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Macro-Quantitative vs Macro-Qualitative Methods in Political Science - Advantages and Disadvantages of Comparative Procedures using the Welfare-State Theory as an Example

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Abstract: In recent years there has been a polemic between more "macro-quantitatively" and more "macro-qualitatively" oriented social scientists. This debate was often characterized by mutual misunderstandings and mis-perceptions, but also false claims and insinuations. The present paper attempts to demonstrate the respective strengths and weaknesses of both procedures using the concrete example of theories of the development of the welfare state in Europe. In particular, the more recent procedure of "Qualitative Comparative Analysis" is presented to a European public. The results show that both approaches can meaningfully stimulate and supplement each other putting, hopefully, to rest some of the polemics.

1. Introduction

Comparative methods in political science are often applied at the 'macro'-level of political systems, that is, at the total (nation) state level and different aspects observed of the whole system. At this level, the number of cases to be examined is of necessity limited, even if one takes the present number of approximately 200 independent states world wide. Furthermore, the number of useful cases exhibiting a level of commonality on certain questions and

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availability of sufficient material (for example the OECD states, certain regions of the Third World, etc.) is often even more limited. On the other hand, these systems and the interactions which are taken into account in the analysis, exhibit a high level of complexity. Thus, the classic dilemma 'many variables - small N' of this sub-discipline of Political Science comes into being (See Lijphart 1971, 1975; Collier 1993; Aarebrot/Bakka 1992).

There are various ways to deal with this dilemma, among which two dominant camps or schools, a 'macro-quantitative' and a 'macro-qualitative', can be observed. In line with Kuhn's proposition, that scientific paradigms demonstrate not only a theoretical nucleus, but also a social environment which has been formed in a specific manner, (see Kuhn 1976), the two sides have not spared mutual accusations of applying unscientific procedures, unproven premises, unwarranted conclusions and similar polemics (see Lieberson 1991, 1994; Savolainen 1994; Hartmann 1995). So, the debate is characterised by an astounding amount of selective perceptions, misunderstandings and unjustifiable insinuations. Misunderstood, or misleading formulations and deceptive claims by the protagonists of both sides have contributed to this situation. Attempts at conciliation (for example King 1994, and with certain limitations Goldthorpe 1994; Ragin et al. 1996) are rare.

The following article aims to briefly outline the central tenets and concrete procedures of both positions. The description of a recent macro-qualitative method, 'Qualitative Comparative Analysis' (QCA) (see Ragin 1987), will be given somewhat more attention, since to date it has been hardly applied in the European context. Following this, the advantages and disadvantages of both methods will be examined using a concrete example, the development of theories relating to the welfare state in Western Europe (see Alber 1987). This example was chosen as it demonstrates the dilemma (only 12 cases and a complex jumble of factors and theoretical explanations to be dealt with) extremely vividly. Other examples, such as Manfred Schmidt's investigation (1982) into the political-economic reactions of the 21 OECD states to the economic crises in the 1970s, or Ferdinand Müller-Rommel's analysis of the development of green-alternative Parties in Western Europe, which are both based primarily on macro-quantitative methods, would also have been suitable. The concluding section will deal with the consequences of this methodical problem for political science theories.

2. Characteristics of Macro-Quantitative Methods

Macro-quantitative methods and comparative aggregate data analyses have enjoyed increasing popularity since the 'behavioural revolution' in political science (see Falter 1982). Although this was concentrated mostly at the 'micro' level of politics and research using individual survey data, the preference for

statistical analysis (as a result of a large number of cases) and a certain 'scientistic' position also coloured corresponding macro analyses. Inspired by such untiring innovators such as Karl Deutsch and Stein Rokkan, comprehensive data handbooks have been complied since the 1960's (see for example Russet 1964; Taylor and Jodice 1982; Flora 1983, 1987), which together with official and unofficial (primarily economic) statistics formed the starting point for numerous macro-quantitative analyses (Widmaier 1992).

The largest possible number of cases (usually states) with comparable data usually formed the foundation of such studies. However, due to the relatively limited level of basic similarities and in the face of frequently occurring data problems and lack of information, especially in the more 'sensitive' areas; random selections, which form the basis for representative interpretations of the survey results on the 'micro' level, and 'normal distributions' cannot normally be applied. Thus, the 'inferential' statistics, which are based on such prerequisites, such as even simple Chi-Square-tests used for calculating levels of significance are out of the question. This consequence is often ignored at peril.

