

‘A Veritable Mountain of Data and Years of Endless Statistical Manipulation’: Methods in the *Three Worlds* and After

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This article assesses the methodological contribution of Esping-Andersen’s Three Worlds of Welfare Capitalism to welfare regime analysis. It revisits the methods deployed in the Three Worlds and assesses their influence on the practice of welfare regime researchers. It finds that welfare regime researchers have embraced the methods presented in the Three Worlds in a piecemeal fashion. Data reduction techniques, such as cluster and latent variable techniques, compete with index construction as the tools of choice for identifying clusters. Although regression analysis has been used extensively in linking welfare programme design and outcomes with welfare regimes, few researchers have followed Esping-Andersen in employing regression analysis in the context of linking policy and politics. Qualitative comparative analysis methods are increasingly employed by welfare regime researchers as an alternative. Finally, the article considers the methodological implications associated with extending welfare regime analysis globally.

Key words: Welfare regime, methodology, welfare institutions, comparative analysis.

Introduction

Esping-Andersen’s *Three Worlds of Welfare Capitalism* (*Three Worlds* thereafter) (1990) is rightly credited with ushering in a paradigmatic change in the comparative analysis of welfare institutions in high-income countries. The book engendered an understanding that welfare institutions under capitalism follow alternative paths and configurations, and that policy follows politics. This was apparent from the diverse ways in which welfare institutions in high-income countries evolved in response to the 1973 Oil Price Crisis (Hemerijck, 2013). The three distinctive welfare regime configurations identified in the *Three Worlds*, liberal, conservative and social democratic, each combine welfare institutions in ways that reflect views on social justice and redistribution and underlying political conditions. The vast literature which followed the *Three Worlds*, and its restatement in *The Social Foundations of Postindustrial Economies* (1999), has explored and developed the different components of the emerging new research programme (Arts and Gelissen, 2002; Ferragina and Seeleib-Kaiser, 2011). This article focuses on the methodological contribution of the *Three Worlds*.¹

The article returns to the *Three Worlds* and discusses two main analytical methods at work there. First, index construction, based on key institutional features of transfer programmes, as a tool to rank order and cluster countries. Second, regression analysis, employed to link country clusters to underlying political processes. The literature following the *Three Worlds* has refined and extended the original decommodification index while adding to the tool box a range of data reduction techniques, such as cluster

analysis. Regression analysis has been deployed extensively to study the association between welfare programmes' design features and outcomes on the one hand and welfare regimes on the other. However, the use of regression analysis as a tool to study the association between welfare regimes and underlying political processes is much less in evidence. Researchers critical of the appropriateness of multiple regression in the context of welfare regime analysis have focused on variants of qualitative comparative analysis as an alternative. The main objective of this article is to throw light on the methodological contribution of the *Three Worlds*, and its subsequent influence on welfare regime research.

Methodological issues can be examined through different lenses. The conventional approach is to study analytical methods as a box of tools, from which researchers select techniques considered appropriate to their research questions, after having weighed up their relative advantages and disadvantages. The main parameters of this choice relate to the appropriateness, effectiveness and the costs associated with implementing alternative methods. Data availability issues are particularly important, and usually embed all three parameters. In contrast, Kuhn's *The Structure of Scientific Revolutions* (1970) suggests a more sociological approach, one in which research paradigms are developed by emerging communities of researchers. They are research collectives sharing norms and aspirations. From this perspective, the choice of methods is fundamental to the sustainability of the research collective. Methods have a protective role which become more significant as competing paradigms emerge. Both perspectives are relevant, and useful, in assessing the methodological dimension of welfare regimes.

The literature is vast and complex, and this brief article is not intended to deliver a detailed state of the art assessment of methods in welfare regime research. Instead it has the less ambitious aim of providing a broad review, focusing on stylised trends and challenges. The text includes, where appropriate, basic explanations of analytical methods to aid non-specialists. The article has three main sections. The first section revisits the methodological approach followed by Esping-Andersen a quarter of a century ago. The second section focuses on methodological developments in the welfare regime literature after the *Three Worlds*. It discusses three main sets of analytical methods: data reduction techniques; regression techniques; and qualitative comparative analysis. The third section assesses the current position and considers the methodological implications associated with extending welfare regime analysis globally. A final section concludes the discussion.

