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Global Patterns of Contemporary Welfare States[‡]

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Abstract

This study proposes a novel and systematic theoretical framework to explain global welfare state policy differences. The existing scholarship examined ample welfare state variations, reforms, and transitions; however, it is typically limited to specific countries, regions, policies, or risks. In an endeavor to combine these theoretical and empirical insights, the global contemporary welfare state patterns remain vague. This study aims at bridging this gap in the literature by deploying an orderly and comprehensive three-step procedure. First, I formally design a three-stage global yet comparative conceptual framework that ensures consistency, inclusiveness, and compliance. Second, based on this framework, I assemble a unique comparative dataset for one-hundred-fifty countries, some of which appear for the first time in this literature. Third, I validate the framework using an advanced data reduction method named model-based cluster analysis. The results of this study demonstrate that global contemporary welfare states follow systematically divergent paths, revealing Proactive, Reactive, and Dual patterns.

Keywords: Proactive and Reactive welfare states; conceptualization; operationalization; measurement; model-based cluster analysis

Introduction

"Social policy means public management of social risks. Some risks are perennial, some come and go with the flow of history". (Esping-Andersen, 1999: 36).

This article proposes a novel theoretical model and validation process that intends to unveil global contemporary welfare state patterns. Scholars argue that the welfare state is a complex and evolving system, with changing goals, functions, and institutions (Hemerijck, 2012). At times, these changes are more profound, dictating the designs and trajectories of welfare states across the globe. In response to 21st-century socio-economic needs and demands, contemporary welfare systems have undergone significant 'restructuring, recalibration, and transformation' (Mares and Carnes, 2009; Hall, 2015; Shahidi, 2015).

[‡]The original version of this article was published with the figures and tables positioned incorrectly. A notice detailing this has been published and the errors rectified in the online and print PDF and HTML copies.

Notably, two waves of welfare research have examined some of these major shifts. The first wave, the 'era of austerity', refers to changes in welfare state policy – namely, the retrenchments of existing benefits in all key social policy areas (Pierson, 2001). At the center of this era are government initiatives designed to tighten eligibility requirements and decrease benefit amounts, which resulted in sweeping changes to old social policies[1]. Welfare scholars have taken a keen interest in these policy changes and country differences, focusing mostly on common risks such as income and job loss, particularly old age, illness or disability, and unemployment benefits (Häusermann, 2012). The second wave reflects the emergence of new social risks and needs in recent decades, which has led to the expansion of welfare state instruments and areas of intervention, such as social investment and activation programs (Taylor-Gooby, 2004; Bonoli and Natali, 2012; Morel et al., 2012). These welfare policy measures are designed and implemented to address new welfare risks such as atypical employment, (long-term) unemployment, lack of opportunities for labor market participation, gender and income inequality, and climate-change-related risks (Häusermann, 2012; Diamond and Chwalisz, 2015; Gough, 2013a).

Existing research shows consistent findings among scholars that modern welfare states are not 'frozen landscapes', but rather "a patchwork mixes of old and new policies and institutions" (Hemerijck, 2012: 12). On the contrary, wide-ranging perspectives on the drivers and the direction patterns of the welfare state change are also evident (Palier, 2006; Häusermann, 2012). The principal objective of this study is to shed light on global (or 'extensively internationalist', Yeates, 2014) contemporary welfare state patterns and to contribute to a better understanding of the pathways that welfare states may take. When I speak about welfare state patterns, I am focusing on countries' varying instruments and priorities for responding to old and new social risks, rather than the varying degrees at which governments intervene. As I would argue, the latter is closely linked to a country's degree of development, i.e. financial opportunities, and should therefore not be at the core of a global perspective on welfare states. In this study, I depend heavily on and also depart from prior theoretical methods aimed at explaining global welfare state policy differences. Findings in the respective literature suggest that welfare states in developed and developing countries follow 'systematically divergent paths', implying that they are neither 'extremely divergent' nor 'universal' (Esping-Andersen, 1990; Rudra, 2007). In essence, they show that global welfare state patterns belong to certain peer groups.

Most studies on welfare regimes depart from Esping-Andersen's seminal work, "The Three Worlds of Capitalism" (1990). An important finding of this

[1]Old social policies address these risks via income protection, such as regulation of employment or passive transfers (Häusermann, 2012).

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contribution is that "welfare-state variations are not linearly distributed, but clustered by regime types," i.e. 'Liberal, Corporatist and Social Democratic' (ibid: 26). This conceptualization of the welfare state solidified the idea of a 'welfare state regime', which includes traditional social services and transfers, macroeconomic management, and employment (Powell and Barrientos, 2011). Esping-Andersen's (1990) welfare regime paradigm has produced an immense amount of 'empirical work, critical commentary, and theoretical reworking' (i.e. Rudra, 2007; Sharkh and Gough, 2010; Gough, 2013b; Kühner, 2015; Mkandawire, 2016). In so doing, this study contributes to the existing research in three ways. First, theoretically, to my knowledge, this is the first piece of research on the field to develop an extensively internationalist comparative conceptual framework for unveiling the patterns of contemporary welfare states. It is particularly significant since it clarifies the theoretical controversy surrounding the systematic variation of global welfare states and provides a new but comprehensive framework for future research in this area. Second, empirically, this study is important since it brings together 150 countries, a sample size that allowed many countries to be included in this literature for the first time. Moreover, it addresses specifically the existing methodological and variable selection gaps in this area of research. Third, these findings will inform policymakers and regional and international organizations on the global direction of contemporary welfare states.

Imagining a comprehensive global picture of contemporary welfare state patterns illuminates my motivation and interest to shed some light on this research gap. As a result, this paper sets out to answer the following question:

> *How can we conceptualize, operationalize, and measure the global contemporary welfare state patterns?*

Previous research sets the groundwork for this study based on two assumptions. First, it assumes that the welfare states consistently change, but the patterns on a global scale remain unclear. Second, looking through the lens of divergence, it assumes that welfare states across the world could follow systematically divergent paths. In this vein, I propose and validate a comparative welfare state conceptual framework, taking into account the strengths and weaknesses of current welfare state models.

This study proceeds as follows. In the second part, it reviews the existing literature on welfare regimes and transformations. In the third part, it proposes a formal and comprehensive three-stage comparative conceptual framework. In the fourth and fifth parts, it introduces a uniquely assembled comparative dataset for 150 countries across six continents. This data is utilized to statistically verify the conceptual framework using model-based cluster analysis. In the final part, it summarizes the key results and provides recommendations for future research.

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Previous research: What do we know?

Theoretical review

As stated above, recent comparative welfare policy research has relied heavily on Esping-Andersen's work on welfare state typology, published in 1990. This book, titled "Three Worlds of Welfare Capitalism," sought to provide "reconceptualization and re-theorization of existing inadequate theoretical models of the welfare state" (1990: 2). It sparked extensive research on welfare regimes (Powell and Barrientos, 2004; Wood and Gough, 2006; Rudra, 2007; Sharkh and Gough, 2010; Hudson et al., 2014; Gough, 2013b; West and Nikolai, 2013), also known in the literature as the 'welfare modeling business' (Abrahamson, 1999). This diverse body of research has generated theoretical and conceptual frameworks that have led to numerous welfare typologies.

Nonetheless, distinct frameworks that intend to explore global welfare state patterns cannot ensure a level playing field for welfare state comparison on a global scale (see Wood and Gough, 2006; Sharkh and Gough, 2010). These frameworks imply that the welfare state typologies proposed by Esping-Andersen (1990) are mainly found in developed nations. Whereas developing nations in Sub-Saharan Africa, South Asia, and parts of East Asia are considered welfareless states since they are classified as 'Insecurity Regimes' or 'Informal Security Regimes' (Wood and Gough, 2006). Recent comparative welfare studies, however, highlight the limitations of existing theories for integrating and understanding the development and transformation of social policy in Sub-Saharan Africa, the Middle East, and North Africa (e.g. see Midgley, 1995; Kpessa and Béland, 2013: 326; Plagerson et al., 2019; Jawad, 2019). It is thus critical to include these countries in systematic theoretical models that aim to explain welfare state policy variations. According to Kpessa and Béland (2013: 326), these models may assist academics and policymakers to map and understand the diverse institutional configurations of the developing countries' welfare state landscape.

