

COMPARATIVE WELFARE GOVERNANCE UNDER DIGITAL TRANSFORMATION: THE ROLE OF DIGITAL INCLUSION AND AGEING IN THE CZECH REPUBLIC AND THE REPUBLIC OF KOREA

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Abstract:

This article offers a comparative policy analysis of welfare governance in the Czech Republic and the Republic of Korea under conditions of demographic ageing and digital transformation. Rather than treating economic efficiency as a directly measured outcome, the article interprets it through a combination of three complementary indicators: social expenditure, digital e-government capacity, and human development. The analysis is based on a descriptive-comparative design using secondary data from the OECD, the United Nations, and the UNDP for the period 2013–2023, with EGDI observations available for 2014–2024. In this article, the generational dimension is approached primarily as a contextual issue of digital inclusion and administrative accessibility across age groups. The comparison suggests that the Republic of Korea combines lower but rising social expenditure with consistently high digital-government capacity, whereas the Czech Republic relies on a more redistributive and fiscally demanding welfare model while gradually improving its digital administration. Both countries achieve high human-development outcomes, but through different institutional configurations. The findings do not demonstrate a direct causal effect of digital governance on welfare efficiency; rather, they offer a structured comparative interpretation of how digital capacity, institutional coordination, and redistributive design interact in shaping welfare performance. The article contributes to the debate on how welfare states can adapt to digital transformation while maintaining social inclusion and administrative legitimacy.

Keywords: social policy; digital transformation; welfare governance; ageing; economic efficiency; comparative analysis; the Czech Republic; the Republic of Korea

JEL classification: I30, I38; H53; O33; O57

1. Introduction

Social policy is one of the key pillars of the modern state, as it links economic stability, social cohesion, and quality of life. However, it has recently encountered significant difficulties due to demands arising from globalisation, technological advancements, and demographic shifts. Governments are being forced to reconsider how they manage social policies and to find a balance between the economy, efficiency, and the upholding of social justice values because

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of an ageing population, rising demands on public budgets, and the rapid digitisation of public services. As a result, discussions about the structure of the welfare state in the age of digitalisation are increasingly centred on economic efficiency and governance.

Existing studies offer substantial insight into the digital transformation of public administration and into comparative welfare-state development. However, much less attention has been paid to how digital governance is connected to welfare performance in institutionally distinct countries facing similar pressures from ageing, fiscal constraints, and administrative modernisation. The gap is therefore not the absence of studies on digitalisation itself, but the limited number of cautious comparative interpretations linking digital state capacity, redistributive effort, and human-development outcomes.

The aim of this article is to compare how the Czech Republic and the Republic of Korea organise welfare governance under digital transformation and how selected indicators of redistribution, digital administrative capacity, and human development evolve in both cases. Particular attention is paid to the institutional interpretation of three indicators - social expenditure, the E-Government Development Index, and the Human Development Index - in order to identify broader patterns of welfare governance under demographic pressure and technological change. The article does not seek to measure economic efficiency directly in a causal or econometric sense but instead offers a structured comparative interpretation of selected indicators of welfare governance under conditions of digital transformation. The generational dimension is not examined here as a separately measured explanatory variable, but as a contextual factor linked to digital inclusion, ageing, and differentiated access to public services. The article therefore addresses the following research questions:

- RQ1: How do the Czech Republic and the Republic of Korea differ in the institutional organisation of welfare governance under digital transformation?
- RQ2: What common and divergent trends can be observed in social expenditure, the E-Government Development Index, and the Human Development Index in both countries?
- RQ3: How can these trends be interpreted in relation to demographic ageing, digital inclusion, and institutional coordination?

2. Conceptual background of welfare governance in the digitalisation era

The pressure of demographic change and technological transformation increasingly shapes social policy governance. Governments are expected to modernise public sector services to enhance efficiency, productivity, and citizen satisfaction. In OECD nations, such as the Czech Republic and the Republic of Korea, demographic shifts, particularly ageing populations and declining working-age cohorts, pose serious challenges for social policy systems (OECD, 2016). To respond to these pressures, adaptable and scalable service delivery is needed,

together with interventions that take account of generational differences in digital literacy and access (Gerven, 2022; Rajpal, Singh, Chatterjee and Sivarajah, 2025).