Methods in *Three Worlds*

Esping-Andersen (1990: ix) stated that the *Three Worlds* was built upon 'a veritable mountain of data and years of endless statistical manipulation'. Revisiting the methods employed in the *Three Worlds* is a necessary starting point for our discussion.

The appropriateness and effectiveness of methods of enquiry should be assessed against the context of the research questions they are intended to help answer. Esping-Andersen's overriding research objective was to provide an explanation for the configuration of welfare institutions found in high-income capitalist countries. The *Three Worlds* described his attempt to answer the question: 'why do nations crystallize into distinct regime clusters?'. It required the development of a comparative approach and an associated methodology. Whereas in the period leading to the oil crisis in 1973, functional explanations of the evolution of the welfare state, the 'logic of industrialism' for example, assumed convergence in welfare institutions, social policy responses to the

crisis reinforced institutional diversity. Esping-Andersen constructed a cross-country and cross-section dataset including variables capturing economic, institutional and political variables for eighteen countries. A necessary first step to theorisation was to array and cluster this institutional diversity. This involved extracting core configurations of welfare institutions, i.e. welfare regimes. After this identification was achieved, the next step involved explaining the emergence of regimes and their outcomes. Drawing on the power resources approach (Korpi, 1980), Esping-Andersen's hypothesis was that institutional diversity could be explained by underlying political processes. The methodological challenge of this second step involved connecting in a reliable manner the core features of welfare regimes to underlying political factors and to welfare outcomes. Methodologically, the first step required data reduction techniques, while the second step required techniques capable of establishing causation or correlation.

The analysis in the *Three Worlds* works sequentially, as will be described in more detail below. But the main analytical tools are index construction and regression analysis.

The index of decommodification aggregates three individual indexes capturing decommodification in pensions, unemployment, and sickness. The individual indexes are constructed by scoring four features for each of the benefits, applying a score of 1 (least generous), 2, or 3 (most generous), based on the deviation of the actual values from the mean of the sample of high-income countries. These scores are then added up and multiplied by the share of the labour force covered by each of these benefits. The resulting summary scores attempt to measure the potential for each programme to decommodify, i.e. 'the degree of market independence for the average worker' (Esping-Andersen, 1990: 50). The three summary scores are then added to form a country decommodification score. The scores are symmetric, in the sense that every feature of each programme is scored 1 for low, 2 for medium and 3 for high decommodification. However, the scores for the value of transfers, as opposed to the scores for accessibility to the benefits, are given double weighting on the basis that they are of greater importance to workers. The aggregate scores for each country are then rank ordered, and grouped in the now familiar liberal, conservative and social-democratic clusters. The clustering of countries is informal in the sense that it reflects 'roughly on how nations cluster around the mean' (Esping-Andersen, 1990: 51). Detailed critical assessments of the construction of the decommodification index are available in the literature (Castles and Mitchell, 1992; Arts and Gelissen, 2002; Bamba, 2006; Scruggs and Allan, 2006).

Turning to regression analysis in the *Three Worlds*, bivariate regressions are deployed to establish correlation between variables. The focus of attention is firmly on the sign and significance of the estimated coefficients as opposed to the coefficients themselves. The results produced by bivariate regressions act as a 'Popperian' device (Esping-Andersen, 2007), that is as a falsification test. Esping-Andersen finds it informative that some variables are not statistically significant, and this is interpreted as rejecting a possible correlation between them. Multivariate regression is deployed when it becomes necessary to assess the relative strength and significance of correlations for combinations of independent variables.