Another shortcoming is that the theoretical models aimed at explaining the welfare variations across countries have mostly concentrated on old social risks and policies, although rightly in line with their time-relevance. Such policies include social assistance (non-contributory and regular transfers) and social insurance (insurance schemes), as the two most essential sub-categories of social protection. The objective of these policies is to offer health care and income security, particularly in the events of illness, work injury, invalidity, unemployment, old age, and maternity or loss of main income earner (World Social Protection Report 2017–19). However, numerous new universal social risks and demands have emerged in recent years. The majority of them are concerned with the issues pertaining to the new knowledge economy, income and gender inequality, and climate change. Low or insufficient levels of schooling,

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reconciliation of family responsibility and paid labor, single parenthood, long-term care dependence of a family member, and climate change-related threats, among other things, are the new social risks and demands (Armingeon and Bonoli, 2006; Gough, 2010; Vandenbroucke, 2012; Kowalewska, 2017). Several new social policy instruments and areas of intervention, including but not limited to social investment and activation policies, are recognized and examined in contemporary welfare state research (see Morel et al., 2012; Bonoli and Natali, 2012; Eriksen, 2018). However, the existing theoretical frameworks barely include any of the new social policies and risks, leaving critical welfare state developments unexplained.

As a consequence, any effort to piece together the existing literature on welfare typologies falls short in unveiling and explaining the patterns of global contemporary welfare states. For illustration, systematic theoretical approaches are employed to capture commonalities and differences of developed welfare states, i.e. OECD18+ and EA-18 countries (Esping-Andersen, 1990; Powell and Barrientos, 2004; Starke et al., 2008; Danforth, 2014). Other studies attempt to identify region-specific welfare variations, i.e. Powell and Barrientos (2004) and Martínez-Franzoni (2008) on Latin America; Haggard and Kaufman (2008) on Latin America, East Asia, and Eastern Europe; Wood and Gough (2006), Rudra (2007), Sharkh and Gough (2010) on non-OECD nations; Mkandawire (2016) on Africa; and Kuypers (2014) on East Asia. Several welfare regimes emerge from this collection of research. Esping-Andersen's (1990) classification of regimes as 'liberal, corporatist, and social democratic' was subsequently extended to include 'welfare state regimes, informal security regimes, and insecurity regimes' (Wood and Gough, 2006). Rudra (2007) proposes the concepts of 'productive and protective welfare regimes', while Martínez-Franzoni (2008) expands on these concepts by introducing the concept of a 'nonstate familiarist regime'.

Methodological review

Empirical methods aimed at explaining variations in welfare states seem to be fraught with statistical, variable, and country selection issues. As new and advanced quantitative research techniques develop, the results of basic and traditional quantitative approaches are increasingly being questioned (Ahlquist and Breunig, 2012). Powell and Barrientos (2015: 263) conduct a review of the welfare regimes literature following Esping-Andersen's (1990) 'Three Worlds of Welfare Capitalism' and classify it into three subgroups, based on their methodological development: data reduction, regression analysis, and qualitative comparative analysis. They find that the most frequently used technique is data reduction, which includes cluster methodologies such as hierarchical cluster analysis and K-means cluster analysis, both of which have been extensively used in the literature on distinct welfare regimes (i.e. Rudra, 2007; Martínez-Franzoni, 2008).

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Nonetheless, since I intend to include in this paper different welfare institutions in developed and developing countries, the use of a more 'sophisticated data reduction technique' will be essential for attaining high clustering accuracy (Barrientos, 2015: 264). Hence, I use the newly developed advanced mixture model-based clustering technique – which has notable advantages over traditional clustering methods[2]– to validate the comparative conceptual framework (Ahlquist and Breunig, 2012).

Another shortcoming that characterizes current empirical research of welfare regimes is known as the 'variable selection' issue. Yörük et al. (2019) collect, categorize, and statistically evaluate all variables utilized in the literature on welfare regimes. The results of this study revealed three key findings, which my analysis carefully examines and addresses. First, scholars choose variables mostly based on data availability and depend less on theoretical frameworks. Second, welfare policy variables are typically utilized in OECD country studies, while in non-OECD countries with insufficient data, researchers use development outcome variables as proxies. Third, Esping-Andersen variables are rarely utilized in non-OECD research, which weakens reliability and comparability with OECD studies (ibid: 1). This trend in the current research could hurt genuine attempts to properly conceptualize, operationalize, and measure welfare state patterns (ibid: 1). In light of these limitations, I develop a formal variable selection criterion in this study, which takes into account the representation of all major welfare policies and risks, and combines input, output, and outcome variables, a similar approach to the one adopted by Rudra (2007: 386) and Gough (2013a: 42) (see the 'Operationalization' section for details).

The conceptual framework of contemporary welfare states

In this part, I construct a global yet comparative conceptual framework for unveiling the patterns of contemporary welfare states. I take three critical factors into account to ensure a clear and consistent comparative analysis of welfare states across the globe. First, unlike most existing ones, the proposed conceptual framework follows a formal development process and complies with the operationalization and measurement processes (Yörük et al., 2019). Second, the majority of countries, regardless of economic level, are welfare states; therefore, this framework adheres to the guiding principles of inclusion and a level playing field. The main criterion for comparing this diverse collection of countries is a functioning government. This implies that formal institutions are in charge of a social welfare system and are accountable for addressing various 'new' and 'old' social risks. Third, it is critical to incorporate contemporary social policies and risks aimed at responding to global demands and needs resulting from the new knowledge economy, gender and income inequalities, and climate change

[2]Please see the 'Method: Model-based cluster analysis' section for details.

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(Armingeon and Bonoli, 2006; Bonoli and Natali, 2012; United Nations, 2015; Stiglitz, 2018). Accordingly, I design and deploy a novel framework, which applies to both "policy mechanisms and outcomes achieved in all welfare states" (Taylor-Gooby, 2004). This framework defines and measures concepts using a three-stage formal process known as conceptualization, operationalization, and measurement (DeCarlo, 2018).

First Stage: Conceptualization

"A concept is the notion or image that we conjure up when we think of some cluster of related observations or ideas" (DeCarlo, 2018: 228). Conceptualization, moreover, is a clear and concise definition of a concept (ibid: 228). My goal in this stage is to examine the main nuances of contemporary welfare states. I identify five dimensions that are presented chronologically, around which I build the new concepts that assist in unveiling global welfare state patterns (Table 1). 'Concentration' emphasizes the presence of both old and new social risks and needs. Countries worldwide may direct their resources toward one category of risks and policies or the other, or in certain cases, they may devote an equal amount of effort to both categories (Esping-Andersen, 2002; Bonoli and Natali, 2012). 'Configuration' emphasizes the differences in the forms of welfare provision. According to the existing research, welfare states that prioritize new social risks and needs provide fewer transfers but more services. Those who concentrate on older social hazards and needs, on the other hand, offer more transfers and fewer services (Häusermann, 2012). The 'Instruments' dimension delves into the main policy areas/instruments that dominate contemporary welfare state policy. Existing research links activation and social investment policies with new social risks and demands, while social security and assistance policies are associated with old social risks and needs (Esping-Andersen, 2002; Morel et al., 2012; Bonoli and Natali, 2012; Hemerijck, 2017). 'Market' stresses the relationship between distinct welfare state policies and the market. It emphasizes that some welfare programs seek to encourage productivity and market participation (i.e. activation and social investment), while others aim to shield individuals from market failures (i.e. social security and assistance). The last component, 'Measures', underlines the kinds of measures intended to either prevent social risks from occurring or to respond to an undesirable result (Esping-Andersen, 2002).

