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Revisiting the globalisation-welfare state Nexus: what about the quality of the social welfare?

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ABSTRACT

A large amount of literature examines the effects of globalisation on the *size* of the welfare state. Unlike previous papers, this article studies globalisation's effects on the *quality* of social welfare. For this purpose, we use the annual panel dataset of 169 countries from 1970 to 2018. The findings indicate that a higher level of globalisation leads to a higher quality of the welfare state. This evidence is valid when the countries are divided according to their income levels, such as low-income, middle-income, and high-income economies. In addition, these results remain robust when various sensitivity analyses are implemented, such as using different indicators of globalisation, utilising different estimation techniques, including various controls, and excluding outliers.

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1. Introduction

Globalisation is a multifaceted concept indicating capital, goods, and services. Globalisation plays a significant role in enhancing economic growth, which is already well-identified in international economics (Dreher, 2006). Therefore, the impact of globalisation on the size of the welfare state across countries has been one of the classic questions raised in international economics. There is growing research on the consequences of globalisation on the welfare state with different indicators (see, e.g., Dreher & Gaston, 2008; Dreher et al., 2008; Egger et al., 2019; Epifani & Gancia, 2009; Hälg et al., 2020; Lim & Burgoon, 2020; Meinhard & Potrafke, 2012; Rodrik, 1998; Schulze & Ursprung, 1999; Shelton, 2007; Ursprung, 2008).

More open countries have larger public sectors due to the uncertainty caused by trade openness and global financial markets. This view is defined as the *compensation*

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hypothesis and attributed to Rodrik (1997 and 1998) in the economics literature.[1] There are four stages behind the theoretical mechanism of the compensation hypothesis: First, countries have integrated significantly into global markets due to economic globalisation, and different countries have been significantly affected by uncertainty shocks (e.g., commodity prices) (Bouri et al., 2019; Buysse et al., 2018; Gozgor & Can, 2017). Second, the uncertain environment in global markets will cause more uncertain domestic economic conditions. Third, economic globalisation's uncertainty leads to higher security policy demands by voters in the domestic country (Fang et al., 2022b). Fourth, security demands affect open economies to enhance social security and welfare programmes, such as cheap and efficient health systems and education, retirement programmes, and unemployment insurance (Gozgor, 2012). Finally, more open countries have larger public sectors (Bergh, 2021). In short, the compensation hypothesis suggests that the welfare state should compensate individuals for potential disadvantages due to globalisation.

However, several researchers contend that globalisation reduces the welfare state's size (Schulze & Ursprung, 1999). Scholars have indicated that trade liberalisation creates competition among national governments in a race to the bottom, suppressing tax rates. This view is defined as the *efficiency* hypothesis. The reduction of tax rates should reduce the tax revenues of the fiscal government, and lower tax revenue will decrease fiscal power (Jha & Gozgor, 2019). Consequently, smaller governments will have a lower capacity for public spending. In addition, higher economic globalisation will cause countries to reduce tax rates to attract capital. Avoiding capital attraction will have a higher cost on economic performance than welfare loss due to higher public spending. Schulze and Ursprung (1999) are among the earlier empirical studies. The authors did an extensive survey on the globalisation-welfare state nexus. Schulze and Ursprung (1999) also indicated that global economic integration creates European unemployment and lowers wage rates for lower-income and middle-income families in the United States. According to the efficiency hypothesis, reducing the welfare state size should be expected when economic globalisation increases (Meinhard & Potrafke, 2012).

Following arguments by Rodrik (1997 and 1998) and Schulze and Ursprung (1999), several scholars have empirically investigated the globalisation-welfare state nexus and have reached mixed results. For instance, Kim (2009) found that more integrated countries experience economic instability and employment fluctuations. This issue requires effective government intervention for the losers of globalisation in open economies regarding more significant social insurance and employee benefits. Other researchers have used narrowly defined measures of globalisation, that is, only trade liberalisation or financial openness. These mixed findings may also relate to several studies focussed on aggregated globalisation data.

Given these backdrops, our article fills this research gap while revisiting the globalisation-welfare state nexus in a panel data sample of 169 countries from 1970 to 2018. Our main contribution is to focus on the *quality* of the welfare state rather than the *size* of the welfare state. Lower quality is the welfare state's means-tested programmes (e.g., cash transfers) that usually target only poor and needy people. Some people may benefit more than others; e.g., higher-wage workers receive higher

unemployment benefits. However, in the welfare state's higher quality, welfare programmes are universal and non-means-tested. For instance, free education, affordable health care, and inclusive social security should benefit everyone. These issues represent the quality of the welfare state, which can be a better measure than the size of the welfare state. At this stage, our article does not focus on the size of the welfare state but rather on its quality. Next, we analyse the effects of globalisation on the quality of the welfare state.

To the best of our knowledge, this is the first article in the empirical literature to examine the effects of globalisation on the quality of the welfare state measured by the revisited Konjunkturforschungsstelle (KOF) index of globalisation. Our article also differs from the existing studies in terms of its sample size and consideration of heterogeneous countries based on their levels of economic development. Unlike previous studies, our article considers the panel data set in 169 countries from 1970 to 2018 for revisiting the globalisation-welfare state nexus. We also empirically study the globalisation-welfare state nexus in low-income, middle-income, and high-income countries. In handling the empirical exercise, we use different globalisation measures, including de facto and de jure, with other economic dimensions, such as trade and financial globalisation.

The empirical results indicate that a higher level of globalisation leads to a higher quality of the welfare state worldwide. This evidence is valid when the countries are divided according to their income levels, such as low-income, middle-income, and high-income economies. In addition, these results remain robust when various sensitivity analyses are implemented—such as using different indicators of globalisation, utilising different estimation techniques, including various controls, and excluding outliers. Thus, these findings indicate that different dimensions of global integration promote the quality of the welfare state.

The remainder of this article is organised as follows: Section 2 reviews the related studies on the globalisation-welfare state nexus. Section 3 discusses the data, the model, and the estimation procedures. Section 4 analyses the empirical findings, while robustness analyses are highlighted in Section 5. Finally, Section 6 concludes with policy implications and scopes for future works.

2. Literature review

2.1. Determinants of welfare state indicators

Globalisation is a multifaceted concept beyond trade openness and capital movements, and it remains controversial in international economics. Hence, it is essential to brief the existing empirical studies on the globalisation-welfare state nexus. Why do more open economies have bigger governments? This research question is addressed by the seminal works of Rodrik (1997 and 1998), which are the most prominent studies validating the compensation hypothesis.[2] The panel analysis of Rodrik (1998) uses the data from 1985 to 1989 in 125 countries. It supports the driving role of globalisation on government consumption (expenditure). This finding also becomes consistent when the data period from 1990 to 1992 in 103 countries are considered. The author argues that the scope of government in most open economies is

more extensive than in less integrated economies with others globally. This evidence is robust to include per capita income. This issue shows that some countries gain while others lose. However, Alesina and Wacziarg (1998) criticised Rodrik's (1997 and 1998) work, indicating the potential of omitted variable bias due to neglecting a country's size. The authors show that controlling the country size, measured by log population, hinders the robustness of Rodrik's (1997 and 1998) results on the compensation hypothesis's validity. Therefore, following Alesina and Wacziarg (1998) and Rodrik (1997 and 1998), we consider per capita income and population as the primary control variables in the estimations. Garrett (2001) also finds a positive correlation between trade openness and public spending. However, the evidence is insufficient to consider different model specifications.

Ram (2009) also tested the validity of the compensation hypothesis, considering the panel dataset in 154 countries from 1960 to 2000. The validity of the results is based on the study's specific dataset. The results from the fixed-effects estimations are in line with Rodrik (1997 and 1998)'s baseline results, and they reject the significant role of country size as an omitted variable bias. The evidence is also valid when the author considers different model specifications. However, a newer study by Jetter and Parmeter (2015) observes that Ram's (2009) findings are not robust enough to implement sensitivity analyses on the periods and different country samples.[3]

Meinhard and Potrafke (2012) examined the globalisation-welfare state nexus using the panel dataset of 186 countries from 1970 to 2004 and find that globalisation increases government expenditures. The authors further show that globalisation-driven government expenditure is more substantial in the Organisation for Economic Co-operation and Development (OECD) countries. Gozgor and Ranjan (2017) theoretically and empirically demonstrated that globalisation promotes absolute redistribution (a measure of the capacity of the welfare state) and that the impact is more vital in wealthier economies. The positive impact of globalisation on social expenditures shelters the welfare of the people. The evidence is consistent with the compensation hypothesis proposed by Rodrik (1997 and 1998), where a more significant size of the government can be provided during expanding globalisation.