The analysis proceeds sequentially. First, the relevance of political variables in explaining social security expenditure is examined. Taking cross-sections for 1933, 1950 and 1977, a measure of social security expenditure is regressed on a range of variables capturing political, demographic and economic factors, one at a time. The results indicate that the share of left and left of centre parties is significant only after the 1970s, not earlier.

The share of the population aged sixty-five and over, an indicator of population ageing, is statistically significant in 1950 and 1977. This is interpreted as providing support for the hypothesised influence of left mobilisation, and a separate hypothesis on the role of population ageing, in explaining welfare state development. He then employs multivariate regression to assess the relative effects of ageing and left mobilisation on the level of social expenditure.

Second, the analysis regresses specific features of pension regimes, described as 'bias', on political variables, reflecting the orientation of country clusters as measured in 1980. For example, Esping-Andersen finds a statistically significant correlation between state bias in pension regimes, as measured by the share of public sector employees covered by pension schemes, and the strength of Catholic parties. This is held to be a feature of the conservative welfare regime. He also finds a correlation between social security bias, measured by social security pensions as part of total pension expenditure, and left mobilisation. This is associated with the social-democratic regime.

Third, political variables are then correlated with stratification outcomes. Welfare institutions generate welfare outcomes and at the same time influence stratification. The main finding here is that the share of means tested benefits in total social security expenditure, a feature of liberal regimes, is negatively correlated with left mobilisation and positively correlated with gross domestic product per capita. Similarly, Catholic party strength is correlated with full employment.

Finally, the analysis focuses on correlations between the decommodification index scores and political variables. The results more or less follow from the construction of the index. Taken as a whole, the analysis shows that political variables are correlated with the configuration of welfare institutions, and in turn with welfare and stratification outcomes.

Throughout, Esping-Andersen is fully cognisant of the limitations of the regression approach and of the data employed. He is aware that the 'dominant correlational approach' is ... marred by a frequent mismatch between theoretical intent and research practice' (Esping-Andersen, 1990: 106). As regards data, he notes that in 'this study we are condemned to rely mainly on cross-sectional analysis ... conclusions of a dynamic nature will have to be considerable hedged' (Esping-Andersen, 1990: 115). The use of regression analysis as a falsification device avoids the pitfalls of earlier correlation analyses which assumed countries line up on a common convergence path. However, this is not followed through everywhere. In places, Esping-Andersen claims to have 'examined the causal mechanisms behind welfare states in terms of size, and pensions in terms of structural biases' (1990: 126). Despite his awareness of the limitations of cross-section data analysis in capturing dynamic processes, he is able to state that 'the simple conclusion, therefore, is that left-party power is a precondition for the development of the socialist regime' (1990: 137).

It is interesting to consider Esping-Andersen's later re-appraisal of his methods.² He is reassured that the 'distinctiveness of welfare regimes more or less remains when subjected to alternative treatments' (Esping-Andersen, 2007: 335). However, he also admits that an 'older and perhaps also wiser' Esping-Andersen would 'concede that the use of MR [multivariate regression] to explain welfare regime differences was rather inappropriate for the purpose at hand' (Esping-Andersen, 2007: 336). At the same time, he is not convinced that the limitations of the multiple regression approach warrant discarding it. Instead, he insists that the approach can be deployed effectively 'not to identify causal mechanisms via the β s, but rather as a "Popperian" device' (Esping-Andersen, 2007: 341).

His conclusion is that 'we should favour whichever method delivers superior information about the underlying statistical distribution' (Esping-Andersen, 2007: 341).

Methods after the *Three Worlds*

This section provides a brief review of methodological developments after the *Three Worlds*. The review is organised into three sub-sections: data reduction, regression analysis and qualitative comparative analysis.

