules in place (number) 15. Fiscal rules index (higher, more strengthened) 16. A dummy variable taking a value of 1 if a country is landlocked 17. A dummy variable (taking a values of 1) for an island country 18. A dummy variable that equals 1 if the presidential system is employed	WEO, WDI, UN Comtrade and other	32 NRF, 68 resource-rich countries	1988–2012

AUTHOR	IEE	DEPENDENT VARIABLES	Sources	Volatility Transformation Method	INDEPENDENT (Explanatory) VARIABLES		Sources	Sample	Period
					main interest	control variables			
Taguchi & Ganbayar (2022)	volatility of government expenditure and primary balance	1. General government total expenditure, % of GDP, absolute value of the deviation from the period average 2. General government primary net lending/borrowing, % of GDP, absolute value of the deviation from the period average	WEO	1. Absolute value of the deviation from the period average of "general government total expenditure as a % of gross domestic product (GDP)". 2. Absolute value of the deviation from the period average of "general government primary net lending/borrowing as a % of GDP".	Stabilization fund dummy: taking a value of 1 if the fund exists in t – 5	1. Gross domestic product as constant prices, % change, one lagged 2. Inflation by average consumer prices, % change, one lagged 3. Population by millions of persons, log term, one lagged 4. Sum of Ex and imports of goods and services, % of GDP, one lagged 5. Total natural resource rents, % of GDP, one lagged 6. Worldwide governance indicators (WGI, average), from –2.5 (weak) to 2.5 (strong) 7. Voice and accountability 8. Political stability and absence of violence/terrorism 9. Government effectiveness 10. Regulatory quality 11. Rule of law 12. Control of corruption	WEO, WDI, WGI	54 NRF, 41 resource-rich countries	1996–2020

Additional information. **WEO** – World Economic Outlook Databases, International Monetary Fund, **WDI** – World Development Indicators, World Bank, **WGI** – Worldwide Governance Indicators, World Bank, **IFS** – IMF International Finance Statistics, **ICRG** – International Country Risk Guide, **IEE** – Indicators for evaluating the effectiveness of NRF in fulfilling their stabilization function, **CPI** – Consumer price index, **GDP** – Gross Domestic Product, **REER** – Real effective exchange rates, **%** – percentage, **$** – dollars, **Ex** – export.
Source: Own preparation.

Table 3. Resource-rich countries

	COUNTRY	RESOURCE		RT WB	Classification according to development		Geographical region
					IMF		
1	Algeria	oil, NG		F	UMC	EMDE	MEA
2	Angola	oil, NG		*F*	*LMC*	*EMDE*	*SSF*
3	Armenia		MI, ME	M	UMC	EMDE	ECS
4	Azerbaijan	oil, NG		F	*UMC*	*EMDE*	*ECS*
5	Bahrain	oil, NG	ME	FM	HIC	EMDE	MEA
6	Bolivia	NG	MI, ME	FM	LMC	EMDE	LCN
7	Brunei Darussalam	oil, NG		*F*	*HIC*	*EMDE*	*EAS*
8	Cameroon	oil, NG	MI, ME	FM	LMC	EMDE	SSF
9	Canada	oil, NG	MI, ME	FM	HIC	AE	NAC
10	Chile		MI, ME	*M*	*HIC*	*EMDE*	*LCN*
11	Colombia	oil, coal		F	UMC	EMDE	LCN
12	Congo, Rep.	oil		F	LMC	EMDE	SSF
13	Ecuador	oil		*F*	*UMC*	*EMDE*	*LCN*
14	Egypt, Arab Rep.	oil, NG	ME	FM	LMC	EMDE	MEA
15	Equatorial Guinea	oil, NG		F	UMC	EMDE	SSF
16	Gabon	oil		*F*	*UMC*	*EMDE*	*SSF*
17	Georgia		MI, ME	M	UMC	EMDE	ECS
18	Guinea		MI, ME	M	LMC	EMDE	SSF
19	Indonesia	oil, NG, coal	ME	FM	*UMC*	*EMDE*	*EAS*
20	Iran, Islamic Rep.	oil, NG		F	UMC	EMDE	MEA
21	Iraq	oil, NG		F	UMC	EMDE	MEA
22	Jamaica		MI	*M*	*UMC*	*EMDE*	*LCN*
23	Kazakhstan	oil, NG	MI, ME	FM	UMC	EMDE	ECS
24	Kuwait	oil, NG		F	HIC	EMDE	MEA
25	Lao PDR		MI, ME	*M*	*LMC*	*EMDE*	*EAS*
26	Libya	oil, NG		F	UMC	EMDE	MEA
27	Mauritania		ME	M	LMC	EMDE	SSF
28	Mongolia	coal	ME	*FM*	*UMC*	*EMDE*	*EAS*
29	Montenegro		MI, ME	M	UMC	EMDE	ECS
30	Mozambique	NG, coal	MI	FM	LIC	EMDE	SSF
31	Myanmar	NG	MI, ME	*FM*	*LMC*	*EMDE*	*EAS*
32	Namibia		MI, ME	M	UMC	EMDE	SSF