Some papers focus on countries in specific regions, memberships, or income groups. For instance, Avelino et al. (2005) concentrated on Latin American countries. They argue that different measures of globalisation affect social spending. The authors find that trade openness fuels social spending as a measure of globalisation. In contrast, financial openness on social spending is ineffective. They also argue that political regimes play a vital role in the dynamics of social spending because democratic regimes spend more on social welfare than authoritarian regimes. Subsequently, Ha (2008) focused on the OECD countries, where globalisation is also higher than in other countries, and found that left-wing governments spend more on social welfare than right-wing governments, and Potrafke (2009) indicated that an increase in public spending appears weaker when there is a lower level of globalisation in the OECD countries. Finally, Leibrecht et al. (2011) focused on Western and Eastern Europe from 1990 to 2006 and observe that the KOF index of globalisation promotes social expenditures in Western Europe while it reduces social expenditures in Eastern Europe. Therefore, the authors conclude that the quality of institutions, such as

democracy, can be an essential variable in changing the effects of globalisation on government expenditures.

Other studies find a negative influence of globalisation on the welfare state, implying the efficient hypothesis's validity. For instance, Garrett and Mitchell (2001) used the panel data from 18 OECD countries from 1961 to 1993 and find that trade openness negatively affects government spending. Kittel and Winner (2005) concluded that evidence exists for neither the efficiency nor the compensation hypotheses. Dreher et al. (2008) considered a panel sample of 60 countries from 1971 to 2001 and observe that globalisation does not significantly affect government expenditures. Their findings remain consistent from 1991 to 2000 in the OECD countries. Potrafke (2019) also found no significant relationship between globalisation measures and social expenditures in the non-OECD Asian economies when the fixed effects are included in the estimations. Finally, using data from the panel dataset of 36 OECD economies from 1990 to 2015, Santos and Simões (2021) found that all dimensions of globalisation (economic, political, and social) positively affect total social expenditures. However, the impact is not statistically significant for social globalisation.

2.2. The role of covid-19 pandemic and financial markets

Regarding the impact of pandemics, Mirza et al. (2020a) examined the impact of human capital efficiency on Latin American mutual funds during the Covid-19 outbreak. The authors found that mutual funds with higher human capital efficiency perform better than their counterparts (Ielasiet al., 2018). Yarovaya et al. (2021) investigated the impact of human capital efficiency on equity funds' performance during three stages of the Covid-19 pandemic. Their results suggest that fund managers should invest in human capital to improve funds' coping ability and resilience during periods of extreme stress. Meanwhile, Hasnaoui et al. (2021) studied the impact of human capital efficiency on mutual fund performance in sixteen pandemic-affected Asian countries. The authors found that funds with better human capital efficiency outperform their counterparts that rank lower on human capital efficiency (Gao et al., 2021). Yarovaya et al. (2020) examined the impact of the pandemic on loan portfolios of 225 credit institutions in the ten most affected European Union (EU) states. The authors found a significant deterioration in asset quality due to the pandemic. Rizvi et al. (2020b) examined the impact of Covid-19 on asset management in the EU. They found that social entrepreneurship funds demonstrated positive returns during the pandemic. At the same time, most of the other subcategories plunged into the negative zone. Their findings suggest that fund managers have been drifting from high-risk options to low-risk in size and investment strategy. Mirza et al. (2020b) studied the impact of Covid-19 on the solvency profile of business firms in the EU member states. The authors found that the solvency profile of business firms deteriorates in terms of raising their debt, default, and declining coverage during pandemics.

From the review of the previous empirical papers in the literature, we observe mixed results on the effects of globalisation on welfare state indicators, such as public and social expenditures. However, these papers have focussed on the size of the welfare state. Our article differs from the previous studies in focussing on the quality of

the welfare state. In addition, our study re-examines the globalisation-welfare state nexus by employing a larger dataset. Finally, we implement a battery of robustness checks to confirm the main findings on the validity of the compensation hypothesis.

3. Data descriptions, models, and estimation procedures

3.1. Data descriptions

The annual panel dataset in this article covers the sample from 1970 to 2018. The annual data are used to capture short-term fluctuations. Our dataset considers 169 countries. Following World Bank's (2022b) definitions, we also consider 26 low-income economies whose per capita gross national income (GNI) was less than $1,035 in 2019. In addition, we have 91 middle-income economies with a per capita GNI between $1,036 and $12,535 and 52 high-income economies with a per capita GNI higher than $12,536. The related 169 countries are provided in Table A1. The period under concern and the countries in the sample are related to the data availability.

3.1.1. Dependent variable: quality of the welfare state

As we have previously discussed, most of the papers in the empirical literature have generally focussed on the effects of globalisation on the size of the welfare state. Our article aims not to focus on the size of the welfare state but rather on the quality. The low quality of the welfare state means that welfare programmes are means-tested, targeting only poor and needy people. Cash transfers to poor and needy people are examples of a low-quality welfare state. A higher quality of the welfare state means that welfare programmes are non-means-tested (universal), aiming at everyone (or almost everyone) in the country. Free (or almost free) education, health care services, efficient retirement, and unemployment programmes are examples of a high-quality welfare state. Of course, some people benefit more from specific welfare programmes; e.g., unemployment benefits can be higher for workers with higher salaries. Still, the critical issue in our definition is that all people in the society are targeted as potential beneficiaries.

The index declined during the financial crisis, e.g., the 2008–2009 Global Financial Crisis, meaning that financial uncertainties distorted the quality of the welfare state. Given this backdrop, our measure for the quality of the welfare state (*LnQWS*) is an index from 0 (there is no welfare state) to 100 (the best welfare state opportunities) in the natural logarithmic form. It is obtained from the Varieties of Democracy (V-Dem) dataset (Version 11) and Pemstein et al. (2021).

We observe that the lowest value is observed in Somalia, and the highest values occur in Norway, Sweden, and Denmark. Note that a higher level of the index of *LnQWS* implies a higher quality of the welfare state (Pemstein et al., 2021).

3.1.2. Main Variable of ınterest: Globalisation measures

Our primary variable of interest is the level of globalisation. According to the compensation hypothesis, globalisation enhances the size of the welfare state; however, the efficiency hypothesis suggests that globalisation decreases the size of the welfare

state. Following these hypotheses, we focus on the effects of globalisation on the quality of the welfare state. We focus on different overall globalisation dimensions, including economic, financial, and trade. We consider the revised KOF globalisation indices proposed by Gygli et al. (2019). We downloaded the data from the KOF Swiss Economic Institute of ETH Zurich University and used the dataset published in 2020. According to Gygli et al. (2019), the revisited KOF globalisation indices enhance the previous versions.[4] The authors provide the most detailed and comparable data in 207 countries for the different aspects of globalisation, such as economic, social, and political, with the de facto and de jure dimensions. The de facto indices of globalisation focus on economic, political, and social outcomes, such as trade openness in goods and services, financial openness, foreign investments (Karim et al. 2022), international patents, and tourism. However, the de jure indices of globalisation consider the variables related to globalisation policies such as tariffs, agreements, regulations, taxes on trade and investments, freedom to visit, and press freedom.[5]

At this stage, we consider 12 measures of globalisation, which can be written as follows: (i) Overall Globalisation (*LnKOF_GI*), (ii) De Facto Globalisation (*LnKOF_GIdf*), (iii) De Jure Globalisation (*LnKOF_GIdj*), (iv) Overall Economic Globalisation (*LnKOF_EGI*), (v) De Facto Economic Globalisation (*LnKOF_EGIdf*), (vi) De Jure Economic Globalisation (*LnKOF_EGIdj*), (vii) Overall Trade Globalisation (*LnKOF_TRGI*), (viii) De Facto Trade Globalisation (*LnKOF_TRGIdf*), (ix) De Jure Trade Globalisation (*LnKOF_TRGIdj*), (x) Overall Financial Globalisation (*LnKOF_FINGI*), (xi) De Facto Financial Globalisation (*LnKOF_FINGIdf*), and (xii) De Jure Financial Globalisation (*LnKOF_FINGIdj*). Globalisation indices are defined from 0 to 100, and a higher index implies a higher level of globalisation (Gygli et al., 2019). Following Gozgor (2018), we use the globalisation indices in the natural logarithmic form.