Data reduction

In the *Three Worlds*, the construction of the decommodification index is intended to reduce the considerable variety in welfare institutions to a manageable set of indicators. The methodological approach used in the construction of this index of decommodification has been strongly contested in the literature (Castles and Mitchell, 1993; Bamba, 2006; Scruggs and Allan, 2006). Contestation has been directed in part at the selection of key institutions and variables taken to be influential in the configuration of welfare institutions, for example, pension systems, and in part at the coding and weighting scheme. There is a strong justification for selecting pension systems as they constitute the largest component of welfare states, but the criticism of the decommodification index raised the possibility that adding other institutions could contribute more information (Obinger and Wagschal, 2001).³ Regarding the coding and weighting scheme, Castles and Mitchell's (1993) criticism centres on the fact that the coding of means tested features in the *Three Worlds* has the effect of downgrading decommodification in social assistance-based social protection systems in Australia and New Zealand. This criticism demonstrated the salient role of prior assumptions, and perhaps discretion, in the construction of the index. The important point here is that data reduction is inevitably informed by prior assumptions.

Some studies following the *Three Worlds* have sought to redefine and improve the decommodification index. Scruggs's generosity index retains the underlying conceptual basis from the *Three Worlds*, but refines the consistency and sensitivity of the index (Scruggs, 2007, 2014). The Comparative Welfare Entitlements dataset 1 and 2 provide consistent estimates of the generosity index (www.cwed2.org). Scruggs (2007) cites extensive empirical work on Esping-Andersen's decommodification index; while Scruggs (2014) reports over one hundred publications using the Comparative Welfare Entitlements dataset 1. The introduction of the defamilialisation index in Esping-Andersen (1999) and subsequent work has opened up another area of index construction.

Others rejected Esping-Andersen's informal index approach and replaced it with alternative methodologies for clustering countries. Cluster analysis is an obvious candidate. Cluster analysis is a heuristic methodology for linking cases along a set of variables. It has been used extensively in welfare regime analysis (Pitruzzello, 1999; Gough, 2001; Obinger and Wagschal, 2001). One variant is hierarchical cluster analysis which works by pairing cases along a measure of distance based on the z-scores of a variable or variables, until all cases are in one cluster. This variant is referred to as hierarchical because once pairings are constituted they are unchanged throughout. Typically, the formation of the clusters is displayed in a dendrogram. Because the cases are clustered until they consolidate in one cluster, selecting a particular number of clusters is to an extent discretionary. K-means cluster analysis, in contrast, works by setting a

priori the number of clusters. Cases are allocated to a cluster based on a measure of the distance to the center of the cluster. Here, the cases can be recombined through successive iterations. The results can be presented graphically by scatterplots. Some studies utilise both hierarchical and K-means cluster analyses (Pitruzzello, 1999; Powell and Barrientos, 2004). Cluster analysis provides a straightforward, flexible and informative approach to welfare regime analysis. The important point to keep in mind is that cluster analysis can be effective in reducing the diversity in the institutional data, and changes over time (Powell and Barrientos, 2004), but it is inappropriate as a tool for testing competing hypotheses.

More sophisticated data reduction techniques have been proposed. They are variants of latent variable models, in which unit responses on a set of observed variables are mapped onto one or more latent or underlying variables. In this case, welfare institutions in selected countries are mapped on to an underlying set of welfare regimes. They include non-linear principal component analysis (Wildeboer Schut *et al.*, 2001; Vrooman, 2012), factor analysis (Shalev, 2007) and latent class analysis (Ferragina and Seeleib-Kaiser, 2011).⁴

Influenced by the index of decommodification in the *Three Worlds*, welfare regime researchers have refined and developed index construction as a means to order and cluster countries. They have also introduced and applied a range of data reduction techniques. Cluster analysis has been used extensively due to its accessibility. The availability of more sophisticated data reduction techniques will prove essential to cluster the more diverse welfare institutions in low and middle income countries.