	COUNTRY	RESOURCE		RT WB	Classification according to development		Geographical region
					IMF		
33	Niger	uranium, oil	MI, ME	FM	LIC	EMDE	SSF
34	Nigeria	oil, NG		F	*LMC*	*EMDE*	*SSF*
35	Norway	oil, NG		F	HIC	AE	ECS
36	Oman	oil, NG		F	HIC	EMDE	MEA
37	Peru	oil, NG	ME	*FM*	*LCN*	*EMDE*	*LCN*
38	Qatar	oil, NG		F	HIC	EMDE	MEA
39	Russian Federation	oil, NG, coal		F	HIC	EMDE	ECS
40	Rwanda		MI	*M*	*LIC*	*EMDE*	*SSF*
41	Saudi Arabia	oil, NG		F	HIC	EMDE	MEA
42	South Africa	coal	ME	FM	UMC	EMDE	SSF
43	Trinidad and Tobago	oil, NG		*F*	*HIC*	*EMDE*	*LCN*
44	Turkmenistan	oil, NG		F	UMC	EMDE	ECS
45	United Arab Emirates	oil, NG		F	HIC	EMDE	MEA
46	Venezuela, RB	oil, NG		*F*	*UMC*	*EMDE*	*LCN*
47	Yemen, Rep.	oil, NG		F	LIC	EMDE	MEA
48	Zambia		MI, ME	M	LMC	EMDE	SSF
49	Zimbabwe		MI, ME	M	LMC	EMDE	SSF

Additional information. **WB** – World Bank, **IMF** – International Monetary Fund, **TNRR** – total natural resource rent, **TNRE** – total natural resource export, **NG** – natural gas, **MI** – minerals, **ME** – metals, **Italic** – both TNRR and TNRE exceeded the established limit, **No italics** – only TNRE exceeded the established limit, **EAS** – East Asia & Pacific, **ECS** – Europe & Central Asia, **LCN** – Latin America & Caribbean, **MEA** – Middle East & North Africa, **NAC** – North America, **SAS** – South Asia, **SSF** – Sub-Saharan Africa.

WB classification according to development**: LIC** – Low income ($1,145 or less), **LMC** – Lower middle income ($1,146 to $4,515), **UMC** – Upper middle income ($4,516 to $14,005), **HIC** – High income ($14,006 or more).

IMF classification according to development: **AE** – Advanced Economies, **EMDE** – Emerging Market and Developing Economies.

M: ores and metals

F: fuels

FM: fuels and ores and metals.

Source: Own preparation.

Table 4. Natural resource funds

	COUNTRY	FUND NAME	DATE OF ESTABLISHMENT	FUND TYPE			INVESTMENT TYPE				SP
				S	I	SFG	Domestic	International	Short--term	Long--term	
1	Algeria	Revenue Regulation Fund	2000	X			X		X		
2	Angola	Fundo Soberano de Angola	2012			X	X	X	X	X	X
3	Armenia	none									
4	Azerbaijan	State Oil Fund of the Republic of Azerbaijan	1999			X	X	X	X	X	X
5	Bahrain	Future Generations Reserve Fund	2006			X	X	X		X	
6	Bolivia	none									
7	Brunei Darussalam	Brunei Investment Agency	1983	X	X	X	X	X	X	X	
8	Cameroon	Caisse de Stabilisation des Prix des Hydrocarbures	1974	X			X		X		
9	Canada	Alberta Heritage Savings Trust Fund	1976			X	X	X		X	
10	Chile	Social and Economic Stabilization Fund	1985(2006)	X				X	X		X
		Pension Reserve Fund	2006			X	X	X		X	X
11	Colombia	Colombia Savings and Stabilization Fund	2012	X				X	X		
12	Congo, Rep.	none									
13	Ecuador	none									
14	Egypt, Arab Rep.	none									
15	Equatorial Guinea	Fund for Future Generations	2002			X		X		X	
16	Gabon	Sovereign Wealth Fund of the Gabonese Republic	1998(2012)			X	X	X	X	X	X
17	Georgia	none									