3.1.3. Control variables

We consider the following control variables in the empirical analyses.

3.1.3.1. Macroeconomic variables and demographics. We first control the empirical analyses of macroeconomic variables and demographic indicators. Log GDP per capita (*LnRGDPC*), measured by the constant 2010 US$prices, is the benchmark control variable in the estimations following the model of Alesina and Wacziarg (1998) and Rodrik (1997 and 1998). Then, following Alesina and Wacziarg (1998) and Ram (2009), we include the country size, which is measured by log total population (*LnPOP*). Therefore, our first model controls *LnRGDPC* and *LnPOP* in line with Alesina and Wacziarg (1998) and Ram (2009). Then, we replace the *LnPOP* with the age dependency ratio (*AGE_DEP*) as the per cent of the working-age population to capture demographics (e.g., retirement programmes) on the quality of the welfare state (Szymańska, 2022). Therefore, in line with the model in Gozgor and Ranjan (2017), our second model controls *LnRGDPC* and *AGE_DEP*. These data are obtained from the World Bank (2022a).

We also include additional macroeconomic variables, which can affect the quality of the welfare state. We consider the inflation rate (% change in annual consumer

price index) since the inflationary environment can affect the capabilities (budget) of the welfare state (Meinhard & Potrafke, 2012). We also include the unemployment rate (% of the total labour force) since higher unemployment can change the dynamics of social expenditures, such as unemployment benefits and insurance (Gozgor, 2017; Schulze & Ursprung, 1999). These data are obtained from World Bank (2022a). Here, we also control the labour market regulations (index from 0 to 10) in the Economic Freedom Dataset of Gwartney et al. (2020).[6] In addition, more educated people can request a higher level of government expenditures; thus, a higher level of human capital can lead to higher quality demand in the welfare state (Ram, 2009). At this stage, we include the human capital (index) in the Penn World Table (version 10) dataset introduced by Feenstra et al. (2015). Finally, we add the Gini index (from 0 to 1) for disposable income (post-tax and post-transfers) inequality measure in the Standardised World Income Inequality Database (SWIID) (Version 9.0) in Solt (2020). Higher-income inequality should generally promote total welfare spending (Chen et al., 2021; Song et al., 2021; Tica et al., 2022).

3.1.3.2. Institutions and political systems. Inclusive institutions and democratic political systems can promote 'checks and balances' and efficiency (Acemoglu et al., 2019; Esaiasson et al., 2020). Therefore, higher-quality institutions can increase the government's quality and the welfare state's efficiency (Azam et al., 2021; Lühiste, 2014; Rothstein, 2009). At this point, following Ha (2008) and Leibrecht et al. (2011), we use several indicators of the quality of institutions: (i) Executive Constraints Concepts (*XCONST*), indexed from 1 to 7; (ii) Revised Combined Polity Score (*POLITY2*), indexed from −10 to 10; (iii) Competitiveness of Participation (*POLCOMP*), indexed from 0 to 5. The related data are obtained from the Polity5 Annual Time-Series introduced by Marshall and Gurr (2020).

In addition, following Avelino et al. (2005), we consider political systems using the following variables: (i) Regime Category, indexed from 0 to 5; and (ii) Typology of Political Institutions, indexed from 0 to 3. These data are obtained from the Regime Dataset (version 3.2) proposed by Bjørnskov and Rode (2020).

Finally, we include the total summed magnitudes of internal and external conflicts (indexed from 0 to 14). The related data are accessed from the Major Episodes of Political Violence (MEPV) dataset of Marshall (2019). According to Pleninger and Sturm (2020), conflicts can change the impact of globalisation on redistribution.

3.2. Models

We estimate the following six regressions to examine the effects of globalisation measures on the quality of the welfare state:

$$LnQWS_{i,t} = \gamma_0 + \gamma_1\ Globalisation_{i,t} + \gamma_2\ LnRGDPC_{i,t} + \gamma_3\ LnPOP_{i,t} + \ \vartheta_t + \vartheta_i + \varepsilon_{i,t} \tag{1}$$

$$LnQWS_{i,t} = \beta_0 + \beta_1\ Globalisation_{i,t} + \beta_2\ LnRGDPC_{i,t} + \beta_3\ AGE\_DEP_{i,t} + \vartheta_t + \vartheta_i + \varepsilon_{i,t} \tag{2}$$

$$LnQWS_{i,t} = \gamma_4 + \gamma_5\ Globalisation_{i,t-1} + \gamma_6\ LnRGDPC_{i,t-1} + \gamma_7\ LnPOP_{i,t-1} + \vartheta_t + \vartheta_i + \varepsilon_{i,t} \quad (3)$$

$$LnQWS_{i,t} = \beta_4 + \beta_5\ Globalisation_{i,t-1} + \beta_6\ LnRGDPC_{i,t-1} + \beta_7\ AGE\_DEP_{i,t-1} + \ \vartheta_t + \vartheta_i + \varepsilon_{i,t} \quad (4)$$

$$LnQWS_{i,t} = \gamma_8 + LnQWS_{i,t-1} + \gamma_9\ Globalisation_{i,t-1} + \gamma_{10}\ LnRGDPC_{i,t-1} + \gamma_{11}\ LnPOP_{i,t-1} + \ \vartheta_t + \vartheta_i + \varepsilon_{i,t} \quad (5)$$

$$LnQWS_{i,t} = \beta_8 + LnQWS_{i,t-1} + \beta_9\ Globalisation_{i,t-1} + \beta_{10}\ LnRGDPC_{i,t-1} + \beta_{11}\ AGE\_DEP_{i,t-1} + \ \vartheta_t + \vartheta_i + \varepsilon_{i,t} \quad (6)$$

In equations from (1) to (6), $LnQWS_{i,t}$ and $LnQWS_{i,t-1}$ are the current and lagged log (natural logarithmic) index for the quality of the welfare state in country *i* in time *t* and *t-1*; $Globalisation_{i,t}$ and $Globalisation_{i,t-1}$ are the current and lagged measures[7] of globalisation (overall globalisation index, de facto globalisation index, de jure globalisation index, economic globalisation, and its sub-indices) in log form in country *i* in time *t* and *t-1*[8]; $LnRGDPC_{i,t}$ and $LnRGDPC_{i,t-1}$ are the current and lagged per capita gross domestic product (GDP) in country *i* in time *t* and *t-1*; $LnPOP_{i,t}$ and $LnPOP_{i,t-1}$ are the current and lagged log population in country *i* in time *t* and *t-1*; $AGE\_DEP_{i,t}$ and $AGE\_DEP_{i,t-1}$ are the current and the lagged age dependency ratio in country *i* in time *t* and *t-1*. Finally, ϑ_t and ϑ_i present the time fixed-effects and the country fixed-effects; while $\varepsilon_{i,t}$ represent error terms.

We propose two models in Equations (1) to (6). The first model is based on Alesina and Wacziarg (1998) and Rodrik (1997 and 1998). The second model is based on Gozgor and Ranjan (2017). We consider the per capita income and population as the primary control variables in Equations (1) (3), and (5). We use the per capita income and age dependency ratio as the primary control variables in Equations (2) (4), and (6). We also include additional control variables in the sensitivity analyses, such as macroeconomic variables, demographic indicators, institutional quality, political regimes, and conflicts.