Regression analysis

In the *Three Worlds*, Esping-Andersen acknowledged the limitations of his own 'linear models' in addressing the question of whether welfare institutions cluster into regimes because of differences in underlying political processes. He ends with the hope that '[a]nswers to these kinds of questions must await new breakthroughs in the statistical analysis of welfare state development' (Esping-Andersen, 1990: 138). There is a large literature applying regression techniques in comparative welfare state analysis, especially in the context of connecting welfare programme design features and outcomes with welfare regimes. In this literature, welfare regime identifiers are primarily used as independent variables or to define a country sample. By contrast, the use of cross-section regression analysis to investigate the political processes underpinning welfare regime distinctiveness in the *Three Worlds* is much less in evidence in subsequent research. And there is little evidence of the hoped-for breakthroughs in this context. It is, however, beyond the scope of this brief review to provide a detailed assessment of this point. The discussion below sketches debates on the use of multiple regression analysis in the welfare regime literature and considers the contribution of multilevel regression models.

There is little consensus among researchers on the contribution of regression techniques in welfare regime analysis, except for agreement on the need to move beyond the analysis of cross-section country-level data. For some, this requires replacing regression analysis with qualitative comparative analysis. Reviewing the use of multiple regression analysis in welfare state research, Amenta and Hicks find that cross-section country comparisons were 'important and influential in adjudicating debates and advancing knowledge in the early years of research on welfare states' (Amenta and Hicks, 2010: 113),⁵ but that 'simple cross-sectional analysis has been abandoned by scholars,

because ... [it] cannot exploit case-based knowledge or yield conjunctural findings as well as can formal qualitative methods like QCA' (Amenta and Hicks, 2010: 112). Shalev's (2007) assessment that Esping-Andersen's use of regression analysis could be replaced without loss with a 'low tech' equivalent also makes this point.⁶

The availability of time series and pooled data might offer the possibility of employing improved regression tools, as has been the case in the comparative politics literature (Beck and Katz, 1995; Plümper *et al.*, 2005). The limitations of these analytical methods in the comparative analysis of institutions and institutional development are forcefully discussed in several papers by Kittel (2006) and Shalev (2007). To the extent that many of these criticisms are being addressed in the comparative politics literature, there remains an opportunity for the application of times series and pooled regression techniques to study political processes underpinning welfare regime distinctiveness, and to produce the breakthrough prefigured in the *Three Worlds*.

A set of papers exploring public attitudes to welfare institutions have been successful in developing and implementing multilevel regression techniques (Svallfors, 1997; Gelissen, 2000; Jaeger, 2006; Larsen, 2008). Multilevel regression analysis enables researchers to link up individual, country and regime data to assess stratification effects associated with welfare regimes, and therefore to connect welfare institutions to underlying political preferences and processes. This is an important area of welfare regime research where regression techniques have been introduced and extended successfully.

Qualitative comparative analysis

Qualitative comparative analysis did not figure in the *Three Worlds*, or in *Social Foundations of Postindustrial Economies*, but has emerged as a strong contender to provide a methodological basis for qualitative comparative work in welfare regime analysis. It is a methodology for case-oriented, qualitative work on the conditions associated with specific configurations of welfare institutions. The analysis proceeds by way of a detailed analysis of cases and their context, which leads to the identification of 'causal' mechanisms and their comparison across cases. Qualitative comparative analysis is rooted in Boolean logic and the comparisons are therefore fully identified by conjunction $x \text{AND} y$, disjunction $x \text{OR} y$ and negation $\text{NOT} y$. The researcher identifies the status of the conditions for particular outcomes, and reduces the conditions to the minimum combinations that are associated ('cause') with the outcome. In crisp set qualitative comparative analysis, the causal conditions are coded 0 or 1, whereas in fuzzy-set qualitative comparative analysis, the degree of membership of a causal condition is coded between 0 and 1. In the context of welfare regime analysis, fuzzy set qualitative comparative analysis has been used to examine the causal conditions needed for countries to be placed within a specific type of welfare regime (Kangas, 1994).

Qualitative comparative analysis is usually described as configurational analysis, a term which makes a direct link to the research concerns in welfare regime analysis (Vis, 2012). Qualitative comparative analysis addresses in part the limitations that Esping-Andersen identified with historical methods as applied to welfare institutions, in that it provides a sound framework for generalisation. It is particularly appropriate in a small-N setting, and can accommodate situations in which different sets of causal conditions generate similar outcomes.