Such data can impart useful descriptive averages of certain frequency distributions or provide actual analysed 'universal' explanations for observed variances based on the number of cases, such as in linear (also an often unjustified assumption) regressions. Specific characteristics of individual cases are not taken into account using this method. If such characteristics differ too crassly from the observed frequency distribution, they are often dismissed and neglected as 'outliers'. The fact that the limited number of cases increases the possibility that including one or a few deviating cases can drastically change the end results, is often not respected.

The choice of variables in such analyses should be guided by specific hypotheses and theoretical premises. However, such macro-quantitative approaches and the statistical data involved usually keep the number of independent variables to be examined relatively small (see Amenta/Poulsen 1994). In addition, there is often a certain economic deterministic bias based on the initial data available, for example the regularly compiled Year Books from the UN organisations, the OECD, the Statistical Bundesamt and so on, whose main emphasis lies in this area. As Robert Dahl observed: "No doubt one reason why so much attention has been given to the relationship between regime and socio-economic level is simply that reasonably acceptable (if by no means wholly satisfactory) 'hard data' are available from which to construct indicators. This is a perfect example of how the availability of data may bias the emphasis of theory." (Dahl 1971: 206) In contrast, differentiated socio-cultural or political data in a more specific sense are much more difficult to obtain and seldom collected on a regular basis. 'Misspecifications' by analysts on the basis of a limited and prejudiced selection of variables are therefore no rare occurrence.

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The causal relationships observed are 'probabilistic', that is they are usually based on correlations between a dependent and one or more independent variables. Such correlations can, of course, be 'spurious' (that is they may have occurred due to a third factor which has not been taken into account). The direction of a causal relationship is also not always clear (what came first? What depends on what?). The assumed causality is, as already stated, 'universal' in nature, that is relating to the average of the observed totality. But, in view of the unrepresentative nature of the selection of cases, 'inferential' generalisations are clearly inadmissible. 'Conjunctural' causalities (which are based on differing combinations of variables) such as described by J. S. Mill (1974/75 [1843]) must also be discarded.

All of these criticisms and others are of course obvious and long known. They are taken partly into account by more 'robust' statistics (see Hampel et al. 1986). However, there still remains a considerable amount of dissatisfaction with regard to the one-sidedness, superficiality and limited theoretical implications of many macro-quantitative investigations. Charles Tilly comes to the sobering conclusion: "Little of long-term value to the social sciences has emerged from the hundreds of studies conducted during the last few decades that have run statistical analyses including most of the world's nation states." (Tilly 1984: 76)

The rather sweeping defences against such allegations by well-known protagonists of the macro-quantitative school (see Jackman 1985; Bollen 1993) cannot fully convince either and often deteriorate into misunderstandings or insinuations against the other camp, without critically acknowledging the strengths and weaknesses of each position and constructively translating it into action. If an impression of the present authors' favouring comparative-qualitative methods arises here, this is explained by the dominance to date of quantitative-statistical methods in political science curricula, existing deficits in the comparative field and more recent developments we were involved in and which are not yet known amongst a wider public. However, we are interested in dealing fairly and constructively with the above mentioned problems and in bridging certain gaps between the two camps.

3. Macro-Qualitative Methods

Over the last few years, 'qualitatively' orientated methods have been more intensively employed and improved using new technological developments (see Ragin 1987, Drass/Ragin 1992), by developing systematic 'most different' and 'most similar' research designs (see Przeworski/Teune 1970, De Meur/Berg-Schlosser 1994), and also by more historically orientated social scientists such as Theda Skocpol (1979, 1984) or Dietrich Rueschemeyer, Evelyne Huber Stephens and John Stephens (1992). Their specific characteristics, which can

also be understood as certain compensatory aspects of the quantitative method, will be briefly dealt with in this section.

'Macro-qualitative' is used here to describe the analysis of the presence or not of characteristics specific to the examined cases at the 'macro' level of political systems. This term should not be confused with qualitative methods at the micro-level (such as participant observations in ethnology) or with qualitative interpretative methods (for example in hermeneutics). The technique presented here relies on a dichotomisation of the observed variables (yes/no, high/low, 0/1 etc.). In the case of more varied characteristics, certain 'thresholds' must be established or a number of 'dummy' variables be formed (as for the conversion of different nominal characteristics to variables for certain statistical methods which require dichotomous or interval variables).