3.3. Estimation procedures

Equations (1)–(4) are estimated by the fixed-effects regressions, the traditional method in the empirical literature. Following Garrett (2001), we do not include the lagged dependent variable following Nickell's (1981) bias in the fixed-effects estimations. We also consider potential endogeneity issues between control variables and the index of the welfare state quality when we instrument these variables with their lags. Therefore, we utilise the System Generalised Method of Moments (GMM) estimations for the panel data proposed by Arellano and Bover (1995) and Blundell and Bond (1998). We provide the results of the Sargan test for checking potential over-identification problems in selecting instruments. Following Roodman (2009a), we

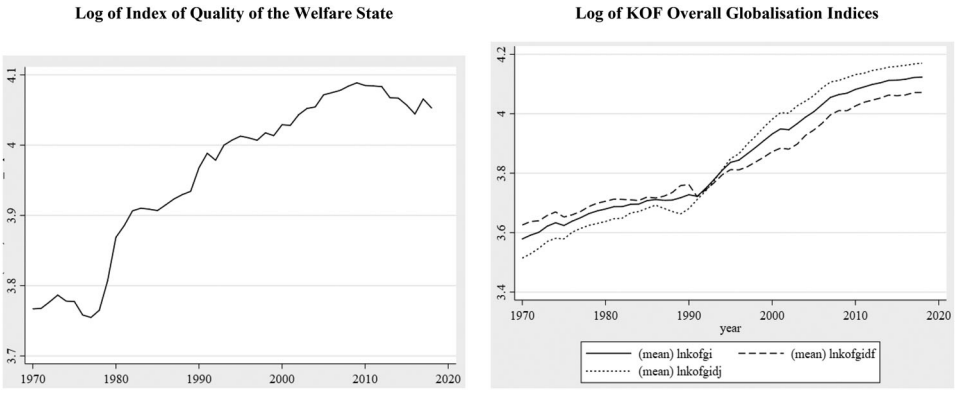

Figure 1. Quality of the welfare state and overall globalisation (1970–2018).
Source: own work based on KOF indices.

consider the two-step variance estimation to eliminate the possible autocorrelation problem. At this stage, we must observe the first-order autocorrelation. However, we must find no second-order autocorrelation in the residuals. Following Roodman (2009b), we collapse the instruments to address different integration units in variables.

3.4. Preliminary findings

At this stage, we report the descriptive statistics and data sources in the Table A2. We also provide the correlation matrix for the leading indicators of the empirical analyses in the Table A3. We observe positive correlations among *LnQWS*, *LnKOF_GI*, *LnKOF_GIdf*, *LnKOF_GIdj*, and *LnRGDPC*. Besides, *AGE_DEP* is negatively correlated to all other indicators. *LnPOP's* correlation between *LnQWS* and *LnRGDPC* is negative. However, there are positive correlations among *LnKOF_GI*, *LnKOF_GIdf*, *LnKOF_GIdj*, and *LnPOP*. Therefore, the preliminary pairwise correlation results indicate a positive relationship between the quality of the welfare state and overall globalisation measures. The correlations also do not lead to concerns regarding multicollinearity in the regressions.

Figure 1 depicts the log index of quality of welfare state and the log KOF overall globalisation indices from 1970 to 2018. Figure 1 shows an unweighted average of the entire sample of countries. On the one hand, there was an increasing trend in the quality of the welfare state from 1970 to 2008; however, the 2008–9 Global Financial Crisis changed this trend. Thus, there is a downward trend from 2009 to 2018. On the other hand, in terms of overall globalisation indices, there is a significant upward trend from 1970 to 2018. Additionally, the collapse of the Soviet Union in 1991 accelerated the rising trend of overall globalisation measures.

Figure 2 depicts the scatter plot, which shows the relationship between the welfare state's quality and the KOF overall globalisation in 169 countries for the period average between 1970 and 2018. The evidence aligns with the results of pairwise correlation, showing a positive association between globalisation and the quality of the

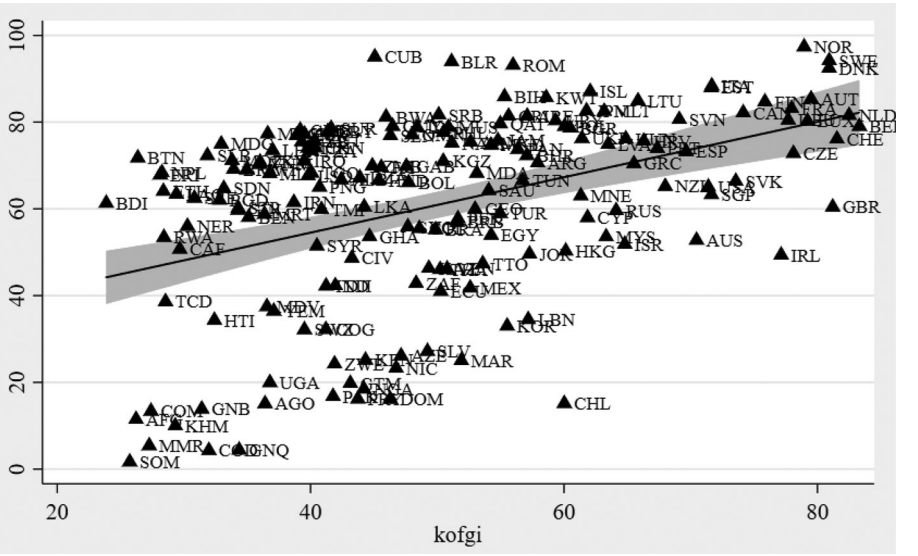

Figure 2. Scatter plot: Quality of the welfare state and KOF overall globalisation ındices (169 Countries, Period Average, 1970–2018).
Source: own work based on KOF indices.

welfare state. Thus, the preliminary findings are suitable for the compensation hypothesis of Rodrik (1997 and 1998).

4. Empirical findings

4.1. Fixed-effects estimations with the current model: globalisation and quality of welfare state

Table 1 reports the findings of the fixed-effects estimations with the current model in Eq. (1) and Eq. (2), representing the effects of $LnKOF\_GI_t$, $LnKOF\_GIdf_t$, and $LnKOF\_GIdj_t$ on $LnQWS$.

The results with no controls are provided in columns (1), (2), and (3). The results for the first model (main controls are $LnRGDPC_t$ and $LnPOP_t$) are reported in columns (4), (5), and (6). The results for the second model (main controls are $LnRGDPC_t$ and AGE_DEP_t) are provided in columns (7), (8), and (9).

The findings in columns (1), (4), and (7) are used for the overall globalisation index, and these findings should be considered as the baseline results. We observe that a 1% rise in the overall globalisation index yields a 0.35% increase in the index of welfare state quality on average. All findings indicate that higher levels of globalisation lead to a higher quality of the welfare state. All coefficients of the globalisation indicators are significant at the 1% level.

In terms of controls, $LnRGDPC_t$ is negatively associated with $LnQWS$. However, the second model's related coefficients are only statistically significant at the 1% level. $LnPOP_t$ positively affects the index of welfare quality; however, AGE_DEP_t negatively affects $LnQWS$. All these coefficients are statistically significant at the 1% level.

Table 1. FE estimations (Current model): Globalisation and quality of the welfare state (1970–2018).

Indicator	LnQWS (1)	LnQWS (2)	LnQWS (3)	LnQWS (4)	LnQWS (5)	LnQWS (6)	LnQWS (7)	LnQWS (8)	LnQWS (9)
$LnKOF\_GI_t$	0.485***	–	–	0.201***	–	–	0.352***	–	–
	(0.021)			(0.037)			(0.029)		
$LnKOF\_GIdf_t$	–	0.491***	–	–	0.145***	–	–	0.282***	–
		(0.023)			(0.031)			(0.028)	
$LnKOF\_GIdj_t$	–	–	0.391***	–	–	0.144***	–	–	0.281***
			(0.017)			(0.031)			(0.025)
$LnRGDPC_t$	–	–	–	−0.018	−0.003	−0.011	−0.067***	−0.050***	−0.059***
				(0.014)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)
$LnPOP_t$	–	–	–	0.217***	0.255***	0.227***	–	–	–
				(0.021)	(0.018)	(0.022)			
AGE_DEP_t	–	–	–	–	–	–	−0.406***	−0.542***	−0.399***
							(0.053)	(0.049)	(0.054)
Constant Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,732	7,732	7,732	7,039	7,039	7,039	7,039	7,039	7,039
Countries	171	171	171	169	169	169	169	169	169
R-squared (Within)	0.062	0.053	0.059	0.076	0.075	0.075	0.071	0.065	0.068

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index. The robust standard errors are in parentheses. ***$p < 0.01$.
Source: own work based on KOF indices.