TABLE 1. Conceptualization

Dimensions	I. Reactive Welfare State	II. Proactive Welfare State
1. Concentration	Old social risks and needs	New social risks and needs
2. Configuration	More transfers and fewer services	Fewer transfers and more services
3. Instruments	Social security and assistance	Activation and social investment
4. Market	Encourages protection from the market	Encourages productivity in the market
5. Measures	Responsive	Preventive

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Based on the summary of the dimensions, I identify and conceptualize two concepts, Reactive and Proactive Welfare States (Table 1). My rationale for naming these concepts differently from the existing ones that circulate in the current literature is appropriate for two reasons. First, the concepts I propose, particularly the second one, include policy areas that go beyond employment-related issues, such as civil rights, climate change, public order, and gender development. As a result, the fundamental definitions of these concepts vary from the existing ones. Second, the usage of the new concepts avoids readers' confusion about whether this study is aligning more with or endorsing one set of existing typologies over the others. In fact, I firmly believe that the most prominent welfare regimes studies bring to this body of literature invaluable and unique insights.

The first concept, Reactive Welfare State, derives from the dimensions listed in the first group (I). In this set, I perceive a higher tendency of welfare policy design to prioritize old social risks and needs, offer welfare provision and protection after the market has failed, encourage de-commodification, and use more responsive measures. On the other hand, the second concept, Proactive Welfare State, reflects on the dimensions presented in the second group (II). Here, I observe a higher tendency of welfare state policy design to respond to new social risks and needs, offer more services, encourage productivity and commodification, and use more preventive measures. I assume that these welfare state concepts are two ideal types, forming a spectrum of welfare states, with actual welfare states falling somewhere in between these two types. However, given the changing nature of welfare state priorities, certain countries may unveil a Dual welfare state pattern. This may arise as a result of the shift from Proactive to Reactive welfare state priority, or vice versa, or even as a result of particular countries' lack of clear and concise welfare state designs.

The framework then continues to identify the elements of conceptualization based on the concepts and dimensions in Table 1. In this case, elements refer to critical policy areas that are present in some form or another in the majority of contemporary welfare states. As discussed previously, traditional welfare policies (i.e. Table 2: 1-7) account for the majority of components in the existing frameworks. Nonetheless, contemporary policy areas (i.e. Table 2: 8-14) relating to gender and income inequality, new knowledge economy, and climate change, for numerous reasons need further attention in the newly developed theoretical methods. First, policy changes affecting new work/welfare relationships have changed at various levels across the globe (Hall, 1993; Lewis, 2010). From a gender viewpoint, more precisely, the masculinist

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paradigm of labor and welfare has shifted, indicating a trend toward generalization to women (Lewis, 2010). These modifications to the gender-centered model tackle time constraints and emphasize the need of developing welfare policies that address and value care work, equality of opportunity, and so forth (Lewis, 2010; United Nations, 2015). Second, during the last three decades, socioeconomic developments have influenced the construction of different welfare states. Hall (2015: 256) argues that the emergence of revolutionary new technologies, economic and cultural globalization, and significant global shifts toward service-based employment call into question the capacity of traditional welfare programs to address the challenges posed by the new knowledge economy. Third, researchers of welfare policy see climate change as a systemic threat that is "novel, big, global, long-term, persistent, and uncertain" (Stern, 2007: 25; Gough, 2010, 2013a). Indeed, climate change-related hazards have numerous consequences for welfare policy. Several of these include precautionary policies on housing, increased insurance costs, and increased health needs in the event of severe climatic disasters (Gough, 2013a). Further, climate migration may exacerbate social integration difficulties and increase demand for housing, employment, education, social protection, services, and health care (ibid: 328). Synergies between climate change and social policy are gaining prominence and should be included on the list of elements of conceptualization (Koch and Fritz, 2014). Fourth, in terms of public order and safety, I am more concerned with corruption and property rights enforcement, a policy area influenced by the studies of Lambsdorff (2001) and Rothstein (2021). The first contends that corruption leads governments to be unable or unwilling to maximize welfare services, while the latter argues that different kinds of malpractice in social program execution have a significant effect on the potential for gaining peoples' support for social policy. Finally, other mentioned policy areas appear often in the welfare states literature (i.e. see Table 3 sources for details), with the majority of these indicators fairly accurately also reflecting a country's fiscal policy efforts in terms of social policy (i.e. expenditure variables).

Table 2 compiles a list of fourteen policy areas that dominate contemporary welfare state architecture. These policies are neither mutually exclusive nor are they substitutes; rather, they complement one another. Based on the concepts derived from Table 1, I propose that contemporary welfare states follow either a Reactive or a Proactive path, or in specific cases a Dual path. The Reactive Welfare State pattern represents welfare designs that prioritize policy areas 2-7, whereas the Proactive Welfare State pattern reflects welfare designs that prioritize policy areas 8-13 (Table 2).

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TABLE 2. Elements of Conceptualization

Elements: Policy Areas	Reactive Welfare State	Proactive Welfare State
1. Civil Rights[3]	*Central*	*Central*
2. Social Assistance	*Central*	*Marginal*
3. Social Insurance	*Central*	*Marginal*
4. Healthcare	*Central*	*Marginal*
5. Housing and Amenities	*Central*	*Marginal*
6. Public Order and Safety	*Central*	*Marginal*
7. Labor Protection	*Central*	*Marginal*
8. Education and Training	*Marginal*	*Central*
9. Gender Development	*Marginal*	*Central*
10. Childhood Development	*Marginal*	*Central*
11. Knowledge-Economy	*Marginal*	*Central*
12. Climate Policy	*Marginal*	*Central*
13. Employment Activation	*Marginal*	*Central*
14. Family Policy	*Marginal*	*Central*

Note: The Central and Marginal rankings indicate the degree of priority and use according to certain policies by each regime.

Second Stage: Operationalization

In quantitative research, the operationalization process is concerned with 'how a concept will be measured' (DeCarlo, 2018: 236). It includes the identification of indicators that represent each concept. In this stage, I do so by identifying at least one indicator for each element of conceptualization (Table 3). In the indicator selection process, I closely consult the existing welfare regimes' scholarship and mix input, output, and outcome indicators. Fundamentally, I construct my rationale based on the arguments, experiences, and results deriving from two prominent studies on welfare regimes, Rudra (2007) and Gough (2013b). The term 'input' refers to legislation and expenditure, 'output' refers to the implementation rate of legislation and provision, and 'outcome' refers to the final effect on individuals. Indeed, input, output, and outcome variables are expected to be related. In practice, and according to Rudra and Gough, these connections may vary in different country contexts. As a result, it is critical to consider all three dimensions. The combination of these types of indicators generates substantial explanatory power as it captures the welfare states' efforts and results in several areas, as listed in Table 3.

[3]Civil rights are a prerequisite for the effective execution of other policy areas; therefore, I propose that both regimes place it at the heart of their welfare state policy designs.

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TABLE 3. Indicators of Elements

Indicator Selection	Policy Area Relation	Selected References	Type
Reactive Welfare State			
Civil liberties	Civil Rights	Gough et al., 2004	Outcome
Social security policies	Social Insurance	Rudra, 2007	Input
Total social protection-expenditures, including health	Social Assistance, Healthcare	Wood and Gough, 2006 Rudra, 2007	Input
Older persons covered by social protection	Social Protection (Social Assistance and Insurance)	IPCIG, 2019	Output
Prevalence of undernourishment	Social Protection (Social Assistance and Insurance)	Gough et al., 2004	Outcome
Legal health coverage deficit	Healthcare	IPCIG, 2019	Output
Child mortality	Healthcare	Conley and Springer, 2001	Outcome
Maternal mortality	Healthcare	Molla et al., 2015	Outcome
Corruption	Public Order and Safety	Toukan, 2017	Outcome
Wage and salaried workers	Labor Protection	Hudson and Kühner, 2009	Output
Vulnerable employment	Labor Protection	Weil, 2009	Output
Working poverty	Labor Protection	Halleröd et al., 2015	Outcome
Proactive Welfare State			
Civil liberties	Civil Rights	Gough et al., 2004	Outcome
Education index	Education and Training	Rudra, 2007	Output
Education expenditures	Education and Training	Wood and Gough, 2006	Input
Tertiary education enrollment	Education and Training	Rudra, 2007	Output
Gender development	Gender Development	Stadelmann-Steffen, 2008	Outcome
Preprimary school enrollment	Childhood Development	Busemeyer and Seitzl, 2018	Output
Individuals using the Internet	Knowledge-Economy	Ojanperä et al., 2019	Output
PM 2.5 Air	Climate Policy	Requia et al., 2019	Output
Renewable energy output	Climate Policy	Gough, 2008	Output
Labor force participation rates	Employment Actv., ALMP	O'Connor, 1996	Output
Labor underutilization	Employment Actv., ALMP	Hudgins and Gevrek, 2015	Output
Youth Unemployment 15-24	Employment Actv., ALMP	Caliendo and Schmidl, 2015	Output
Length of maternity leave	Family Policy	O'Connor, 1996	Input

Note: This list illustrates the range of indicators that scholars may use in other similar studies. In this paper, I used indicators that generated robust empirical findings.