In a number of instances, this entails loss of information. Such losses of information are also present in numerous statistical methods, for example in 'cluster' or 'correspondence' analysis where multidimensional 'clouds' of cases are projected on a two dimensional surface, without all the users being fully aware of such limitations. The necessary dichotomisation allows the implementation of new more complex methods on the basis of Boolean algebra, of set theory and elaborated 'similarity' and 'dissimilarity' levels, which represent a certain 'compensation' for the occurring information loss.

In contrast to overall statistical methods, macro-qualitative analyses are more strongly case orientated, that is each case which is taken into account has in principle the same value for the analysis. The selection of cases must therefore be as hypothesis and theory guided as the selection of variables. A minimum amount of homogeneity amongst the cases to be chosen, e.g. historical-regional similarities, must be ensured in order to analyse them meaningfully. Among the more limited number of cases selected in this way, a high level of heterogeneity not only with regard to the dependent variable but also to the possible independent variables is desirable. In this manner the smaller and less studied countries, or cases strongly 'deviating' in a different manner can often supply interesting information relating to the validity and range of certain hypotheses.

The cases to be analysed are considered in their whole complexity in order to discover more indirect influences or disguised historical-qualitative (e.g. political-cultural) interactions at work. This requires a high level of knowledge of each case to be studied, including its historical characteristics, which often are only accessible in official documents and other sources in the respective language. Thus, even for a small number of cases, which each require knowledge of a different language a serious 'qualitative' orientated researcher will soon reach their limits. International co-operation and group research is therefore often indispensable (see Rokkan 1973). Of course, this also presents a certain hurdle and demands a considerable organisational and communications effort among similarly trained and orientated colleagues. Fortunately, in the last decades the institutional prerequisites for such studies have improved

considerably, e.g. within the framework of the European Consortium for Political Research (ECPR) and in the Research Committees of the International Political Science Association (IPSA).

Such a 'case orientation' should not be confused with a 'case-based' in contrast to a 'variable-based' statistical method. Naturally, the cases selected *and* a wide spectrum of possible variables form the base of the analysis. The range of complexity of the examined cases is, of course, subordinate to theoretical and practical limitations. However, a high level of familiarity with a large number of cases is a prerequisite for every 'macro-qualitatively' inclined political scientist in order to obtain the necessary sensibility for the often complex and historically determined facts.

In contrast to more 'universal-statistical' attempts at explanation on the one hand and exclusively historical-idiographical (individualising) case studies on the other, macro-qualitative analyses can also expose 'conjunctural' causal relationships, that is different patterns of factor combinations ('variation finding' in the sense of Charles Tilly 1984). The range of these patterns can be ascertained and in certain cases modified by a step by step expansion of the field of examination.

A technique such as 'Qualitative Comparative Analysis' (QCA) offers the further possibility of including hypothetically possible case constellations ('logical remainder cases') in the analysis and therefore of developing at least a hypothetical generalisation over and above the cases taken into account In the next section, the macro-qualitative method will be presented in relation to the use of this technique. Other methods which are based on 'most similar' and 'most different systems' designs are more comprehensively dealt with and put into practice in a different article (see De Meur/Berg-Schlosser 1994, Berg-Schlosser/De Meur 1996). These methods can supplement or modify the results obtained from QCA.

4. Applications using the Example of the Welfare State

Jens Alber's study of the development of the west European welfare state (Alber 1987) has been chosen from the many comparative studies on the OECD-States and the west European countries. This study was chosen for a number of reasons: (1) The number of studied west European countries of 12 is a typical 'small N'-size; (2) The data needed for the analyses are documented in their entirety in Alber's work; (3) Alber uses both simple averages and also the correlations and regressions techniques typical of macro-qualitative analysis; (4) The analysis of the (West European) welfare state is a relatively established area of comparative politics. In spite of methodical limitations which it is necessary to draw attention to, Alber's work is on the whole a very thoroughly documented, theoretically reflective and historically informed study. It presents a positive example of the macro-qualitative method.

4.1 Research Problem: What Conditions determined the varying extent of the West European Welfare State at the turn of the Century?