2.1 Generational dimension: A contextual factor of digital government

The generational dimension represents an important contextual factor in the functioning of digital government, because age significantly shapes how individuals access, use, and benefit from digital public services. Therefore, age should be understood not only as a demographic characteristic, but also as a factor linked to different life experiences, educational trajectories, adaptive capacities, and opportunities to engage with technological change (Tirado-Morueta, Rodríguez-Martín, Álvarez-Arregui, Ortíz-Sobrino and Aguaded-Gómez, 2023). The literature emphasizes that digital divides emerge across several interconnected dimensions, including access, literacy, usage, participation, and outcomes. In the context of digital government, this means that generational position influences not only whether citizens can access online public services, but also how effectively they are able to interact with increasingly digitalised administrative systems (Lyulyov, Pimonenko and Kwilinski, 2025; Trofymenko, Bulatova, Trofymenko and Vyshniakov, 2023). For the purposes of this article, the generational dimension is treated as a contextual lens for understanding unequal access to digital welfare services, rather than as an independently measured analytical category.

The generational dimension of digital inclusion is closely embedded in broader structures of social inequality. Unequal access to digital technologies, lower educational attainment, limited financial resources, insufficient digital skills, and disparities in infrastructure tend to reproduce pre-existing social stratification. Age often intersects with other disadvantages, such as disability, rural residence, or weaker social support, which increases the risk of digital exclusion (Trofymenko, Bulatova, Trofymenko and Vyshniakov, 2023). Recent studies point out that older adults should not be treated as a homogeneous group, since their levels of digital engagement vary according to cognitive ability, self-efficacy, health status, previous experience, and the availability of social or institutional support (Tirado-Morueta, Rodríguez-Martín, Álvarez-Arregui, Ortíz-Sobrino and Aguaded-Gómez, 2023).

2.2 Technological dimension: Digitalisation and artificial intelligence in welfare administration

Digitalisation and AI have become fundamental drivers of social transformation, influencing the efficiency, accessibility, and governance of social policy systems. Digitalisation represents one of the determining factors of sustainable development and quality of life, extending across economic, social, and environmental dimensions (Reis, Santo and Melao, 2019). In the European context, these processes are associated with the effective utilisation of cohesion policy funds. In contrast, in the Asian context, they are often perceived as tools for overcoming demographic and social inequalities. Such interconnected experiences reveal how technological

change can help integrate generational diversity into long-term social and regional sustainability strategies.

One of the most visible applications of digitalisation lies in healthcare, where digitised systems may improve accessibility, quality, and efficiency. Cloud-based data storage can support long-term patient monitoring and the sharing of medical information across institutions, thereby supporting the creation of integrated health records. Telemedicine and remote health monitoring can extend care to regions with limited healthcare infrastructure, potentially supporting more balanced access to services. Moreover, digital technologies such as machine learning algorithms are increasingly used to optimise diagnostic processes and service coordination (Sharma and Garg, 2024). A similar logic applies to social care and protection systems.

At the theoretical level, recent debates have introduced the concept of the “digital welfare state”, which describes systems of social protection increasingly driven by data and technology (Gerven, 2022). Critical interpretations claim that automation, prediction, identification, and surveillance are part of digitalisation in welfare government, and that these processes can both increase and regulate social assistance (Rajpal, Singh, Chatterjee and Sivarajah, 2025). The digital welfare state can be understood as a transition to data-driven social policy and as a new regime of benefit provision based on digital infrastructures.

3. Institutional background of welfare governance

Institutions are a crucial component of social policy management in this context because they oversee drafting legislation, implementing policies, and assessing the outcomes of specific initiatives. In the Czech Republic, the system facilitates a better response to local demands but also complicates administration. This arrangement is further shaped by the country’s embeddedness in the EU’s Cohesion Policy and digital policy frameworks, which promote solidarity and seek to reduce regional disparities. In contrast, the Republic of Korea employs a more centralised management approach built around advanced technology and a high level of public sector digitisation. As discussed by Chung, Choi, and Cho (2022), this model can support greater coordination and administrative precision, while also reflecting the broader Indo-Pacific context in which rapid innovation is often treated as a strategic instrument of competitiveness and state capacity.