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Third Stage: Measurement

Following conceptualization and operationalization, this stage focuses on ensuring the validity of these concepts via accurate measurement. As a result, the dataset I constructed includes only indicators of elements deriving from Table 3. Based on the current literature, data reduction, and more specifically, cluster analysis, is an appropriate quantitative technique for validating the proposed framework (Barrientos, 2015). Cluster analysis groups countries with comparable characteristics and demonstrates feature variations across country groups. Cluster results unveil patterns of contemporary welfare states as I suggested, if they confirm that some countries' welfare designs are prioritizing one group of welfare policies (i.e. Proactive Welfare State policies) over another (i.e. Reactive Welfare State policies), and vice versa. However, if the cluster analysis shows just one cluster, it would imply that the attempts to find welfare state patterns across the world are pointless and that the efforts to tackle the existing new and old social risks are relatively similar in every country. Alternatively, if cluster analysis reveals a much larger number of clusters (e.g. 7-10 clusters), it would imply that global welfare state efforts to address new and old social risks are considerably more diverse than this study suggests.

Data and empirical approach

Data

I assembled a unique and comparable dataset for the year 2015[4], including nineteen input, output, and outcome variables for 150 countries across six continents (see note 4 and Appendix A for details). The country sample is highly comprehensive and covers the welfare states of more than ninety percent of the world's population. The other omitted information predominantly includes small islands characterized by a substantial lack of data and some extreme country cases, i.e. ruthless dictatorships or countries in massive ongoing wars. The sources of the selected data include international organizations such as the United Nations, World Bank, World Health Organization, International Labor Organization, and International Institute for Democracy and Electoral Assistance (see Appendix B and C for details). The large sample size, the period it covers, the mix of variables, and the comparability and credibility of data, provide sufficient statistical power to detect global contemporary welfare state patterns.

[4]The model-based clustering technique does not work when there is missing data. As indicated in the original dataset, a tiny portion of the missing data for 2015 is replaced with data from the closest available years. Alternatively, in extreme cases where data for a single country was unavailable, I utilized R's MICE package, which generates multiple imputations for multivariate data. To verify the robustness of this package, I employed other data imputation options (such as mean or mode) or omitted the observed nations entirely, and I still got the same cluster findings.

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Method: Model-based cluster analysis

Cluster analysis is an unsupervised learning method used to examine homogenous groups of observations within a multivariate dataset (García-Escudero et al., 2010; Kumar, 2019). In unsupervised learning, hierarchical clustering, partitioning methods, and model-based clustering are the most popular methods. In this study, I used model-based clustering (or Gaussian Mixture Model), a formal and sophisticated method that relies entirely on statistical models and creates the prospects to make formal inferences (Kumar, 2019; Fraley and Raftery, 2002). Recently, model-based cluster analysis has advanced considerably in terms of methods, software, and interpretation of the output (Fraley and Raftery, 2007). It is a 'well-established' tool for clustering multivariate data and is gradually preferred over heuristic methods (Fop and Murphy, 2018; Fraley and Raftery, 2007).

According to Ahlquist and Breunig (2012), the model-based clustering method has four unique advantages over the heuristic clustering methods[5]. Firstly, the partition of data in model-based clustering develops from an estimated statistical model. Secondly, it enables us to choose the clustering method relying on a formal model selection. In this article, I used the Bayesian Information Criterion (BIC) to select the best model. Thirdly, model-based clustering detects the number of clusters in a dataset, unlike the K-means approach, which requires a prior selection, or the hierarchical approach that requires post-subjective selection of the number of clusters. Fourthly, model-based clustering currently has available numerous cluster shapes, unlike the other methods (ibid: p.96). In this analysis, I assume a Gaussian Mixture Model for data X, with D variables and N observations. For G clusters, the likelihood is:

$$\prod_{i=1}^{N}\sum_{k=1}^{G} T\kappa\emptyset k(xi \mid uk,\ \Sigma k),$$

where $T\kappa$ represents the probability that an observation belongs to cluster k, $\emptyset k$ is the normal probability distribution centered at uk with variance-covariance matrix $\sum k$ (Evans et al., 2015: 67). In this approach, "clustering is formulated in a modeling framework, and the data generating process is represented through a finite mixture of probability distributions" (Fop and Murphy, 2018: 2). This study uses multivariate data, and I conduct model-based clustering analysis via GMMs in R (R Core Team, 2017), using *mclust* package. The data is standardized

[5]It is also worth mentioning a disadvantage that is discussed by Baudry (2015). The model-based clustering method (MBC-BIC) picks mixtures that are a good fit to the data, which might generate "too many" components when the goal is to identify clusters. In this case, the ILC criterion is preferred.

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since the ranges of the variables vary significantly. Using the model-based clustering method, I was able to attain an optimal number of clusters and a smooth interpretation of the results.

Validation of the conceptual framework

In Figures 1 and 2, as well as Table 4, I show model-based cluster findings. I converted the data to percentiles to facilitate a smooth comparison between countries and variable averages. The values of all variables are computed in ascending order from 0 to 100. The higher the percentile rating, the stronger the corresponding indicators are in a country/cluster, and vice versa. First, I determine the number of clusters identified by the data reduction technique. Second, I evaluate the features of each cluster and compare the findings to the conceptual framework developed in this study. Third, I use a suitable robustness technique to assess the confidence of the chosen model (see Appendix D for details).

The model-based cluster analysis reveals three clusters, demonstrating the presence of different patterns of welfare states throughout the world (see Figure 1). The highest BIC score indicates the strongest evidence in favor of the optimal model. The cluster findings show three groupings made up of 53, 39, and 58 countries, respectively (see Figure 2). Analyzing variable or

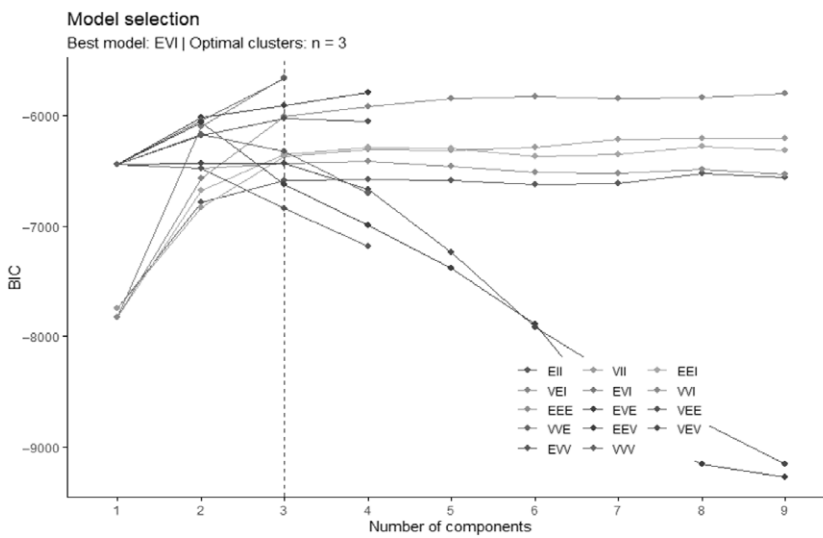

FIGURE 1. Model selection.

Note: Figure 1 shows the selection of the best model using the Bayesian Information Criterion (BIC). The optimal number of clusters representing the best model is three.