Alber's 'Analyses of the development of Social Security in Western Europe' came into being in the context of the far-reaching HIWED-Project (Historical Indicators of West European Democracies) under the supervision of Peter Flora, which produced the above mentioned data handbooks (Flora 1982/87), studies on the long-term development of State Finances (Kohl 1985) and the development of the West European welfare state after the Second World War (Flora 1986/7). Alber discusses the various theories concerning the *origin* and *extent* of the welfare state. They cover functionalist and conflict models, which themselves can be differentiated into two approaches. One emphasises periphery reactions, e.g. as a consequence of increased suffrage; or reactions from the centre such as the countering of demands for increased political participation via social measures. These three groups of models have certain pluralistic and (neo) Marxist variants (Alber 1987: 73-114).

Only one of the wide range of possible questions will be examined here. It concerns the conditions of the varying *extent* of social security in western Europe at the turn of the century, not the conditions necessary for the *introduction* of the welfare state which is also examined by Alber (Alber 1987: 120-134). The question is limited due not only to lack of space, but also due to the fact that in his section covering the conditions of the expansion of the system of social security before the First World War, Alber (1) differentiates between different political contexts and (2) employs conventional macro-qualitative methods (Alber 1987: 145-151). Therefore the advantages and disadvantages of the macro-quantitative method can be vividly demonstrated using this example.

Macro-Quantitative Analysis

Alber describes the stage of research reached and from this extracts his hypotheses using two main groups of factors; socio-economic and political. The former he operationalises as the levels of industrialisation and urbanisation. These he combines additively to a socio-economic development index. The main political indicators he uses are the extent of suffrage at the rum of the century (the proportion of enfranchised men in the adult male population) and the number of votes given to left wing parties (the aggregate number of votes for workers' parties in the last elections). He refines the analysis further in that he distinguishes between a (relatively) early or late development of trade unions and an early or late founding of workers' parties. In addition to this he also distinguishes between authoritarian ('constitutional-dual monarchies') and parliamentary-democratic systems. The raw data for all these variables are listed in Table 1.

Table 1: Raw data (Alber 1987)

Country	IND1900	URB1900	SDEV1900	ELEC1900	LEFT1900	TRADEDATE	PARTDATE	TRADEUN	PROTESTA	DEMOCRAC	SCOP1900
AUS	24	14	38	85	0.0	1892	1889	0	0	0	9.0
BEL	43	27	70	90	21.0	1898	1885	1	1	1	3.8
DEN	28	21	49	87	14.3	1898	1878	1	0	0	10.5
GER	40	29	69	94	27.2	1869	1869	1	-	0	40.8
FIN	11	7	18	19	0.0	1907	1899	0	1	0	1.8
FRA	30	24	54	88	11.3	1903	1880	0	0	1	6.8
ITA	24	24	48	25	13.0	1906	1882	0	1	(1)	2.8
NET	32	36	68	51	3.0	1893	1894	0	-	1	0.0
NOR	26	19	45	90	3.0	1899	1887	0	1	1	3.3
SWE	27	14	41	25	0.4	1898	1889	1	1	0	3.3
SWI	47	18	65	79	9.7	1880	1888	1	-	1	4.0
UK	54	57	111	62	1.3	1863	1900	1	1	1	9.8
Median	29.0	22.5	51.5	82.0	6.4	1898	1888				3.9
Mean	32.2	24.2	56.3	66.3	8.7	1892	1887				8.0

Table 1 continued:

Abbreviations and Definitions of Variables:

AUS	Austria
BEL	Belgium
DEN	Denmark
GER	Germany
FIN	Finland
FRA	France
ITA	Italy
NET	Netherlands
NOR	Norway
SWE	Sweden
SWI	Switzerland
UK	Great Britian and N. Ireland

IND1900	Industrialization 1900 - percentage of active population employed in the secondary sector (Alber 1987: 243).
URB 1900	Urbanization 1900 - percentage of population in towns with more than 20.000 inhabitants.
SDEV1900	Index of socio-economic development 1900 - sum of IND1900 and URB1900 (Alber 1987: 243).
ELEC1900	Proportion of enfranchised men as percentage of adult male population (Alber 1987: 243).
LEFT1900	Proportion (votes) of left wing parties at the last general elections before 1900.
TRADEDATE	Year of foundation of central trade union association (Alber 1987: 231)
PARTDATE	Year of foundation of working-class party (Alber 1987: 231).
TRADEUN	Early (1) or late (0) development of trade unions (Alber 1987: 127). This variable includes information about the temporal and the organizational dimension (foundation and density of trade union membership).
PROTESTA	Protestant countries (1), catholic countries (0) mixed countries (-) (Alber 1987: 145).
DEMOCRAC	Type of political regime 1900 -parliamentary democracies (1), constitutional-dualistic monarchies (0) (Alber 1987: 144). The brackets in the case of Italy indicate the difficulties in classifying Italy by Alber and Flora & Alber (1981: 79).
SCOP 1900	Scope of social insurances 1900 - average proportion of active population covered by a insurance scheme (accident, sickness, old age, unemloyment) (Alber 1987: 152).