3.1 Institutional framework and management of social policy in the Czech Republic

The institutional framework of social policy in the Czech Republic is based on a multi-level system of governance that links the activities of the state administration, regions, and municipalities. The Czech Republic is a typical representative of a welfare state, for which social policy is a key tool for ensuring social protection of the population and improving quality of life.

Although social policy plays a fundamental role in the Czech system, it has long faced political and economic pressures related to the imbalance between social demands and limited financial resources. In recent years, the state has therefore been reforming and modernising the system to strengthen the effectiveness and sustainability of social protection, a development that is consistent with one of the lowest levels of old-age income inequality among OECD countries reported in the OECD review (2020).

The central pillar of the social security system is the Czech Social Security Administration, which administers insurance benefits. All economically active citizens, both employees and self-employed persons, are compulsorily enrolled in the social insurance system. The funds collected are then used to finance social insurance benefits, primarily pensions and sickness benefits (ČSSZ, 2026). This system represents a basic form of solidarity between generations and protects citizens in situations such as old age, illness, disability, or loss of a breadwinner.

Another key pillar is the Czech Labour Office, which administers the non-insurance benefits system and implements active employment policy measures. Unlike insurance benefits, most non-insurance benefits are not conditional on economic activity or the payment of insurance premiums (Kaczor, 2022). In some cases, such as unemployment benefits, previous work activity may also be considered. The Labour Office has an extensive network of regional branches and contact offices that ensure the availability of social services throughout the country and provide targeted assistance to families with children, people with disabilities, and the long-term unemployed (Ondrášek, Kozlová, Hricová, and Urban, 2024).

Municipalities and regions, which have both delegated and independent authority, are also a crucial pillar of social policy. They perform legally mandated tasks, such as protecting children's social and legal rights, preventing social harms, or ensuring the availability of social services, within the parameters of their assigned authority (Kaczor, 2022). Although this approach guarantees a broader range of social needs, it also may be linked to higher administrative costs, regional variations in service quality, and fragmentation of competencies.

3.2 Institutional framework and management of social policy in the Republic of Korea

The social policy of the Republic of Korea has developed to protect citizens' rights and support their basic living needs, including healthcare, social welfare, and income security. The government of the Republic of Korea regularly adjusts social security programmes in response to changing societal needs in order to maintain living standards and quality of life. The Ministry of Health and Welfare (MOHW) plays a key role in managing the social policy system and is responsible for planning, coordinating, and implementing national-level social programs. Other key institutions include the National Pension Service (NPS) and the National Health Insurance Service (NHIS), which administer the various pillars of the social insurance system and support the financial administration and accessibility of services for residents of the Republic of Korea (MOHW, 2026).

The Korean social system is based primarily on social insurance and public assistance. The first of these components, social insurance, has a long tradition in the Korean system. Its foundations were laid with the introduction of insurance for occupational accidents and pension schemes for specific occupational groups, while over time the system expanded into a broader framework covering the population against major social risks. In the field of old-age income protection, the Korean pension system currently consists of a mandatory public pension scheme, occupational pension arrangements, and voluntary individual pension schemes (OECD, 2022). Health insurance is also a significant part of the system and is mandatory for all residents of the Republic of Korea, regardless of citizenship. Healthcare is financed through contributions based on the insured person's salary, income, or financial circumstances. According to NHIS guidance (2025), the NHIS oversees the calculation of insurance premiums, administrative procedures, and service access across population groups.

Social assistance is focused on people who are unable to work, whose income is below the subsistence level, or who find themselves in extremely unfavourable social circumstances. Livelihood protection and health-related support programs aim to reduce poverty and provide a basic level of social security. The National Basic Living Security Act of 2008 defines the purpose of this part of the system as ensuring a minimum standard of living for deprived persons and supporting their self-reliance, which is consistent with its central place in the Korean framework of income protection (KLRI, 2008).