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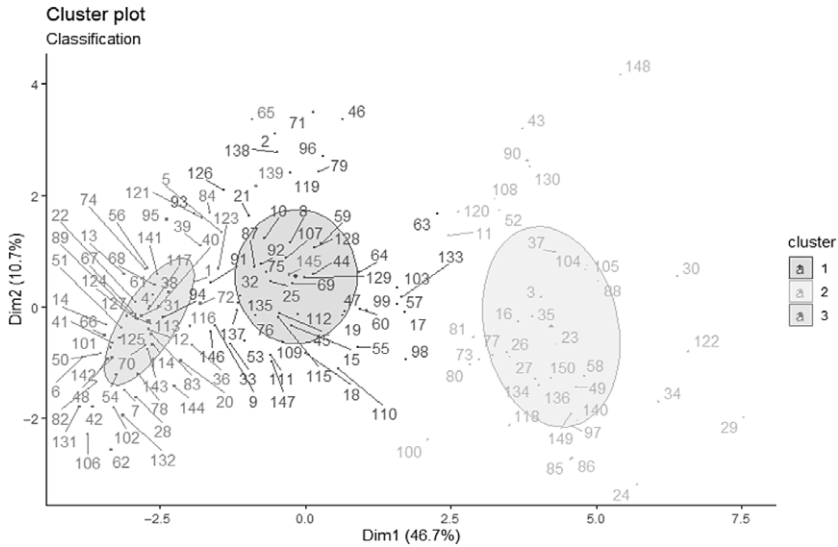

FIGURE 2. Cluster plot.

Note: Figure 2 figure shows the three cluster plots. Cluster one (center) represents the group of countries with the Dual Welfare States, cluster two (right) represents the group with the Proactive Welfare States, and cluster three (left) represents the group with the Reactive Welfare States.

country averages may provide micro information about how a variable compares to a country group, or how one country compares to a set of variables. However, in this study, I am primarily concerned with extracting information from a macro perspective. Do the cluster findings, in particular, validate the new conceptual framework that this study proposes? If that is the case, what does the global picture of contemporary welfare state patterns tell us?

Model-Based Cluster Analysis Results

In Cluster 1, the indicators capturing the Reactive and Proactive Welfare State concepts have almost identical cluster averages (46th and 45th percentiles, respectively) (see Table 4). This finding reveals a hybrid pattern or a 'Dual Welfare State', which means that, from a macro viewpoint, this group of countries puts equal efforts in both Proactive and Reactive welfare programs and risks. However, from a micro perspective, the results show that several countries have individual average welfare state patterns that lean toward Reactive (i.e. Algeria, Egypt, and South Africa), Proactive (i.e. Bhutan, Ghana, and

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Peru), or Dual (i.e. Dominican Republic, Malaysia, and Kyrgyz Republic) welfare state patterns.

Cluster 2 has the lowest welfare state performance of the three clusters (19th and 32nd percentiles, respectively) (see Table 4). Nonetheless, the results indicate that the welfare state structure of this set of countries is characterized as a Proactive Welfare State pattern. Cluster analysis reveals that the average of the variables representing the Proactive Welfare State dimension is considerably higher in nearly all countries than the indicators representing the Reactive Welfare State. As a result, in accordance with the proposed conceptual framework, I refer to this group of countries as the Proactive Welfare States, since they devote a relatively greater amount of attention to the policies and risks upon which this regime is built. A thorough causal analysis is necessary to elucidate why this group of emerging countries with low-level welfare states adheres to the Proactive pattern. However, current literature provides some indications. According to Kuitto (2016), the main components of the Proactive Welfare State, social investment and activation policies, are less costly than compensatory programs such as social protection policies; hence, they are more affordable and attractive for poorer countries (Kuitto, 2016). Furthermore, new welfare policies are simpler to modify than conventional ones since they do not have substantial 'path-dependent' consequences (ibid: p.5). Finally, I believe that the impact of international organizations in bringing Proactive Welfare State ideas to the top of the social policy agenda may be another explanation.

Cluster 3 has the strongest welfare state performance of the three clusters (72nd and 65th percentiles, respectively) (see Table 4). As I am interested in the primary directions and strategies of the welfare state rather than on the level, cluster averages show that this group of countries has especially high values for Reactive Welfare State policies and risks. Such a finding is also mirrored in nearly all country-level averages. This cluster mostly consists of nations that feature often in the current literature on welfare regimes yet are classified as having distinct welfare regimes (e.g. Norway, Sweden, United States, United Kingdom, and Germany). The clustering of this group in the current study is most likely due to path dependence and the fact that the majority of these nations have well-established social safety systems built over decades. In this regard, it is worth noting that the cluster analysis may still assist in identifying differences within this cluster that correlate to traditional typologies. To illustrate, if we compare Sweden (Social-Democratic), Germany (Corporatist), and the United Kingdom (Liberal) using Esping-Andersen's (1990) traditional (Reactive) welfare state instruments, their national average still shows this difference through percentiles, 84th, 81st, and 77th, respectively.

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TABLE 4. Cluster Analysis Results

	CLUSTER 1									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Algeria	50	57	25	61	38	32	50	52	85	**50**
Azerbaijan	48	57	11	100	36	63	60	9	93	**53**
Bahamas	32	43	91	34	71	40	62	100	100	**64**
Bahrain	23	13	1	61	73	71	43	100	84	**52**
Belize	29	21	77	45	51	58	50	28	65	**47**
Bhutan	15	2	27	44	31	31	6	56	67	**31**
Bolivia	57	43	53	18	28	26	74	38	54	**43**
Botswana	43	13	62	12	27	34	74	22	33	**36**
Brunei D.	11	13	4	69	61	65	61	100	100	**54**
Cabo Verde	45	57	88	29	42	50	64	44	61	**53**
China	38	57	7	40	61	59	74	65	70	**52**
Colombia	66	57	50	49	50	43	45	54	67	**53**
Dominican	41	43	59	33	33	38	19	30	69	**40**
Ecuador	48	57	41	46	52	43	46	24	62	**46**
Egypt	59	43	5	59	39	54	40	40	75	**46**
El Salvador	61	21	56	36	52	46	26	24	73	**44**
Georgia	58	43	70	48	58	54	67	28	64	**54**
Ghana	34	13	67	51	21	20	38	46	58	**39**
Guatemala	26	21	42	24	34	40	14	34	59	**32**
Guyana	49	21	57	44	32	24	74	26	66	**44**
Honduras	26	43	48	25	43	34	47	18	30	**35**
India	15	43	33	23	26	29	32	19	24	**27**

TABLE 4. Continued

	CLUSTER 1									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Indonesia	4	13	55	42	36	35	21	41	50	**33**
Jamaica	28	21	80	41	48	39	37	23	77	**44**
Jordan	51	21	28	30	45	45	44	47	79	**43**
Kuwait	60	13	24	100	67	97	36	100	81	**64**
Kyrgyz R.	52	57	34	48	41	41	74	50	69	**52**
Lebanon	7	13	37	32	69	71	0	38	80	**39**
Malaysia	21	2	26	69	73	51	28	100	100	**52**
Mauritius	54	21	64	54	54	47	74	100	84	**61**
Mexico	63	43	49	62	53	52	34	52	68	**53**
Moldova	78	57	44	44	49	65	55	48	95	**59**
Mongolia	66	57	66	27	44	50	74	49	87	**58**
Morocco	42	57	31	66	38	36	41	37	72	**47**
Myanmar	2	2	21	33	22	28	70	60	56	**33**
Namibia	44	43	68	9	25	22	72	31	48	**40**
Nicaragua	39	21	28	21	44	30	31	18	50	**31**
Oman	22	2	12	56	60	69	32	66	89	**45**
Panama	54	43	68	38	46	38	40	40	73	**49**
Paraguay	40	21	52	31	40	33	30	26	74	**38**
Peru	36	43	60	39	48	42	27	43	61	**44**
Philippines	9	21	58	26	34	36	41	50	52	**36**
Qatar	30	2	9	100	70	73	26	100	100	**57**
Saudi A.	20	13	5	56	69	74	54	28	100	**47**
South Africa	56	57	56	55	28	32	68	100	54	**56**