His analysis is based first of all on relatively simple correlations of his independent variables with the extent of the social security system in 1900 (the average percent of the working population which is covered by accident and health insurance, pension schemes and unemployment benefits). These correlations are given in Column 1 of Table 2. They clearly demonstrate that the proportion of left wing votes and an early founding of workers' parties have the highest value. In contrast to this, the socio-economic indicators play a much more limited role. When these results are differentiated according to authoritarian or democratic systems (Columns 2 and 3) it becomes clear that the scale of importance of the political factors, especially for the proportion of left wing votes and the early founding of workers' parties becomes even stronger in the authoritarian systems. In the democratic systems it disappears completely or becomes negative. The analysis of socio-economic (industrialisation and urbanisation) and political factors (the extent of suffrage, the political strength of the workers' movement and its unions) thus confirms neither the functionalistic assumption, which views social security laws as a necessary reaction in the face of the problems of the modernisation process, nor conflict theories, which view the introduction of the social security system in the first instance as an achievement of the workers' movement In contrast, the results favour the explanation that an early social security system was introduced by the political elite as a *reaction* against the political mobilisation of the workers' movement, which became visible in the founding of workers' parties and the strong influence of the left wing vote in authoritarian systems (Alber 1987: 124, 130).

The fact that the influence of socio-economic factors is strongly represented in authoritarian systems (see Column 2), points to the *simultaneous* presence of economic and political factors influencing this sub-group. This differentiated result which Alber does not mention specifically, allows the conclusion that this group consists of developed 'bureaucratic-authoritarian' systems (this concept was coined by O'Donnell to describe the authoritarian 'newly industrialising' countries in Latin America and south-east Asia, today, for example, still Singapore). In these countries, the increased 'problem pressure' (strong economic development and the increasing weight of left wing parties) clearly gives rise to the elite reaction detailed by Alber, of social security laws 'from above'. Other authoritarian states of this era which are less developed, for example Greece, Portugal, Romania etc., which are not taken into account by Alber, thus probably do not fit into this pattern.

If one looks at the distribution of cases for the most important variables in a scattergram, it becomes clear that a certain 'outlier', namely Germany, has an unusually strong influence. The regression of the level of social security (SCOP1900) on the proportion of the left wing vote (LEFT 1900) and results for all 12 cases in an R^2 of 0.404, as shown in the regression line in Figure 1.

However, if one does not include the 'outlier', Germany, then the regression coefficients and the 'explained' variance tend towards nil (see Figure 2). In the

Table 2: Correlations between social insurance scope and political and socio-economic variables

	1	2	3	4	5
	Total	Authoritarian Systems	Democratic Systems	Total (GER excl.)	Authoritarian Systems (GER excl.)
Industrialization	0.29	0.82	0.54	0.29	0.57
Socio-economic Development	0.25	0.80	0.59	0.30	0.48
Extension of Suffrage	0.44	0.70	0.14	0.51	0.99
Left Vote	0.64	0.82	-0.08	0.08	0.31
Foundation Socialist Party	0.66	0.80	-0.18	0.23	0.58
Foundation Trade Union	0.60	0.96	0.54	0.42	0.76
N =	12	5	7	11	4

Source: Alber (1987: 150); own calculations

same way, the correlation of the total value of the proportion of the left wing vote is very low, if the German case is left out (Columns 4 and 5 in Table 2). The correlations and regressions of Alber's analysis are thus almost totally dependent on the particular dispersion of cases (and the corresponding selection). Thus, more general explanations based on these results are highly questionable.