4. Methodology

The methodological framework combines a focused literature review with descriptive-comparative analysis and contextual institutional interpretation. The article does not attempt to measure economic efficiency in a causal, explanatory, or econometric sense. Instead, it adopts a descriptive-comparative policy analysis design to interpret how welfare governance differs across two countries with distinct institutional traditions but similar long-term pressures from ageing, labour-market change, and digital transformation.

The comparison is organised around three analytical dimensions. These dimensions do not constitute a ready-made composite index or an established measurement framework of welfare efficiency; rather, they form the author's own analytical construct, grounded in the literature on welfare governance, digital government and human development. Their logic is complementary. Social expenditure captures the redistributive and fiscal effort of the welfare state, EGDI captures the digital-administrative capacity through which public services can be coordinated and delivered, and HDI provides a broad outcome-oriented context of long-term social development. Taken together, the indicators therefore make it possible to compare institutional configurations of welfare governance, while avoiding a direct causal interpretation of efficiency.

The first dimension is the economic-fiscal dimension, represented by social expenditure as a share of GDP. The second is the digital-administrative dimension, represented by the E-Government Development Index (EGDI):

$$EGDI = \frac{1}{3}(OSI_{norm} + TII_{norm} + HCI_{norm}) \quad (1)$$

consisted of Online Service Index (OSI), Telecommunication Infrastructure Index (TII), and Human Capital Index (HCI).

The third is the social-developmental dimension, represented by the Human Development Index (HDI):

$$HDI = \sqrt[3]{I_{health} \cdot I_{education} \cdot I_{income}} \quad (2)$$

calculated as the geometric mean of three normalized indices of health, education, and income.

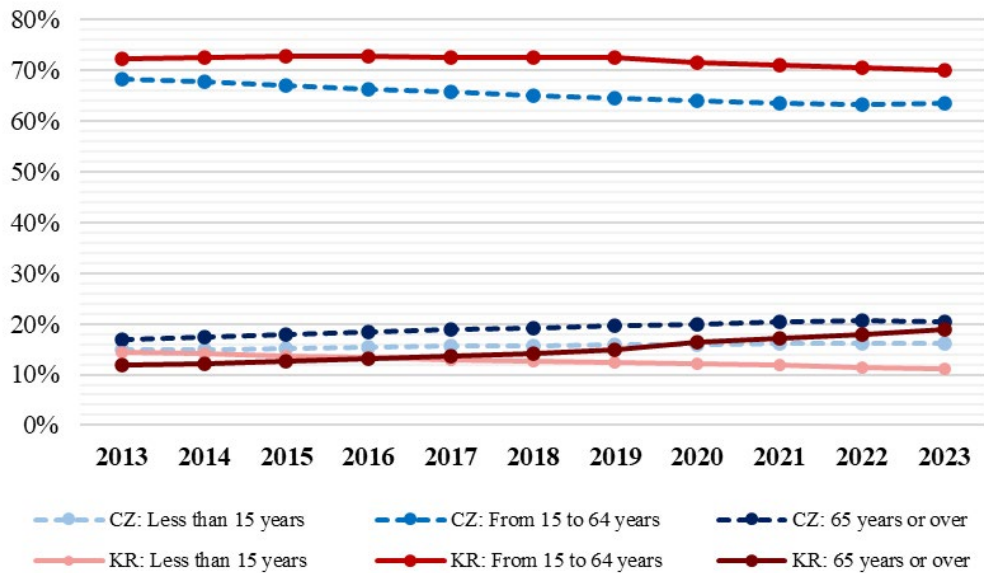
The selection of the Czech Republic and the Republic of Korea was made on the basis of a most-different comparative logic. The two countries differ in their historical welfare-state trajectories, administrative traditions, regional setting and degree of digital-government maturity. At the same time, they are comparable because both are high-income OECD economies, both face population ageing, fiscal pressure on social protection and rising demand for digital public services, and both must reconcile administrative modernisation with social inclusion. The Czech Republic reflects a more decentralised and redistributive European welfare setting, while the Republic of Korea illustrates a more centralised and innovation-oriented model of public administration (Ondrášek, Kozlová, Hricová and Urban, 2024; Chung, Choi and Cho, 2022). This contrast makes it possible to examine whether different institutional arrangements are associated with different trajectories of digital governance and welfare performance. This combination of shared structural pressures and different institutional solutions makes the comparison analytically useful rather than merely descriptive.