4.2. Fixed-effects estimations with the lagged model: globalisation and quality of welfare state

Table 2 provides the results of the fixed-effects estimations with the lagged models in Eq. (3) and Eq. (4), which show the effects of $LnKOF\_GI_{t-1}$, $LnKOF\_GIdf_{t-1}$, and $LnKOF\_GIdj_{t-1}$ on *LnQWS*.

Again, the findings with no controls are reported in columns (1), (2), and (3). The findings for the first model (main controls are $LnRGDPC_{t-1}$ and $LnPOP_{t-1}$) are provided in columns (4), (5), and (6). The findings for the second model (main controls are $LnRGDPC_{t-1}$ and AGE_DEP_{t-1}) are reported in columns (7), (8), and (9).

The results reported in columns (1), (4), and (7) are considered the overall globalisation index, and these results should be tagged as the benchmark findings. We find that an average 1% increase in the overall globalisation index leads to a 0.33% rise in the welfare state quality index. All results show that higher levels of globalisation lead to a higher quality of welfare state. All coefficients of the globalisation measures are significant at the 1% level.

When we look at the controls, $LnRGDPC_{t-1}$ negatively affects the index of welfare quality. *LnPOPt-1* is positively related to the *LnQWS*; however, *AGE_DEPt-1* negatively affects *LnQWS*. All these coefficients are also statistically significant at the 1% level. However, the second model's related coefficients are only statistically significant at the 1% level.

Overall, the primary evidence from the different model specifications of the fixed-effect estimations illustrates that various globalisation measures increase the quality of the welfare state.

4.3. Fixed-effects estimations with the lagged model: globalisation and quality of welfare state in different stages of economic development

This section analyses the validity of the baseline findings of fixed-effects estimations according to the income level. Following the World Bank's (2022b) definitions, we consider low-income, middle-income, and high-income economies. Table 3 reports the findings of the fixed-effects estimations for Eq. (3) in the high-income (columns 1, 2, and 3), the middle-income (columns 4, 5, and 6), and low-income economies (columns 7, 8, and 9).

Overall, globalisation positively affects the quality of the welfare state in all countries. At least, the corresponding coefficients of *LnKOF_GIt-1* are statistically significant at the 5% level. In addition, de facto globalisation is positively related to the quality of the welfare state in all countries. The corresponding coefficients of $LnKOF\_GIdf_{t-1}$ are statistically significant at the 5% level. Furthermore, de jure globalisation is positively associated with the quality of the welfare state in all countries. However, the corresponding coefficients of $LnKOF\_GIdj_{t-1}$ are only statistically significant at the 1% level in high-income economies. This effect is statistically insignificant in the low-income and middle-income economies, implying that policy implications in the high-income economies on fewer capital restrictions and trade restrictions are practical tools to promote the welfare state's quality.

Table 2. FE estimations (Lagged model): Globalisation and quality of the welfare state (1970–2018).

Indicator	LnQWS (1)	LnQWS (2)	LnQWS (3)	LnQWS (4)	LnQWS (5)	LnQWS (6)	LnQWS (7)	LnQWS (8)	LnQWS (9)
$LnKOF\_GI_{t-1}$	0.466***	–	–	0.186***	–	–	0.343***	–	–
	(0.021)			(0.036)			(0.029)		
$LnKOF\_GIdf_{t-1}$	–	0.469***	–	–	0.137***	–	–	0.275***	–
		(0.023)			(0.031)			(0.028)	
$LnKOF\_GIdj_{t-1}$	–	–	0.375***	–	–	0.129***	–	–	0.272***
			(0.017)			(0.031)			(0.024)
$LnRGDPC_{t-1}$	–	–	–	−0.022	−0.009	−0.014	−0.071***	−0.054***	−0.061***
				(0.013)	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)
$LnPOP_{t-1}$	–	–	–	0.220***	0.255***	0.231***	–	–	–
				(0.021)	(0.018)	(0.022)			
AGE_DEP_{t-1}	–	–	–	–	–	–	−0.391***	−0.523***	−0.386***
							(0.053)	(0.049)	(0.054)
Constant Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,561	7,561	7,561	6,873	6,873	6,873	6,873	6,873	6,873
Countries	171	171	171	169	169	169	169	169	169
R-squared (Within)	0.059	0.050	0.056	0.074	0.073	0.073	0.067	0.062	0.065

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index. The robust standard errors are in parentheses. ***$p < 0.01$.
Source: own work based on KOF indices.

Table 3. FE estimations (Lagged model): Globalisation and quality of the welfare state (1970–2018) (Different stages of economic development).

Indicator	LnQWS (1) (High-Income)	LnQWS (2) (High-Income)	LnQWS (3) (High-Income)	LnQWS (4) (Middle-Income)	LnQWS (5) (Middle-Income)	LnQWS (6) (Middle-Income)	LnQWS (7) (Low-Income)	LnQWS (8) (Low-Income)	LnQWS (9) (Low-Income)
$LnRGDPC_{t-1}$	0.211***	0.280***	0.138***	−0.126***	−0.131***	−0.106***	−0.188***	−0.186***	−0.155***
	(0.022)	(0.019)	(0.022)	(0.019)	(0.018)	(0.019)	(0.050)	(0.050)	(0.048)
$LnPOP_{t-1}$	−0.029	−0.034	−0.125***	0.423***	0.420***	0.462***	0.079	0.165***	0.183**
	(0.028)	(0.024)	(0.031)	(0.030)	(0.026)	(0.031)	(0.083)	(0.056)	(0.074)
$LnKOF\_GI_{t-1}$	0.145**	–	–	0.097**	–	–	0.351***	–	–
	(0.070)			(0.047)			(0.131)		
$LnKOF\_GIdf_{t-1}$	–	0.152**	–	–	0.136***	–	–	0.237**	–
		(0.060)			(0.041)			(0.092)	
$LnKOF\_GIdj_{t-1}$	–	–	0.376***	–	–	0.004	–	–	0.148
			(0.061)			(0.040)			(0.097)
Constant Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,185	2,185	2,185	3,673	3,673	3,673	1,015	1,015	1,015
Countries	52	52	52	91	91	91	26	26	26
R-squared (Within)	0.142	0.143	0.155	0.108	0.109	0.107	0.078	0.077	0.073

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index. The robust standard errors are in parentheses. *** $p < 0.01$ and ** $p < 0.05$.
Source: own work based on KOF indices.

When we look at the controls, they behave differently in the different income groups of economies. Specifically, per capita income increases the quality of the welfare state in high-income economies. Still, the impact turns negative in the low-income and middle-income economies. All of the related coefficients are statistically significant at the 1% level. In addition, population (country size) decreases the quality of the welfare state in high-income economies; however, the effects are adverse in low-income and middle-income economies. The homogeneity of countries can explain these findings in terms of per capita GDP and country size in high-income economies.

4.4. Fixed-effects estimations with the lagged model: economic globalisation and welfare state quality

Table 4 reports the findings of the fixed-effects estimations with the lagged models in Eq. (3) and Eq. (4), which indicate the effects of $LnKOF\_EGI_{t-1}$, $LnKOF\_EGIdf_{t-1}$, $LnKOF\_EGIdj_{t-1}$, $LnKOF\_TRGI_{t-1}$, $LnKOF\_TRGIdf_{t-1}$, $LnKOF\_TRGIdj_{t-1}$, $LnKOF\_FIN_{t-1}$, $LnKOF\_FINdf_{t-1}$, and $LnKOF\_FINdj_{t-1}$, on *LnQWS*.

We use the controls of $LnRGDPC_{t-1}$ and $LnPOP_{t-1}$; that is, we estimate the first model. The results for economic globalisation are reported in columns (1), (2), and (3); the findings for trade globalisation are provided in columns (4), (5), and (6). Finally, the results for financial globalisation are reported in columns (7), (8), and (9).