The technical limitations of qualitative comparative analysis have been noted in the literature. While it is well suited to the study of multiple conjectural causation, the possible combinations of causal conditions rise exponentially with the number of cases. This limits in practice the analysis of possible combinations of causes (Amenta and Hicks, 2010). Implementing qualitative comparative analysis, especially in its fuzzy set variant, requires a deep understanding of the role of causal mechanisms to inform the coding of the membership function (Vis, 2012). This might be perceived as a strength by supporters of case-oriented research, but to the extent that detailed coding reflects the researcher's assumptions it inevitably opens areas of contestation of the implementation and findings.

In the context of welfare regime analysis, qualitative comparative analysis's strong focus on cases might prove to be a weakness. As Ragin notes, the 'case-oriented strategy sees cases as meaningful but complex configurations of events and structures, and treats cases as singular, whole entities' (Ragin, 1994: 300). This is in direct conflict with a view of welfare regimes as latent configurations of welfare capitalism. Research employing fuzzy set ideal type analysis has pushed in this direction (Hudson and Kühner, 2009; Vis, 2012).

Moving forward and going global

The discussion in the previous section showed that, while accepting Esping-Andersen's research questions, welfare regime researchers have embraced the methods presented in the *Three Worlds* in a piecemeal fashion. Data reduction techniques such as cluster and latent variable techniques compete with index construction as the tools of choice for identifying clusters. Although regression analysis has been used extensively in linking welfare programme design and outcomes with welfare regimes, few researchers have followed Esping-Andersen in employing regression analysis in the context of linking policy and politics. Qualitative comparative analysis methods are increasingly employed by welfare regime researchers as an alternative.

As noted in the Introduction, there are two lenses through which to assess these developments.

From a more technical perspective, methodological pluralism and innovation are relatively unproblematic. This is well established in the welfare regime literature. Kangas (1994) provided an early attempt to compare and combine the three methodological approaches we have reviewed in this article. Rather than considering them as 'mutually exclusive, they are alternative or parallel research options for expanding our understanding of social reality' (Kangas, 1994: 362). Along similar lines, Esping-Andersen notes that the 'goodness-of-fit of the three way regime typology has been tested utilising several methodological techniques' (Esping-Andersen, 1999: 86). Ebbinghaus (2012) compares the relative advantages of cluster analysis and fuzzy set qualitative comparative analysis. Vis (2012) argues that combining regression analysis and fuzzy set qualitative comparative analysis might be a way forward in contexts where moderately large-N datasets are available.

Drawing on a Kuhnian perspective, the choice of methods matters because it serves to identify the boundaries of a research programme and the community of researchers who work within it. This is perhaps a better perspective with which to assess the debate between welfare regime researchers supporting the case-oriented and largely qualitative approach on the one hand, and those supporting the variable-oriented quantitative

approach on the other. A research community based around qualitative comparative analysis would look very different to a community of researchers relying on regression analysis. Importantly, the core research question, the puzzle in Kuhn's terminology, would be very different in each case. A research programme built around qualitative comparative analysis techniques would necessarily be more interested in countries' welfare regimes and in country context-based explanations for their design and evolution. This implies a focus on 'causes-of-effects' as described in Vis (2012). On the other hand, a research programme built around regression techniques would be interested in unveiling the latent varieties of welfare capitalism and their change over time.

The opportunities and challenges associated with extending welfare regime analysis globally should also be factored in. Esping-Andersen's *Three Worlds* was intended to identify ideal types of welfare institutions in order to facilitate theorisation on the extent and nature of these institutions. A comprehensive theory of welfare institutions can only be achieved through a global perspective on welfare regimes. This would lift two key restrictions on current research. First, the restriction of selection bias associated with the main focus on high-income countries which dominates current research (Ebbinghaus, 2012) (Kim, 2014, this issue). Second, the small-N restriction which favours case-oriented research (Vis, 2012). A global extension of welfare regime analysis might deliver methodological advantages. At the same time, extending welfare regime analysis beyond high-income countries will require changes in scope. The shift in terminology from welfare state regimes to welfare regimes in part acknowledged this, and in part helped incorporate the contribution of markets and families to wellbeing. It is debatable whether European welfare states are a feasible universal benchmark in low and middle income countries. But a welfare regime focus is capable of encompassing most countries (Gough and Wood, 2004).