The analysis uses secondary data from the OECD, the United Nations, and the UNDP. The principal observation window covers 2013–2023, while EGDI data are available biennially for 2014–2024. The period was selected for both analytical and practical reasons: it captures the post-crisis consolidation of welfare systems, the acceleration of digital government, the demographic intensification of ageing and the pandemic-related stress test of public administration, while also providing a sufficiently consistent data base for both countries. The selected indicators were preferred because they are conceptually relevant, internationally standardised and sufficiently comparable across both countries over time. Other indicators, such as poverty or inequality measures, were considered but not included due to lower comparability or inconsistent longitudinal coverage.

5. Result Analysis

Before analysing the selected welfare indicators, it is necessary to consider the demographic background within which both welfare systems operate. Changes in population age structure are particularly relevant to social policy because they directly affect the demand for pensions, health care, long-term care and digitally accessible administrative services. In this respect, the Czech Republic and the Republic of Korea represent comparable ageing societies, although the Korean trajectory is more compressed and dynamic. Fig 1 therefore presents the development of the population age structure in both countries between 2013–2023 in a single comparative format, which makes the divergence between age groups and countries more visible.

Fig 1. Development of the population age in the Czech Republic and the Republic of Korea in 2013–2023 (in %)



Source: OECD (2013–2023)

Both countries recorded a gradual decline in the share of the population aged 15–64 and a corresponding increase in the share of persons aged 65 years or over. At the same time, the proportion of children under 15 remained relatively stable in the Czech Republic, while in the Republic of Korea it declined more visibly over the observed period. The most dynamic change can be observed in Korea’s elderly population, whose share increased markedly from approximately 12% to almost 19%, whereas in the Czech Republic the increase was more moderate, from around 17% to 20%. This demographic profile is important for the subsequent policy interpretation: ageing increases expenditure pressure, but it also raises the importance

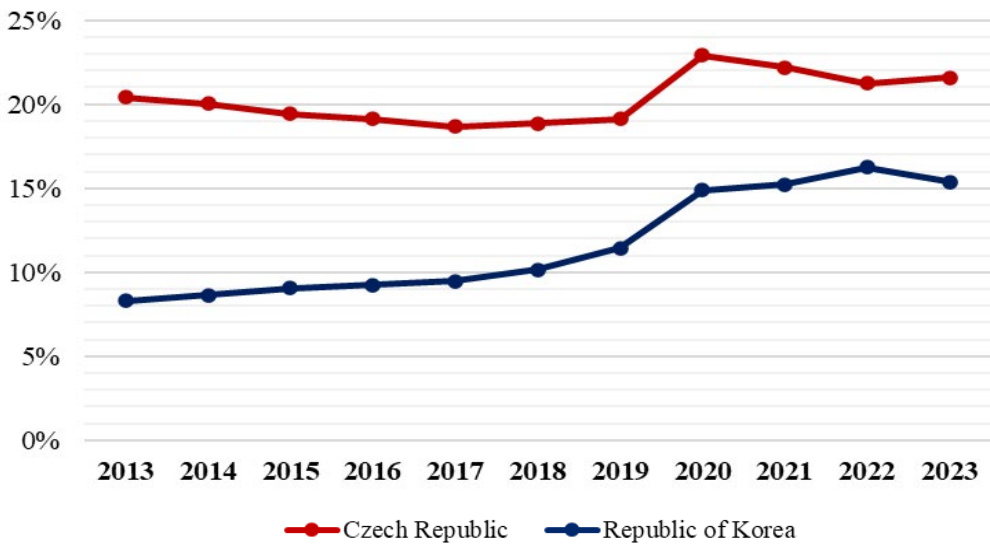
of accessible digital administration, because older citizens may be more exposed to barriers in online welfare services.