We observe that a 1% rise in the economic globalisation indices leads to an average 0.8% increase in *LnQWS*. Thus, all findings indicate that higher economic globalisation indicators promote *LnQWS*. Furthermore, all coefficients of nine economic globalisation indicators are statistically significant at the 5% level. In terms of controls, $LnRGDPC_{t-1}$ negatively affects *LnQWS*. However, the related coefficients are statistically insignificant. On the other hand, $LnPOP_{t-1}$ is positively associated with *LnQWS*, and the related coefficients are statistically significant at the 1% level.

Overall, we find that globalisation increases the quality of the welfare state. The following section implements various robustness analyses, such as implementing the system GMM estimations, including additional controls, and excluding outliers and the countries in different regions.

5. Robustness analyses

5.1. System GMM estimations with the lagged model: globalisation and quality of the welfare state

Table 5 reports the system GMM estimations' findings, representing the effects of $LnKOF\_GI_{t-1}$, $LnKOF\_GIdf_{t-1}$, and $LnKOF\_GIdj_{t-1}$ on *LnQWS*. We again consider Model 1 and Model 2 in Eq. (5) and Eq. (6), including the lagged dependent variable.

We address potential endogeneity bias and reverse causality problems; a higher quality of the welfare state allows for stronger economic integration. Initially, we begin with the diagnostic findings in the system GMM estimation. We observe the validity of the first-order autocorrelation. However, there is significant second-order

Table 4. FE estimations (Lagged model): Economic globalisation and quality of the welfare state (1970–2018).

Indicator	LnQWS (1)	LnQWS (2)	LnQWS (3)	LnQWS (4)	LnQWS (5)	LnQWS (6)	LnQWS (7)	LnQWS (8)	LnQWS (9)
$LnRGDPC_{t-1}$	−0.013	−0.001	−0.002	−0.004	−0.003	−0.007	−0.003	−0.007	−0.006
	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
$LnPOP_{t-1}$	0.253***	0.272***	0.274***	0.261***	0.283***	0.272***	0.282***	0.285***	0.290***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)	(0.016)	(0.016)	(0.016)	(0.015)
$LnKOF\_EGI_{t-1}$	0.148***	–	–	–	–	–	–	–	–
	(0.024)								
$LnKOF\_EGIdf_{t-1}$	–	0.081***	–	–	–	–	–	–	–
		(0.016)							
$LnKOF\_EGIdj_{t-1}$	–	–	0.080***	–	–	–	–	–	–
			(0.022)						
$LnKOF\_TRGI_{t-1}$	–	–	–	0.138***	–	–	–	–	–
				(0.021)					
$LnKOF\_TRGIdf_{t-1}$	–	–	–	–	0.080***	–	–	–	–
					(0.015)				
$LnKOF\_TRGIdj_{t-1}$	–	–	–	–	–	0.069***	–	–	–
						(0.016)			
$LnKOF\_FINGI_{t-1}$	–	–	–	–	–	–	0.052***	–	–
							(0.018)		
$LnKOF\_FINGIdf_{t-1}$	–	–	–	–	–	–	–	0.032**	–
								(0.012)	
$LnKOF\_FINGIdj_{t-1}$	–	–	–	–	–	–	–	–	0.039**
									(0.016)
Constant Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,825	6,825	6,740	6,798	6,873	6,637	6,825	6,825	6,825
Countries	168	168	164	167	169	163	168	168	168
R-squared (Within)	0.062	0.074	0.072	0.077	0.074	0.072	0.072	0.071	0.071

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index. The robust standard errors are in parentheses. ***$p < 0.01$ and **$p < 0.05$.
Source: own work based on KOF indices.

Table 5. System GMM estimations (Lagged model): Globalisation and quality of the welfare state (1970–2018).

Indicator	LnQWS (1)	LnQWS (2)	LnQWS (3)	LnQWS (4)	LnQWS (5)	LnQWS (6)	LnQWS (7)	LnQWS (8)	LnQWS (9)
$LnKOF\_GI_{t-1}$	0.593***	–	–	0.616***	–	–	0.484***	–	–
	(0.034)			(0.041)			(0.059)		
$LnKOF\_GIdf_{t-1}$	–	0.612***	–	–	0.539***	–	–	0.301***	–
		(0.028)			(0.075)			(0.031)	
$LnKOF\_GIdj_{t-1}$	–	–	0.594***	–	–	0.526***	–	–	0.514***
			(0.049)			(0.044)			(0.044)
$LnRGDPC_{t-1}$	–	–	–	−0.032**	−0.015	−0.007	−0.095***	−0.058***	−0.011***
				(0.015)	(0.012)	(0.013)	(0.013)	(0.013)	(0.002)
$LnPOP_{t-1}$	–	–	–	0.024***	0.015***	0.029***	–	–	–
				(0.002)	(0.001)	(0.001)			
AGE_DEP_{t-1}	–	–	–	–	–	–	−1.330***	−1.360***	−1.276***
							(0.195)	(0.114)	(0.183)
Lagged Dependent	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR (1) Test Probability	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
AR (2) Test Probability	[0.745]	[0.979]	[0.669]	[0.650]	[0.984]	[0.984]	[0.508]	[0.504]	[0.518]
Sargan Test Probability	[0.838]	[0.861]	[0.853]	[0.834]	[0.864]	[0.869]	[0.831]	[0.873]	[0.838]
Observations	6,913	6,913	6,913	6,870	6,870	6,870	6,870	6,870	6,870
Countries	169	169	169	168	168	168	168	168	168

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index. The robust standard errors are in parentheses—the probability values are in brackets. ***$p < 0.01$ and **$p < 0.05$.
Source: own work based on KOF indices.

Table 6. Robustness checks: FE estimations (Lagged model) (ıncluding additional controls).

Robustness checks: Including	LnKOF_GI$_{t-1}$	LnKOF_GIDF$_{t-1}$	LnKOF_GIDJ$_{t-1}$
Benchmark estimations	0.186*** (0.036)	0.137*** (0.031)	0.129*** (0.031)
Inflation Rate$_{t-1}$	0.328*** (0.035)	0.122*** (0.029)	0.345*** (0.030)
Unemployment Rate$_{t-1}$	0.183** (0.032)	0.169*** (0.026)	0.144*** (0.029)
Human Capital$_{t-1}$	0.186*** (0.043)	0.087** (0.036)	0.173*** (0.037)
Net Income Inequality$_{t-1}$	0.086** (0.035)	0.178*** (0.029)	0.162*** (0.032)
Labour Market Regulations$_{t-1}$	0.219*** (0.058)	0.138*** (0.043)	0.191*** (0.054)
Institutional quality: EXCONST$_{t-1}$	0.198*** (0.036)	0.153*** (0.032)	0.131*** (0.032)
Institutional quality: POLITY2$_{t-1}$	0.198*** (0.037)	0.153*** (0.033)	0.131*** (0.033)
Institutional quality: POLCOMP$_{t-1}$	0.199*** (0.037)	0.153*** (0.032)	0.132*** (0.032)
Regime Category$_{t-1}$	0.106*** (0.037)	0.078** (0.032)	0.070** (0.031)
Typology of Political Institutions$_{t-1}$	0.127*** (0.037)	0.099*** (0.031)	0.081** (0.031)
Internal and External Conflicts$_{t-1}$	0.196*** (0.037)	0.151*** (0.032)	0.129*** (0.032)

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index.
The robust standard errors are in parentheses. ***$p < 0.01$ and **$p < 0.05$.
Source: own work based on KOF indices.

autocorrelation. Sargan test results also reject the validity of the over-identification. Therefore, we conclude that the restrictions on instruments are satisfied in the system GMM estimation procedures.