TABLE 4. Continued

	CLUSTER 1									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Sri Lanka	42	13	39	38	63	56	34	100	78	**51**
St. Lucia	37	21	91	20	46	48	36	35	51	**43**
Tajikistan	74	43	9	9	30	55	68	3	60	**39**
Thailand	21	57	8	46	62	66	60	69	95	**54**
Trinidad&T.	52	43	69	50	35	44	72	39	92	**55**
Tunisia	58	57	48	59	55	44	39	48	76	**54**
Venezuela	50	43	19	26	40	37	48	100	53	**46**
Vietnam	40	57	20	36	42	46	42	42	65	**43**
Cluster Average	**40**	**33**	**42**	**44**	**46**	**46**	**47**	**50**	**70**	**46**

	CLUSTER 1										
	PROACTIVE WELFARE STATE										
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Algeria	52	42	61	13	38	50	37	11	3	25	14	**32**
Azerbaijan	14	56	20	44	81	38	71	23	46	11	63	**43**
Bahamas	39	60	27	98	83	27	27	0	89	91	26	**51**
Bahrain	22	60	42	35	97	56	6	0	53	1	93	**42**

TABLE 4. Continued

	CLUSTER 1											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Belize	87	52	38	58	42	38	37	62	60	77	30	**53**
Bhutan	91	15	17	21	40	19	89	97	42	27	92	**50**
Bolivia	83	45	52	29	34	52	27	52	71	53	91	**53**
Botswana	98	41	17	64	37	42	13	10	85	62	9	**44**
Brunei D.	37	53	50	81	72	45	3	11	19	4	37	**37**
Cabo Verde	68	29	50	39	44	37	6	42	40	88	16	**42**
China	5	39	62	45	50	56	37	46	74	7	78	**45**
Colombia	32	44	54	83	54	67	71	81	61	50	59	**60**
Dominican	12	40	34	86	53	64	13	32	47	59	29	**42**
Ecuador	42	46	52	59	48	57	13	69	35	41	72	**48**
Egypt	51	34	25	12	38	48	68	24	7	5	13	**29**
El Salvador	33	32	48	56	30	41	60	72	30	56	79	**49**
Georgia	3	81	43	64	47	58	93	84	58	70	18	**56**
Ghana	82	30	98	22	27	28	13	67	81	67	40	**50**
Guatemala	23	25	36	42	32	36	13	74	19	42	96	**40**
Guyana	23	34	77	40	34	21	27	0	17	57	18	**32**
Honduras	86	21	33	62	31	36	13	60	38	48	47	**43**
India	27	28	11	8	17	40	89	37	11	33	81	**34**
Indonesia	32	35	46	30	24	44	27	30	45	55	50	**38**
Jamaica	76	49	71	68	42	40	3	28	48	80	17	**47**
Jordan	46	54	23	13	60	50	9	13	0	28	14	**28**
Kuwait	28	35	48	75	74	46	9	0	58	24	89	**44**
	67	61	23	50	32	61	71	87	28	34	42	**51**

TABLE 4. Continued

	CLUSTER 1											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Kyrgyz R.												
Lebanon	11	37	59	20	77	52	9	17	5	37	37	**33**
Malaysia	60	57	83	62	72	55	6	28	30	26	88	**51**
Mauritius	59	59	93	50	50	51	13	45	15	64	63	**51**
Mexico	71	44	52	44	56	44	13	38	24	49	61	**45**
Moldova	84	56	66	89	67	54	71	21	1	44	58	**56**
Mongolia	45	66	100	97	25	81	68	19	23	66	67	**60**
Morocco	73	26	42	7	56	42	37	36	6	31	20	**34**
Myanmar	0	13	20	42	23	28	37	73	89	21	100	**41**
Namibia	97	32	19	87	28	33	13	93	15	68	1	**44**
Nicaragua	44	30	41	39	21	32	13	66	33	28	41	**35**
Oman	55	54	44	38	77	53	1	0	64	12	72	**43**
Panama	19	48	38	88	51	60	37	79	50	68	70	**55**
Paraguay	62	38	30	61	49	47	71	98	68	52	56	**57**
Peru	29	49	74	38	41	83	27	68	77	60	87	**57**
Philippines	6	42	90	82	35	48	6	47	28	58	87	**48**
Qatar	13	51	45	100	97	26	1	0	95	9	98	**49**
Saudi A.	93	70	17	18	68	71	9	9	11	5	46	**38**
South Africa	83	55	60	69	52	35	70	17	12	56	0	**46**
Sri Lanka	5	65	80	33	10	34	13	64	9	39	63	**38**
St. Lucia	58	46	56	76	43	29	27	0	69	91	3	**45**
Tajikistan	38	42	8	26	20	39	83	93	29	9	20	**37**
Thailand	46	38	48	83	40	63	27	25	78	8	95	**50**

TABLE 4. Continued

	CLUSTER 1											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Trinidad&T.	21	58	65	93	68	23	27	0	49	69	82	**50**
Tunisia	81	40	34	21	46	46	1	18	5	48	10	**32**
Venezuela	88	62	57	98	62	87	89	77	43	19	46	**66**
Vietnam	57	36	66	92	45	43	89	57	92	20	97	**63**
Cluster Average	**48**	**44**	**48**	**54**	**48**	**46**	**34**	**41**	**41**	**42**	**52**	**45**

	CLUSTER 2									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	CivilLiberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Angola	38	21	19	11	8	12	22	1	16	**16**
Bangladesh	6	21	26	22	30	28	38	5	30	**23**
Benin	25	21	72	35	3	14	18	16	8	**24**
Burkina Faso	16	21	65	16	9	16	5	4	11	**18**
Burundi	32	21	6	0	15	3	7	32	1	**13**
Cambodia	2	1	21	18	32	30	5	29	20	**18**
Cameroon	12	21	32	47	7	8	21	7	21	**20**
C. African R.	13	21	23	1	1	1	14	14	2	**10**

TABLE 4. Continued

	CLUSTER 2									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	CivilLiberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Chad	5	21	17	6	0	1	2	15	14	**9**
Congo D.R.	19	21	17	3	4	5	23	16	1	**12**
Congo R.	9	21	10	5	22	14	29	22	15	**16**
Cote d'Ivoire	7	21	45	15	5	6	13	5	20	**15**
Djibouti	46	21	1	17	16	24	20	34	18	**22**
Ethiopia	18	2	13	14	17	18	23	12	18	**15**
Gambia, The	26	2	11	34	14	4	24	73	42	**25**
Guinea	13	43	35	24	7	5	16	2	13	**18**
Kenya	11	2	46	12	24	10	33	36	16	**21**
Lao PDR	5	21	0	22	14	26	10	17	23	**15**
Lesotho	73	1	51	28	5	12	69	22	7	**30**
Liberia	19	2	63	4	10	3	64	42	12	**24**
Madagascar	1	21	40	3	24	18	8	10	0	**14**
Malawi	3	0	62	19	18	7	3	34	3	**16**
Mali	31	21	36	55	2	9	4	6	6	**19**
Mauritania	30	21	32	42	9	7	17	14	63	**26**
Mozambique	28	21	44	10	12	11	25	12	3	**18**
Nepal	17	2	47	40	29	23	49	1	41	**28**
Niger	17	21	60	30	6	9	11	9	10	**19**
Nigeria	1	2	50	38	3	2	13	8	7	**14**
Pakistan	0	43	30	14	11	28	3	30	63	**25**
Rwanda	46	13	22	7	26	22	9	57	5	**23**
Senegal	33	21	70	29	23	20	30	23	14	**29**
	23	2	58	13	1	0	1	1	5	**12**

TABLE 4. Continued

	CLUSTER 2									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	CivilLiberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Sierra Leone										
Sudan	10	2	7	16	15	21	8	32	44	**17**
Tanzania	44	13	40	8	18	15	6	20	9	**19**
Togo	14	21	43	20	12	17	19	12	9	**18**
Uganda	8	2	30	5	20	19	12	7	12	**13**
Yemen R.	53	2	3	7	20	16	15	36	19	**19**
Zambia	35	2	38	2	16	25	16	15	4	**17**
Zimbabwe	36	2	14	1	19	13	11	4	22	**14**
Cluster Average	**21**	**14**	**33**	**18**	**13**	**13**	**18**	**19**	**17**	**19**