The comparative analysis focuses on how the three selected indicators develop in both countries and what these trajectories may suggest about welfare governance under digital transformation. The aim is not to prove that one system is universally more efficient than the other, but to identify differentiated patterns through a comparative institutional reading of the evidence. The observed indicator trajectories should not be interpreted as evidence of simple linear causality. Rather, they point to different institutional combinations through which welfare systems respond to common structural pressures, such as fiscal redistribution, institutional coordination, digital service delivery and inclusive access to administration.

Social Expenditure

Data on social expenditure as a percentage of GDP for 2013–2023 were drawn from the OECD database. The comparison in Fig 2 illustrates persistent differences in the fiscal profile of welfare provision in the Czech Republic and the Republic of Korea.

Fig 2. Share of social expenditure in GDP of the Czech Republic and the Republic of Korea in 2013–2023 (in %)



Source: OECD (2013–2023)

The Czech Republic consistently devoted a higher share of GDP to social protection, ranging from 18.7% to 22.9% over the observed period. This suggests to a more redistributive and fiscally demanding welfare model, with a marked pandemic-related increase and a subsequent stabilisation above pre-pandemic levels. Institutionally, this trajectory is consistent with a system in which pensions, sickness insurance, labour-market support and non-insurance benefits are administered through a broad and relatively complex network of public institutions. The Republic of Korea started from a substantially lower level of 8.3% in 2013 and increased to 15.4% by 2023, indicating a gradual expansion of public commitment to social protection from a lower baseline.

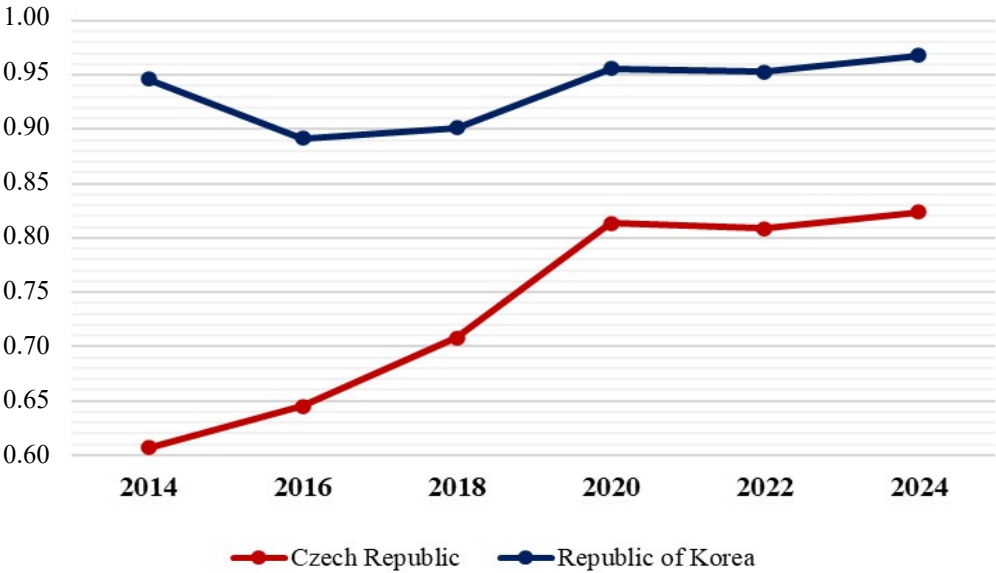
These patterns should be interpreted cautiously, as expenditure levels alone do not provide direct evidence of welfare efficiency. Lower expenditure does not in itself demonstrate higher efficiency, just as higher expenditure does not automatically imply lower effectiveness. From a policy perspective, the Czech trajectory indicates the stabilising role of broad social protection but also exposes the risks of fiscal rigidity and administrative fragmentation. The Korean trajectory reflects the gradual strengthening of social insurance and public assistance in response to rapid ageing, while relying more strongly on central coordination and technologically mediated administration. What the comparison therefore shows is not a simple expenditure-performance hierarchy, but two different reform logics: solidarity-based fiscal protection in the Czech case and expansionary, digitally enabled targeting in the Korean case.