Aligned with the fixed-effects estimations, we find that globalisation positively affects the quality of the welfare state (*LnQWS*). Three measures of lagged globalisation (*LnKOF_GI$_{t-1}$*, *LnKOF_GIdf$_{t-1}$*, and *LnKOF_GIdj$_{t-}$*) are statistically significant at the 1% level. Lagged per capita income (*LnRGDPC$_{t-1}$*) is negatively associated with (*LnQWS*), and the coefficients are significant in four of six estimations. Lagged population (*LnPOP$_{t-1}$*) increases *LnQWS*, while lagged age dependency ratio (*AGE_DEP$_{t-1}$*) negatively affects *LnQWS*. The related coefficients are statistically significant at the 1% level. In short, globalisation still promotes the welfare state's quality when dealing with possible endogeneity bias and reverse causality.

5.2. Including additional controls

Table 6 enhances the findings of the fixed-effects estimations with the lagged model in Eq. (3), including additional controls. Again, we consider three measures of globalisation (*LnKOF_GI$_{t-1}$*, *LnKOF_GIdf$_{t-1}$*, and *LnKOF_GIdj$_{t}$*) to analyse their effects on the quality of the welfare state (*LnQWS*). Again, we include below control variables below one by one in each regression. To save space, we do not report the coefficients of the main control variables.

First, we consider economic indicators–such as inflation rate, unemployment rate, human capital, income inequality, and labour market regulations since these indicators can influence the effects of globalisation on the quality of the welfare state due to economic shocks. For instance, a higher inflation rate represents macroeconomic instability, limiting government expenditures on welfare programmes (Meinhard & Potrafke, 2012). Labour market indicators, such as the unemployment rate and flexibility of labour market regulations, can lead to additional unemployment benefits and insurance (Schulze & Ursprung, 1999). A higher level of human capital can lead to higher quality demand in the welfare state (Ram, 2009). Finally, income inequality can change government expenditures with the increase in globalisation (Gozgor &

Table 7. Robustness checks: FE estimations (Lagged model) (excluding the outliers).

Robustness checks: Excluding	$LnKOF\_GI_{t-1}$	$LnKOF\_GIDF_{t-1}$	$LnKOF\_GIDJ_{t-1}$
Benchmark Estimations	0.186*** (0.036)	0.137*** (0.031)	0.129*** (0.031)
Extreme values of the QWS	0.104*** (0.025)	0.059*** (0.021)	0.089*** (0.021)
Extreme values of globalisation indicators	0.204*** (0.037)	0.120*** (0.031)	0.153*** (0.032)
Sub-Saharan Africa Countries	0.186*** (0.045)	0.130*** (0.039)	0.139*** (0.039)
Latin America & Caribbean Countries	0.086*** (0.030)	0.055** (0.026)	0.079*** (0.026)
East Asia & Pacific Countries	0.201*** (0.039)	0.168*** (0.033)	0.124*** (0.033)
South Asia Countries	0.213*** (0.038)	0.150*** (0.032)	0.156*** (0.033)
The Middle East & North Africa Countries	0.107*** (0.039)	0.058** (0.023)	0.088*** (0.032)
Europe & Central Asia Countries	0.360*** (0.051)	0.290*** (0.044)	0.200*** (0.040)

Notes: The dependent variable is the log of the Quality of the Welfare State (LnQWS) index.
The robust standard errors are in parentheses. ***$p < 0.01$ and **$p < 0.05$.
Source: own work based on KOF indices.

Ranjan, 2017; Heimberger, 2020; Tica et al., 2022), affecting the quality of the welfare state.

Second, we include institutional quality and political systems indicators, such as *EXCONST*, *POLITY2*, *POLCOMP*, regime category, and typology of political institutions. For instance, Acemoglu et al. (2019) indicated that comprehensive governance systems, institutions (e.g., democracy), and political systems are measures of a higher institutional quality. Furthermore, the authors show that institutional quality causes higher economic growth, meaning there will be more sources for governments to increase the quality of the welfare state. We also suggest that institutional quality and political systems can change the effects of globalisation on the quality of the welfare state. Finally, we include the index of intrastate and interstate conflicts since it can change the impact of globalisation on redistribution (Pleninger & Sturm, 2020).

All related results indicate that adding the different control variables does not change the baseline results. In other words, globalisation still significantly promotes the quality of the welfare state when we include additional controls. Thus, there are always positive coefficients for globalisation measures, and these coefficients are statistically significant at the 5% level in each estimations, at least.

5.3. Sensitivity checks

Table 7 provides the results of additional sensitivity checks on the findings of the fixed-effects estimations with the lagged model in Eq. (3). We exclude outlier observations and the countries in different regions. We consider three measures of globalisation ($LnKOF\_GI_{t-1}$, $LnKOF\_GIdf_{t-1}$, and $LnKOF\_GIdj_t$) to analyse their effects on the quality of the welfare state (*LnQWS*).

First, we exclude the extreme values of the globalisation measures and the index for the quality of the welfare state. Following the previous empirical papers (Fang et al., 2021; Gozgor, 2022b), extreme values are defined as the observations with two standard deviation differences from the panel data average. We find that the benchmark results remain robust when excluding extreme values.

Second, following Gozgor and Ranjan (2017) and Rodrik (1998), we exclude the countries in different regions: (i) Sub-Sahara Africa, (ii) Latin America and the Caribbean, (iii) East Asia and the Pacific, (iv) South Asia, (v) the Middle East and North Africa, and (vi) Europe and Central Asia to analyse the sensitivity of the

baseline results by excluding the countries in different regions. Here, we re-estimate Eq. (3) by excluding the countries in each region. We observe that the baseline results are robust to implement these sensitivity checks. Furthermore, extreme values do not mainly determine the baseline results. Results remain robust when we exclude the countries in different regions.

In short, several additional robustness analyses confirm the validity of the baseline results; that is, globalisation indicators positively affect the quality of the welfare state.

6. Conclusion

This article analysed the determinants of welfare state quality and gave a unique role to globalisation indicators. To this end, this article examined the effects of globalisation measures on the quality of the welfare state within the annual panel dataset of 169 countries from 1970 to 2018. We found that a higher level of globalisation leads to a higher quality of the welfare state, implying the compensation hypothesis's validity. Moreover, this evidence is valid when dividing the countries according to their income levels: low-income, middle-income, and high-income economies. We also implemented various sensitivity analyses. First, we used different indicators of globalisation, such as de facto and de jure, economic, financial, and trade. Second, we ran different estimation techniques, such as fixed effects and system GMM estimations. Third, we included various controls and excluded the outlier observations. Nevertheless, the baseline evidence remained robust when we ran these sensitivity analyses.

Our findings indicate that a higher level of globalisation promotes the quality of welfare programmes. Welfare programmes usually target poor people with cash transfers. A higher-quality welfare state means considering everyone as potential beneficiaries rather than targeting only poor people. The experience in the Covid-19 crisis (e.g., The March 2021 enactment of the American Rescue Plan) also shows that welfare programmes should potentially target everyone, including a variety of benefits for affordable education and national health care, retirement programmes, and unemployment benefits and insurance (Fang et al., 2022a; Gozgor, 2022a). Governments should promote the national welfare quality of household care, particularly for children and elderly parents. It is important to note that globalisation can lead to polarisation and divergence in skill distribution. Welfare state programmes should target these issues as long as globalisation increases.

The efficiency hypothesis indicates that increasing the welfare state discourages investments and economic performance in a competitive, globalised world (Hmaittane et al., 2019). However, efficient taxation is an essential aspect of the welfare state since globalisation can make it more difficult to evade tax. For instance, in April 2021, President Joe Biden proposed that the United States needs to work with its allies to form a standardised global minimum income tax (Zhang et al., 2021). Governments must also make green investments to combat climate change (Dutta et al., 2021). According to our results, a new form of higher globalisation with global market regulations and international laws can increase the quality of the welfare state. Capital restrictions, tariffs, and trade restrictions (wars) are not the friends of a higher-quality welfare state.

Finally, it is essential to note that our sample ends in 2018 due to data limitations. Therefore, future papers should include the Covid-19 pandemic period and the Russia-Ukraine War era when the data become available (Wang et al., 2022). In addition, future works can analyse additional potential determinants (e.g., public trust and political preferences) of the quality of the welfare state. Finally, comparative country studies in developing economies (e.g., China and India) can also be meaningful.

Disclosure statement

No conflict of interest has been reported by the authors.