To date, studies focused on low and middle income countries have largely excluded high-income countries. For the most part, they have relied on cluster analysis (Gough and Wood, 2004; Martinez Franzoni, 2008; Abu Sharkh and Gough, 2010; Gough and Abu Sharkh, 2011; Pribble, 2011). Rudra (2007) is the exception as it covers 32 high and middle income countries. The exclusion of the original OECD countries can be problematic if the objective is to support theorisation on welfare regimes globally. Yet the significant diversity in welfare institutions across high and low and middle income countries will need particular attention. Regression techniques developed to study the relations between welfare institutions and outcomes, as in Huber and Stephens (2012) and Haggard and Kauffman (2008), could be applied profitably to the analysis of welfare regimes globally.

Conclusion

This article has reviewed the methodological contribution of Esping-Andersen's *Three Worlds of Welfare*, first by re-visiting his original contribution and then by assessing methodological practice among welfare regime researchers. It is interesting that the influence of the methodological contributions of the *Three Worlds* on the welfare regime research programme appears to have been mixed. Welfare regime researchers have adapted and extended index construction as a means for ordering and clustering countries, but they have developed alternative data reduction techniques. In particular, cluster analysis has been used extensively in the literature. As regards regression analysis,

it has been used extensively as a tool to investigate the association of welfare programmes' design and outcomes on the one hand, and welfare regime clusters on the other. However, the use of regression analysis to link welfare regimes with underlying political processes is much less in evidence. Some researchers have turned to qualitative comparative analysis and its variants in this context.

Is this progress? Methodological pluralism and innovation are to be welcomed, especially if they deliver more effective and appropriate analytical methods. To an important extent, this applies to the challenge of reducing the diversity of welfare institutions to a manageable set of variables. The challenge of qualitative comparative analysis to the type of regression analysis deployed in the *Three Worlds*, however, is of a different nature, because it shifts the focus of welfare regime analysis away from the search for ideal types of welfare capitalism and towards case- and country-oriented comparative research.

The main challenge for welfare regime analysis, to go beyond its Eurocentric roots and move towards a general theory of welfare institutions, will have implications for the choice of appropriate analytical methods. It might well encourage a renewed interest in regression analysis as a tool for comparative research on welfare institutions.

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Notes

1 A broader approach to the methodology in the *Three Worlds* would include a discussion of the main conceptual framework, including the notion of regime. Given space restrictions, the article takes a somewhat narrow approach to methodology by focusing only on methods of analysis.

2 The 1999 *Social Foundation of Postindustrial Economies* uses regression analysis and logistic regression to establish correlations between variables (Esping-Andersen, 1999).

3 This is of acute significance in extending the welfare regime analysis beyond European welfare states.

4 In statistics, latent variables are variables which are not directly observable but can be inferred from observed variables, also referred to as manifest variables. Latent variables can be inferred with the help of mathematical or statistical models. Examples of latent variables include poverty, power and happiness. To the extent that welfare regimes are grounded in power resources, for example, latent variable models are appropriate to their study. Factor analysis is appropriate where the manifest and latent variables are continuous; whereas latent class analysis is appropriate where the manifest and latent variables are categorical.

5 This prompted Shalev to 'speculate that Esping-Andersen adopted MR [multiple regression] out of deference to convention' (Shalev, 2007).

6 Shalev argues that Esping-Andersen applied regression analysis 'as a blunt instrument for tapping gross differences between groups of countries, differences that arguably could have been more effectively conveyed by the use of tables and charts' (Shalev, 2007: 290).

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