If one carries the macro-quantitative analysis a step further than Alber by employing an outcome-orientated statistical procedure, 'discriminant analysis', one discovers hints of cases which are not covered by the variables he uses in his explanation. Discriminant analysis groups the examined cases around two poles of a dichotomised dependent variable (in this case the extent of the social security system in 1900, which was dichotomised taking the meridian as a threshold value, see Table 1). The distance between the two poles should be as large as possible and the distance of the cases to the relevant pole as small as possible. Cases which deviate from the expected explanation in relation to the fundamental independent variables are singled out. The simultaneous consideration of the four most important variables used by Alber (industrialisation, urbanisation, extent of voting rights and the left wing vote) groups 10 of the 12 cases 'correctly'. The variable 'extent of voting rights' carried the most importance. However, the cases of Belgium and Norway (both democratic states with extensive suffrage) which both lagged behind in their social security laws could not be explained. This can be viewed as a further clue of a pattern which differs from a 'general explanation'. These patterns become more pronounced in a macro-qualitative analysis.

Figure 1: Regression Left Vote - Social Insurance Scope (Germany included)
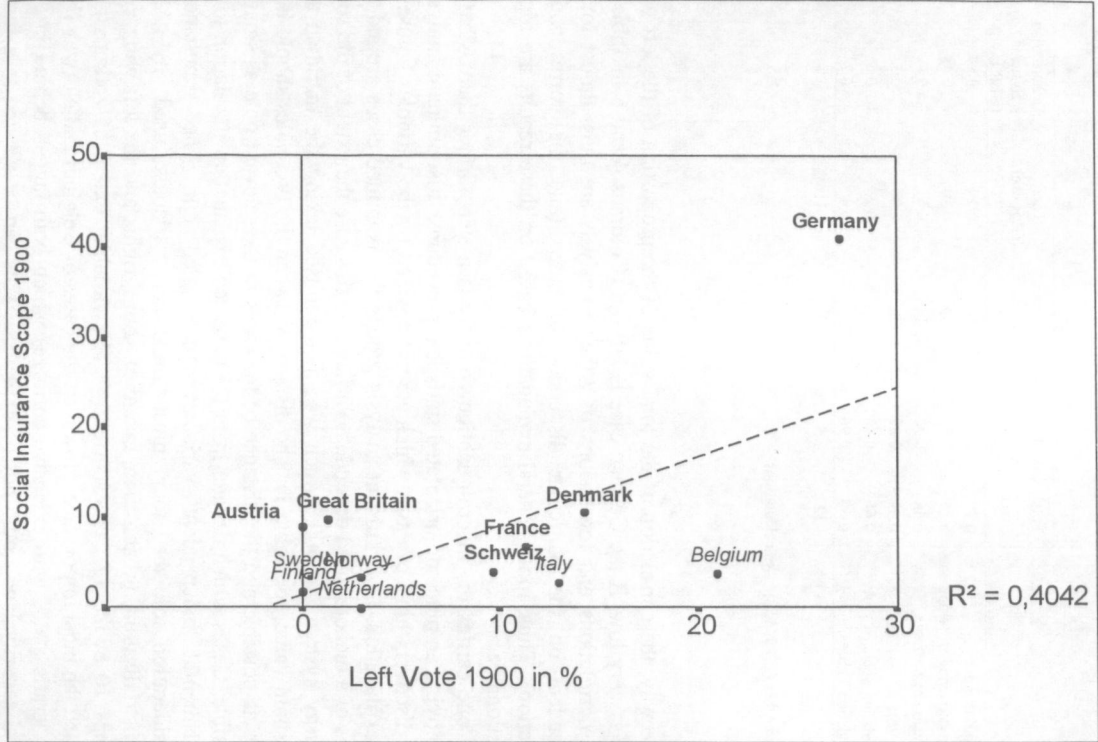
R² = 0,4042