E-Government Development Index

EGDI data from 2014–2024 were obtained from the United Nations. The index captures the capacity of public administrations to deliver digital services, support access to information, and strengthen administrative coordination. The development shown in Fig 3 reveals a durable advantage of the Republic of Korea and a gradual catch-up process in the Czech Republic.

Across the observed period, the Republic of Korea maintained one of the highest EGDI scores globally, ranging from 0.89 to 0.97. The Korean case suggests a more deeply embedded digital-administrative capacity and a long-term institutional commitment to digital government as a core administrative infrastructure. The Czech Republic improved from 0.61 in 2014 to 0.82 in 2024, indicating substantial progress in digital public administration, although from a clearly lower starting point. The contrast is analytically important because it highlights different levels of digital state capacity. In policy terms, Korea's advantage can be linked to stronger central steering, more integrated digital platforms and a governance culture in which digitalisation is treated as a strategic instrument of public-sector performance. The Czech catch-up process, by contrast, points to incremental modernisation within a more fragmented administrative environment, where interoperability and user-oriented service integration remain central challenges. The data do not allow a direct conclusion that higher EGDI automatically translates into better welfare outcomes, but they show that digital governance forms part of the broader institutional environment within which welfare services are delivered.

Fig 3. E-Government Development Index of the Czech Republic and the Republic of Korea in 2014–2024



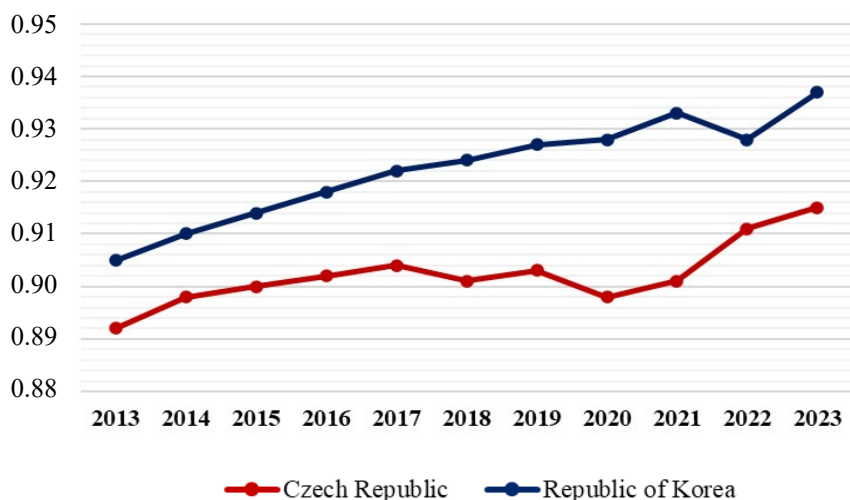
Source: United Nations (2014–2024)

Human Development Index

HDI data covering the period 2013–2023, shown in Fig 4, were collected from the UNDP database. As a composite indicator of life expectancy, education, and income, HDI provides a synthetic view of long-term human-development outcomes relevant to social policy.

Between 2013 and 2023, the Czech Republic’s HDI increased from 0.89 to 0.92, while Korea’s increased from 0.91 to 0.94. Both countries thus remained in the category of very high human development and recorded gradual improvement over time. The comparison suggests that strong human-development outcomes may be achieved through different institutional combinations: in the case of the Czech Republic through stable redistribution and broad social protection, and in the case of the Republic of Korea through a more technologically advanced administrative setting combined with sustained social investment. For policy interpretation, HDI is important because it prevents the analysis from reducing welfare governance to expenditure or digital capacity alone. It shows that similar high-level social outcomes can coexist with different fiscal and administrative models.

Fig 4. Human Development Index of the Czech Republic and the Republic of Korea in 2013–2023



Source: UNDP (2013–2023)

From a policy perspective, the findings point less to a single best model than to different trade-offs in welfare governance as shown in Tab 1.