	CLUSTER 2											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Angola	34	17	32	23	11	14	27	70	34	19	21	**27**
Bangladesh	3	20	26	18	13	30	60	14	20	26	77	**28**
Benin	43	16	20	19	9	25	37	22	59	72	69	**36**
Burkina Faso	49	1	1	15	12	7	37	27	96	65	36	**31**
Burundi	72	11	12	83	3	9	13	86	97	6	84	**43**
Cambodia	9	19	15	25	5	24	27	63	91	21	95	**36**

TABLE 4. Continued

	CLUSTER 2											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Cameroon	15	28	30	15	22	31	37	83	75	32	88	**41**
C. African R.	2	5	4	1	2	2	37	95	83	23	40	**27**
Chad	4	2	0	2	1	3	37	0	51	17	72	**17**
Congo D.R.	9	18	1	9	1	11	37	95	56	17	69	**29**
Congo R.	13	26	11	33	7	23	56	70	54	10	26	**30**
Cote d'Ivoire	62	11	5	2	39	15	37	40	25	45	27	**28**
Djibouti	95	3	3	10	9	7	37	0	2	1	19	**17**
Ethiopia	21	3	25	11	11	12	27	96	95	13	92	**37**
Gambia, The	15	7	32	5	15	1	89	0	77	11	9	**24**
Guinea	26	5	13	4	7	21	37	85	94	35	52	**34**
Kenya	66	27	58	31	15	16	27	89	37	46	23	**39**
Lao PDR	25	19	29	30	19	32	56	87	87	0	99	**44**
Lesotho	99	22	28	91	27	15	13	99	39	51	1	**44**
Liberia	36	12	99	9	33	22	37	0	16	63	94	**38**
Madagascar	10	22	15	36	3	5	37	71	99	40	89	**39**
Malawi	79	15	64	32	4	0	3	90	88	62	58	**45**
Mali	50	1	1	3	8	9	37	60	32	36	33	**25**
Mauritania	24	9	8	10	14	8	37	34	3	32	39	**20**
Mozambique	75	9	9	24	16	10	6	88	86	44	76	**40**
Nepal	30	21	70	27	17	26	3	99	100	47	98	**49**
Niger	72	0	5	5	0	3	37	12	21	60	93	**28**
Nigeria	1	17	7	17	35	18	13	42	8	50	90	**27**
	7	10	54	1	12	17	13	53	10	30	75	**26**

TABLE 4. Continued

	CLUSTER 2											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	Labor Underutility	Average
Pakistan												
Rwanda	34	13	15	36	19	11	13	72	99	22	99	**39**
Senegal	89	7	13	23	30	19	37	29	14	70	2	**30**
Sierra Leone	17	8	7	17	5	1	13	74	32	58	32	**24**
Sudan	11	4	37	7	29	30	3	78	4	7	12	**20**
Tanzania	38	14	27	28	21	4	13	55	87	40	83	**37**
Togo	77	23	14	6	6	20	37	82	91	43	65	**42**
Uganda	8	24	10	15	18	6	13	91	98	30	77	**35**
Yemen R.	35	6	1	0	26	17	9	0	7	3	5	**10**
Zambia	1	33	5	33	23	5	13	91	72	38	36	**32**
Zimbabwe	7	31	34	28	26	13	37	68	93	14	49	**36**
Cluster Average	**35**	**14**	**22**	**20**	**15**	**14**	**29**	**59**	**57**	**33**	**56**	**32**

	CLUSTER 3									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Albania	62	57	54	52	65	57	56	26	84	**57**
Argentina	69	57	66	65	59	48	65	64	79	**64**
Armenia	47	43	38	63	55	63	52	100	71	**59**

TABLE 4. Continued

	CLUSTER 3									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Australia	81	57	85	100	89	90	54	100	40	**77**
Austria	97	57	82	100	91	97	74	71	38	**78**
Barbados	60	43	99	65	56	59	51	100	87	**69**
Belarus	82	57	15	100	85	97	74	100	84	77
Belgium	99	57	85	100	87	87	74	70	40	**78**
Brazil	79	57	74	100	50	50	58	100	71	**71**
Bulgaria	80	57	61	61	69	76	74	54	34	**63**
Canada	77	57	87	100	77	87	74	100	32	77
Chile	69	57	90	67	71	65	59	59	77	**68**
Costa Rica	65	43	99	58	65	63	52	100	75	**69**
Croatia	87	57	64	100	81	84	48	66	57	**72**
Cuba	77	21	3	100	77	52	74	100	89	**66**
Cyprus	91	57	75	52	96	87	74	44	46	**69**
Czech R.	84	57	81	100	94	97	74	100	58	**83**
Denmark	97	57	97	100	84	90	74	100	48	**83**
Estonia	76	57	93	69	94	81	74	58	32	**70**
Finland	99	57	79	100	99	100	74	100	49	**84**
France	100	57	95	100	84	84	74	73	44	**79**
Germany	94	57	87	100	87	90	74	100	36	**81**
Greece	95	57	78	100	81	100	57	100	26	77
Hungary	86	57	52	100	78	69	74	100	46	**73**
Iceland	72	57	98	100	100	100	63	100	56	**83**
Iran	64	57	13	58	49	63	35	56	88	**54**
	74	57	86	100	91	84	70	100	40	**78**

TABLE 4. Continued

	CLUSTER 3									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Ireland	72	57	46	100	89	93	73	100	27	**73**
Israel	98	57	81	100	92	97	74	100	28	**81**
Italy	91	57	71	100	95	93	74	100	28	**79**
Japan	34	57	16	100	58	74	62	46	95	**60**
Kazakhstan	55	21	54	100	92	76	58	100	100	**73**
S. Korea	67	57	89	100	79	67	74	46	29	**67**
Latvia	68	57	73	100	79	79	74	63	26	**69**
Lithuania	88	57	100	100	98	79	74	68	34	**77**
Luxembourg	56	57	34	63	57	84	53	62	87	**61**
N.Macedonia	79	57	92	100	74	81	74	100	55	**79**
Malta	69	57	42	100	85	87	46	63	84	**70**
Montenegro	89	57	79	100	87	87	74	69	42	**76**
Netherlands	85	57	89	100	77	76	74	100	37	**77**
New Zealand	93	57	97	100	98	93	74	100	38	**83**
Norway	83	57	84	100	80	100	74	67	35	**76**
Poland	93	57	94	100	91	79	74	100	31	**80**
Portugal	68	57	72	100	65	56	74	61	22	**64**
Romania	71	57	18	100	67	63	66	55	95	**66**
Russia	92	57	36	53	75	69	44	58	92	**64**
Serbia	24	43	23	100	98	79	0	100	100	**63**
Singapore	83	57	74	65	75	90	74	61	47	**70**
Slovakia	90	57	83	100	99	81	74	100	45	**81**
Slovenia	95	57	76	100	93	93	74	71	26	**76**

TABLE 4. Continued

	CLUSTER 3									
	REACTIVE WELFARE STATE									
Country	Social Protection	Social Security Policies	Civil Liberties	Undernourish-ment	Child Mortality	Maternal Mortality	Old Pension Coverage	Health Coverage	Work Poverty	Average
Spain										
Sweden	96	57	93	100	96	97	74	100	43	**84**
Switzerland	85	57	96	100	83	93	74	100	52	**82**
Turkey	64	43	15	100	56	69	28	53	88	**57**
Ukraine	89	57	29	69	65	63	66	100	92	**70**
United K.	87	57	77	100	82	81	74	100	36	**77**
United States	81	57	95	100	73	72	74	51	26	**70**
Uruguay	75	57	83	100	66	71	56	67	92	**74**
Uzbekistan	62	57	2	50	37	54	71	100	17	**50**
Cluster Average	**78**	**55**	**68**	**90**	**79**	**79**	**65**	**81**	**55**	**72**

	CLUSTER 3											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	**Labor Underutility**	Average
Albania	30	62	71	54	61	79	98	99	13	54	8	**57**
Argentina	69	77	56	83	65	94	27	49	44	66	38	**61**
Armenia	16	64	40	59	58	59	83	50	34	38	4	**46**
Australia	64	99	99	61	88	99	71	34	73	85	60	**76**