Notes

1. According to Garrett (2001), the compensation hypothesis should be traced to the political science works in the 1970s and the 1980s, such as Cameron (1978), Katzenstein (1985), Lindbeck (1975), and Ruggie (1982).
2. As an earlier work, the panel analysis of Cameron (1978) also considers the data from 1960 to 1975 in 18 industrialised countries. The author observes that more open economies often experience the expansion of government spending than closed economies.
3. Refer to Anderson and Obeng (2021), Gräbner et al. (2021), and Heimberger (2021) on the recent literature surveys of the different empirical results on the relationship between economic globalisation and government spending indicators.
4. Refer to Dreher (2006) and Gozgor (2018) for the traditional measures of the KOF globalisation index.
5. Visit https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html for details.
6. A higher value of the labour market regulations index indicates more flexible regulations, thus greater deregulation of the labour market.
7. We consider the lagged measures of globalisation and control variables to address the potential issue of reverse causality.
8. Following Gozgor (2018)'s suggestion, we use the globalisation measures in the natural logarithmic form.

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Appendix

Table A1. 169 countries in the sample.

High-Income Economies (52 Countries): Australia, Austria, Bahrain, Barbados, Belgium, Canada, Chile, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR (China), Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea Republic, Kuwait, Latvia, Lithuania, Luxembourg, Malta, Mauritius, Netherlands, New Zealand, Norway, Oman, Panama, Poland, Portugal, Qatar, Romania, Saudi Arabia, Seychelles, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, Trinidad and Tobago, United Arab Emirates, United Kingdom, United States, and Uruguay.

Middle-Income Economies (91 Countries): Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Cambodia, Cameroon, Cape Verde, China, Colombia, Comoros, Congo Republic, Costa Rica, Cote d'Ivoire, Cuba, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eswatini, Fiji, Gabon, Georgia, Ghana, Guatemala, Guyana, Honduras, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Laos, Lebanon, Lesotho, Libya, Malaysia, Maldives, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Morocco, Myanmar, Namibia, Nepal, Nicaragua, Nigeria, North Macedonia, Pakistan, Papua New Guinea, Paraguay, Peru, Philippines, Russia, Sao Tome and Principe, Senegal, Serbia, Solomon Islands, South Africa, Sri Lanka, Suriname, Tanzania, Thailand, Timor-Leste, Tunisia, Turkey, Turkmenistan, Ukraine, Uzbekistan, Vanuatu, Venezuela, Vietnam, Zambia, and Zimbabwe.

Low-Income Economies (26 Countries): Afghanistan, Burkina Faso, Burundi, Central African Republic, Chad, Congo DR, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Liberia, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Sudan, Syria, Tajikistan, Togo, Uganda, and Yemen.

Table A2. Descriptive statistics.

Indicator	Definition	Data Source	Mean	Std. Dev.	Min.	Max.	Obs.
Quality of the Welfare State (LnQWS)	Index from 0 to 100, Logarithmic Form	V-Dem V11: Pemstein et al. (2021)	3.969	0.739	−1.021	4.595	7,732
Globalisation (Overall) (LnKOF_GI)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.859	0.362	2.649	4.510	7,732
Globalisation (De Facto) (LnKOF_GIdf)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.840	0.354	2.707	4.516	7,732
Globalisation (De Jure) (LnKOF_GIdj)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.867	0.403	2.220	4.538	7,732
Economic Globalisation (Overall) (LnKOF_EGI)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.826	0.379	2.404	4.549	7,650
Economic Globalisation (De Facto) (LnKOF_EGIdf)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.824	0.445	1.449	4.589	7,648
Economic Globalisation (De Jure) (LnKOF_EGIdj)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.780	0.441	2.259	4.569	7,510
Trade Globalisation (Overall) (LnKOF_TRGI)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.801	0.416	2.198	4.564	7,620
Trade Globalisation (De Facto) (LnKOF_TRGIdf)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.806	0.474	1.168	4.601	7,697

(*continued*)

Table A2. Continued.

Indicator	Definition	Data Source	Mean	Std. Dev.	Min.	Max.	Obs.
Trade Globalisation (De Jure) (LnKOF_TRGIdj)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.696	0.606	0.447	4.575	7,368
Financial Globalisation (Overall) (LnKOF_FINGI)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.820	0.432	1.932	4.585	7,683
Financial Globalisation (De Facto) (LnKOF_FINGIdf)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.794	0.543	1.118	4.602	7,683
Financial Globalisation (De Jure) (LnKOF_FINGIdj)	Index from 0 to 100, Logarithmic Form	KOF 2020: Dreher (2006) & Gygli et al. (2019)	3.772	0.529	0.000	4.584	7,683
GDP per Capita (Constant 2010 US$) (LnRGDPC)	Logarithmic Form	WDI: World Bank (2022a)	8.249	1.505	5.087	11.66	7,143
Population, Total (LnPOP)	Logarithmic Form	WDI: World Bank (2022a)	15.74	1.721	10.88	21.05	8,349
Age Dependency Ratio (AGE_DEP)	(% of Working-age Population)	WDI: World Bank (2022a)	70.39	20.50	15.74	117.8	8,349
Inflation, Consumer Prices (Annual %)	Percentage	WDI: World Bank (2022a)	28.85	378.3	−18.11	2373	6,343
Unemployment, Total (Modelled ILO Estimate)	(% of Total Labour Force)	WDI: World Bank (2022a)	7.924	6.220	0.110	37.97	4,760
Labour Market Regulations	Index from 0 to 10	Economic Freedom Dataset: Gwartney et al. (2020)	6.182	1.472	1.840	9.730	2,834
Human Capital	Index, Level	PWT 10.0: Feenstra et al. (2015)	2.174	0.727	1.010	4.150	6,590
Gini for Inequality in Disposable (Post-tax, Post-transfer) Income	Index from 0 to 1	SWIID 9.0: Solt (2020)	0.385	0.089	0.175	0.675	5,052
Institutional Quality: Executive Constraints (Decision Rules) (XCONST)	Index from 1 to 7	Polity5 Annual Time-Series: Marshall and Gurr (2020)	4.315	2.310	1.000	7.000	7,335
Institutional Quality: Revised Combined Polity Score (POLITY2)	Index from −10 to 10	Polity5 Annual Time-Series: Marshall and Gurr (2020)	1.378	7.350	−10.00	10.00	7,335
Institutional Quality: The Competitiveness of Participation (POLCOMP)	Index from 0 to 5	Polity5 Annual Time-Series: Marshall and Gurr (2020)	2.898	1.526	0.000	10.00	7,335
Regime Category	Index from 0 to 5	Regime Dataset 3.2: Bjørnskov and Rode (2020)	2.342	1.548	0.000	5.000	7,759
Typology of Political Institutions	Index from 0 to 3	Regime Dataset 3.2: Bjørnskov and Rode (2020)	1.990	1.079	0.000	3.000	8,323
Total Summed Magnitudes of Internal and External Conflicts	Index from 0 to 14	MEPV: Marshall (2019)	0.781	1.851	0.000	14.00	7,335

Table A3. Correlation matrix.

Indicator	LnQWS	LnKOF_GI	LnKOF_GIdf	LnKOF_GIdj	LnRGDPC	LnPOP	AGE_DEP
LnQWS	1.000	–	–	–	–	–	–
LnKOF_GI	0.359	1.000	–	–	–	–	–
LnKOF_GIdf	0.334	0.959	1.000	–	–	–	–
LnKOF_GIdj	0.358	0.966	0.856	1.000	–	–	–
LnRGDPC	0.277	0.799	0.794	0.746	1.000	–	–
LnPOP	−0.044	0.129	0.070	0.175	−0.076	1.000	–
AGE_DEP	−0.309	−0.750	−0.711	−0.732	−0.718	−0.099	1.000

LnQWS: Log of the quality of the welfare state index, LnKOF_GI: Log of the index of overall globalisation, LnKOF_GIdf: Log of the index of de facto globalisation, LnKOF_GIdj: Log of the index of de jure globalisation, LnRGDPC: Log real per capita GDP, LnPOP: Log total population, AGE_DEP: Age dependency ratio.