Tab 1. Characteristics of welfare governance models in the Czech Republic and the Republic of Korea

Dimension	Czech Republic	Republic of Korea
Welfare governance model	Decentralised, redistributive and territorially differentiated	Centralised, coordinated, and innovation-oriented
Social expenditure profile	Higher and fiscally more demanding	Lower, but rising dynamically
E-government capacity	Improving gradually, but still catching up	Structurally high and stable
Administrative logic	Fragmented across levels of government	Technology-driven and centrally coordinated
Main strength	Broad social coverage and social cohesion	Administrative efficiency and digital integration
Main risk	Fragmentation and lower fiscal flexibility	Social selectivity and risk of digital exclusion
Overall welfare-governance pattern	Solidarity-based resilience supported by broad fiscal redistribution	Digitally enabled targeted governance supported by central coordination

Source: Own elaboration

Tab 1 should therefore be read as an interpretative synthesis of the preceding institutional and indicator-based analysis, not as a purely descriptive typology. The Czech model combines broad coverage, relatively high redistribution and multi-level implementation. Its main policy advantage lies in solidarity and social cohesion, but this is accompanied by coordination costs, fragmented responsibilities and lower flexibility in rapidly adapting services to digital transformation. The Korean model combines lower but rising social expenditure with stronger central coordination and advanced digital-government infrastructure. Its main policy advantage lies in administrative integration and the capacity to scale digital services, but this also creates a need to protect older citizens and disadvantaged groups from digital exclusion. The policy implication is that welfare efficiency cannot be inferred from one indicator alone. It depends on whether expenditure, digital capacity and institutional coordination are aligned with inclusive access and social legitimacy.

A more policy-oriented reading of the observed trajectories therefore links the indicators to concrete governance mechanisms. In the Czech Republic, the key reform challenge is not only to increase digitalisation, but to reduce fragmentation between social security administration, labour-office services, regions and municipalities, and to make digital welfare services easier to use for citizens with lower digital skills. In the Republic of Korea, the key challenge is different: high digital capacity should be complemented by safeguards against exclusion, transparent decision-making and continued expansion of social protection for older people and low-income groups. In both cases, digital transformation should be treated as a supporting governance mechanism rather than as a substitute for social policy design.

6. Conclusion

Both welfare systems operate under common structural pressures, including population ageing, labour-market change, and the need to maintain legitimacy under conditions of technological transformation. This makes comparative interpretation across European and East Asian contexts analytically valuable. The Czech Republic relies more strongly on redistributive stability and higher social expenditure, while the Republic of Korea combines a lower expenditure base with consistently higher digital-government capacity. Taken together, the analysed indicators suggest differentiated patterns rather than a single hierarchy of performance.

The chosen indicators should not be viewed as a pre-made measurement framework, but rather as an authorial analytical construct. The economic-fiscal aspect of welfare governance is captured by social expenditure, the digital-administrative aspect by EGDI, and the wider social-developmental outcome aspect by HDI. According to their combined analysis, the Republic of Korea combines a lower but growing expenditure base with a more sophisticated and centrally managed digital-government infrastructure, whereas the Czech Republic depends more heavily on redistributive stability and extensive social protection. These metrics allow for the comparison of the institutional reasoning by which welfare regimes react to technology

and demographic constraints, but they do not demonstrate direct consequences of economic efficiency.

From a practical policy perspective, the findings point to different reform priorities. In the Czech Republic, the main challenge lies in reducing fragmentation across institutions, improving interoperability and simplifying digital service delivery while preserving assisted or non-digital access for groups at risk of exclusion. In the Republic of Korea, the policy issue is not primarily insufficient digital capacity, but the need to ensure that advanced and technology-driven welfare administration remains inclusive, transparent and accessible for older citizens and socially vulnerable groups. In both cases, digital transformation can more effectively improve welfare governance if it is integrated with administrative legitimacy, social inclusion, and institutional coordination.

Overall, the article therefore supports a cautious interpretation according to which digital transformation may complement welfare governance but does not determine social performance or economic efficiency by itself. The article's contribution is to demonstrate how redistribution, digital state capability, and human-development outcomes can be interpreted together in an organized comparison of two disparate welfare regimes. Future research could expand on this analysis by looking at particular welfare reforms within a more limited causal research design, or by using more direct metrics of digital inclusion, inequality, service accessibility, and policy execution.

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