	COUNTRY	FUND NAME	DATE OF ESTABLISHMENT	FUND TYPE			INVESTMENT TYPE				SP
				S	I	SFG	Domestic	International	Short--term	Long--term	
18	Guinea	none									
19	Indonesia	none									
20	Iran, Islamic Rep.	Oil Stabilization Fund	2000–2010	X			X	X	X		
		National Development Fund of Iran	2011		X		X	X	X	X	
21	Iraq	none									
22	Jamaica	none									
23	Kazakhstan	National Fund of the Republic of Kazakhstan	2000	X				X	X		
		National Investment Corporation	2012			X		X		X	X
24	Kuwait	Kuwait Investment Authority	1953			X		X	X	X	X
25	Lao PDR	none									
26	Libya	Libyan Investment Authority	2006			X		X	X	X	X
27	Mauritania	National Fund for Hydrocarbon Reserve	2006	X							
28	Mongolia	Fiscal Stability Fund	2011	X			X	X	X		
29	Montenegro	none									
30	Mozambique	none									
31	Myanmar	none									
32	Namibia	none									
33	Niger	none									

	COUNTRY	FUND NAME		DATE OF ESTABLISHMENT	FUND TYPE			INVESTMENT TYPE				SP
					S	I	SFG	Domestic	International	Short--term	Long--term	
34	Nigeria	Excess Crude Account		2004–2010	X			X	X	X		
		The Nigeria Sovereign Investment Authority	Stabilization Fund	2011	X			X	X	X		X
			Future Generations Fund	2011			X	X	X		X	X
			Nigeria Infrastructure Fund	2011		X		X			X	X
35	Norway	Government Pension Fund Global		1990			X		X		X	
36	Oman	State General Reserve Fund		1980–2019	X			X	X	X	X	X
		Oman Investment Fund		2006–2019		X		X	X		X	
		Oman Investment Authority	Future Generations Fund	2020			X	X	X		X	X
			National Development Fund	2020		X		X			X	X
37	Peru	Fiscal Stabilization Fund		1999	X				X	X		
38	Qatar	Qatar Investment Authority		2005	X	X	X	X	X		X	X
39	Russian Federation	Russia's Stabilization Fund		2004–2007	X				X	X		
		Reserve Fund		2008–2018	X				X	X		
		The National Wealth Fund		2008	X	X	X	X	X		X	
40	Rwanda	none										
41	Saudi Arabia	Public Investment Fund		1971		X	X	X	X		X	
42	South Africa	none										
43	Trinidad and Tobago	Interim Revenue Stabilization Fund		2000–2006	X				X	X		
		Heritage and Stabilization Fund		2007	X		X		X		X	
44	Turkmenistan	Stabilization Fund		2008	X					X		

	COUNTRY	FUND NAME	DATE OF ESTABLISHMENT	FUND TYPE			INVESTMENT TYPE				SP
				S	I	SFG	Domestic	International	Short--term	Long--term	
45	United Arab Emirates	Abu Dhabi Investment Authority	1976		X	X		X		X	X
		Mubadala Investment Company	2002		X	X	X	X		X	X
46	Venezuela, RB	Macroeconomic Stabilization	1998–2003	X				X	X		
		Fondo de Desarrollo Nacional	2005		X		X		X		
47	Yemen, Rep.	none									
48	Zambia	none									
49	Zimbabwe	Mutapa Investment Fund	2014	X	X		X		X		

Additional information. **S** – stabilization funds, **I** – investment funds, **SFG** – savings funds (funds fot future generations), **SP** – Compliance with the Santiago Principles.

Source: Own preparation based on the data provided by the Natural Resource Governance Institute, International Forum of Sovereign Wealth Funds, Sovereign Wealth Fund Institute and official websites of individual funds.