TABLE 4. Continued

	CLUSTER 3											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	**Labor Underutility**	Average
Austria	74	85	91	56	87	91	60	83	70	82	55	**76**
Barbados	89	69	66	93	80	77	13	0	82	99	24	**63**
Belarus	64	83	91	96	60	95	71	13	57	15	24	**61**
Belgium	85	90	97	55	89	85	56	44	38	85	48	**70**
Brazil	79	47	77	94	58	65	68	81	60	74	39	**67**
Bulgaria	40	77	66	78	55	83	99	41	46	61	28	**61**
Canada	65	90	55	70	93	77	56	76	80	87	75	**75**
Chile	56	74	66	47	81	96	71	61	44	90	30	**65**
Costa Rica	92	57	59	64	59	66	68	94	36	99	15	**64**
Croatia	54	73	47	76	69	80	94	80	27	64	11	**61**
Cuba	99	68	91	37	36	49	71	19	21	3	75	**52**
Cyprus	85	72	62	73	74	70	71	26	62	75	16	**62**
Czech R.	41	91	93	70	79	75	93	31	65	81	85	**73**
Denmark	96	99	85	64	98	92	71	79	81	97	67	**84**
Estonia	70	87	74	95	92	84	83	36	70	93	52	**76**
Finland	90	95	62	86	89	95	87	62	68	79	26	**76**
France	66	84	95	73	84	73	60	39	54	95	34	**69**
Germany	54	100	95	52	91	78	37	51	79	87	79	**73**
Greece	28	82	36	48	64	100	67	50	31	78	6	**54**
Hungary	53	78	64	72	75	62	88	30	36	52	54	**60**
Iceland	95	95	87	50	100	86	27	97	97	98	64	**81**
Iran	17	64	39	14	46	81	95	21	1	13	22	**37**

TABLE 4. Continued

	CLUSTER 3											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	**Labor Underutility**	Average
Ireland	81	97	87	64	87	87	89	48	48	86	46	**75**
Israel	74	88	96	58	82	76	37	15	55	46	65	**63**
Italy	40	72	89	52	57	74	87	58	18	81	12	**58**
Japan	26	83	70	56	95	74	37	40	72	71	81	**64**
Kazakhstan	20	75	46	90	71	58	71	26	79	16	68	**56**
S.Korea	52	86	85	32	93	98	27	16	26	54	57	**57**
Latvia	50	87	71	98	86	85	60	66	67	89	31	**72**
Lithuania	100	89	74	97	73	82	71	58	66	73	50	**76**
Luxembourg	77	70	80	54	99	34	60	54	50	100	34	**65**
N.Macedonia	31	50	30	42	70	54	95	56	22	34	3	**44**
Malta	91	76	96	46	79	62	71	23	26	92	81	**68**
Montenegro	68	71	40	45	66	68	98	65	13	42	7	**53**
Netherlands	61	94	83	50	95	91	60	32	85	79	42	**70**
New Zealand	94	98	77	49	91	90	71	85	84	89	55	**80**
Norway	87	96	87	79	99	88	95	92	83	97	75	**89**
Poland	58	85	57	89	64	79	83	35	42	84	48	**66**
Portugal	70	66	80	69	66	72	59	64	62	94	22	**66**
Romania	19	68	76	72	54	60	71	59	23	72	52	**57**
Russia	36	79	71	95	70	89	83	38	63	18	75	**65**
Serbia	47	67	44	59	63	70	83	48	17	36	5	**49**
Singapore	18	80	19	64	85	93	60	15	66	23	85	**55**
Slovakia	42	81	80	76	83	64	95	44	52	74	32	**66**
	63	89	77	85	76	89	56	52	52	83	44	**70**

TABLE 4. Continued

	CLUSTER 3											
	PROACTIVE WELFARE STATE											
Country	Education Expenditures	Education Index	Preprimary School	Gender Dev. Index	Internet Usage	Tertiary Education	Maternity Leave	R.Energy Output	Labor Force Participation	Civil Liberties	**Labor Underutility**	Average
Slovenia												
Spain	44	79	85	64	85	97	60	56	64	76	7	**65**
Sweden	93	93	83	79	94	72	100	77	90	93	44	**83**
Switzerland	56	92	93	73	90	69	37	75	93	96	56	**75**
Turkey	48	48	24	26	52	99	60	54	9	15	28	**42**
Ukraine	80	74	66	81	48	93	71	20	41	29	54	**60**
UnitedK.	78	97	85	47	96	68	95	46	76	77	67	**76**
United States	60	93	50	79	78	97	0	33	56	95	83	**66**
Uruguay	48	62	76	91	62	66	37	89	74	83	43	**66**
Uzbekistan	97	52	22	40	44	13	60	43	40	2	61	**43**
Cluster Average	**62**	**79**	**70**	**66**	**76**	**78**	**68**	**50**	**53**	**68**	**44**	**65**

Conclusion

In recent years, welfare states across the world have undertaken substantial reforms, mostly in response to new social risks and needs posed by the new knowledge economy, gender and income inequality, and climate change. The objective of this study was to develop – for the first time – a comparative welfare state conceptual framework that takes into account the re-focusing of welfare states in recent years and is capable of capturing welfare state patterns on a global scale. As a result, I designed and deployed a novel and systematic theoretical framework for detecting such patterns. Following that, I moreover assembled a unique dataset for 150 countries, onboarding many of them for the first time in the literature, and ultimately used this information to validate the proposed framework utilizing a sophisticated data reduction technique. This study's most significant results may be summarized as follows.

First, I can show, using my conceptualization and model-based cluster analysis, that welfare states worldwide may be classified into three groups. One cluster identifies a group of countries with a greater welfare commitment/response to new social risks than to old social risks. As a result, I refer to this group's welfare states as the Proactive Welfare States. Another cluster identifies a group of welfare states that perform comparatively better on problems relating to old social risks, and I refer to them as the Reactive Welfare States. Additionally, my research identifies a third cluster, comprised of nations with almost equal levels of commitment/response to both old and new social risks, and I refer to them as the Dual Welfare States. Thus, I can demonstrate that – from a global comparative viewpoint – there is systematic variation in how welfare states prioritize their responses to existing and emerging social hazards.

Second, although the extent to which the welfare state is engaged is not an essential feature of this conceptualization, empirical evidence indicates that the proposed framework may provide such information within and across clusters. In terms of the latter, the Proactive Welfare State cluster exhibits, on average, the lowest welfare state engagement, followed by the Dual Welfare State cluster. The Reactive Welfare State cluster, however, exhibits the highest degree of welfare state effort. Clearly, these distinct levels seem to be linked to the disparities between developed and developing countries. However, while the level of development is rather logically related to the level of welfare state engagement, the results show that richer and poorer countries also differ with respect to the orientation of their welfare states. The majority of developed countries have long-established a comprehensive welfare state to guard against traditional social risks, which has been extended but not supplanted by measures addressing emerging social hazards. This results in a high level of total welfare state engagement. By contrast, developing nations often lack the resources necessary to establish a compact social security net, preferring instead to concentrate on social investment and activation programs, which are usually less costly than

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social protection measures (Kuitto, 2016). This is reflected in these countries' much lower total level of welfare state involvement, as shown in this study.

Third, the comparative framework has a stated goal of identifying welfare state patterns on a global scale. To some degree, this comes at the expense of data constraints with indicators that are not always ideal representations of some specific countries' different welfare state dimensions. Nonetheless, my research demonstrates that the conceptual framework could be extended to a subsample of established democracies as well. The methodology, when concentrating on these nations, shows the various degrees to which these traditional welfare states have been re-focusing their policies on new social risks. Future research may dig further into these disparities using this approach and benefit from the fact that better and more comprehensive data is available for subsamples of countries. Additional disaggregated data for different policy instruments, for example, may allow for the use of more input variables (expenditures and policies) to identify more fine-grained welfare state changes.

Supplementary material

For supplementary material accompanying this paper visit https://doi.org/10.1017/S0047279421001033

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Competing interests

The author declares none.

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