Figure 2:   Regression Left Vote - Social Insurance Scope (Germany excluded)
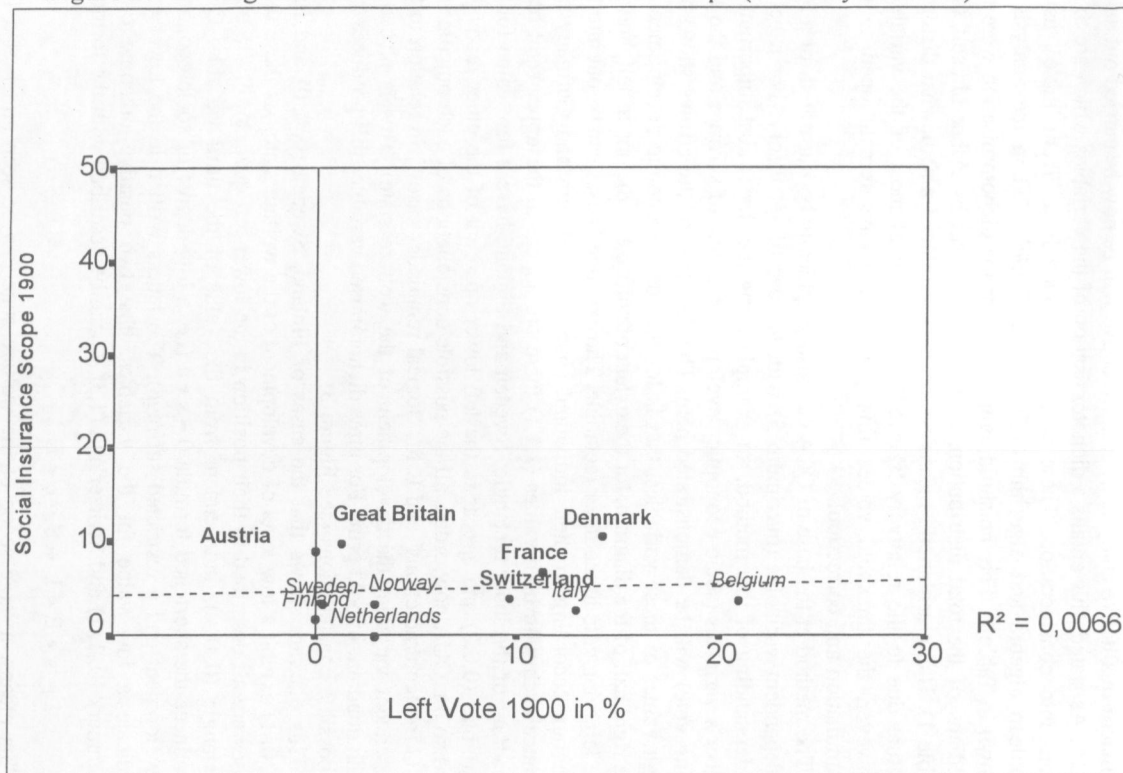
A macro-qualitative analysis as detailed above will be now be carried out using QCA. As stated, this entails a dichotomisation of the variables which are to be taken into consideration. These will be compiled in a 'Truth Table', using Boolean algebra and algorithms. The 'Truth Table' used in the analysis is shown in Table 3. The threshold values used for the dichotomisation were the medians of the total distribution, or those values set by Alber himself (see Table 1). Using arithmetic means would have produced a somewhat distorted picture due to the relatively 'skewed' distribution of most of the variables. However, the threshold values finally chosen always remain open to re-exarnination and correction!

The method at the base of QCA can also graphically be illustrated for a few independent variables (maximum 5) with the use of set theory. For a better understanding of this method, an example using the three most important of Alber's variables (socio-economic development, extent of suffrage and the left wing vote) will be demonstrated here. The direction of the arrows shows the high values of these variables, that is for the socio-economic development in the right half of the diagram, for the extent of suffrage in the upper half, and for the left wing vote in the inner rectangle. The examined cases can be put into the diagram according to their individual character. Belgium and Germany and France each with high values (1,1,1) therefore appear in the upper right hand quadrant of the inner rectangle; Sweden and Finland have a low value for all variables (0,0,0) and appear in the left lower quadrant of the outer rectangle, and so on. QCA now orders all the possible constellations of each outcome (1, 0, C for 'contradictions' and L for 'logical remainder cases') in relation to the dependent variable (the development of the welfare state). This is placed in each quadrant in bold print. For three dichotomised variables this produces $2^3 =$ 8 possible constellations (see Figure 3).

This diagram shows that the cases of Finland, Sweden (0,0,0) and Italy (0,0, 1) exhibit a low level of development of the welfare state. As these three cases are all described in their position in the lower left quadrant of the outer rectangle (0,0, -), independent from the value of the third variable, QCA produces the shortened formula 0 = s • e (i.e. a low degree of socio-economic development and a restricted suffrage). The letters written in the lower case indicate a low value for the variables. The two positive outcome cases Denmark (0, 1, 1) and Switzerland (1,0,1) can be described with the formula:

l = s • E • L + S • e • L

(This means, a large scope of the welfare state can be seen *either* at a low degree of socio-economic development (s) and a extended suffrage (E) and electorally strong left wing parties (L) *or* at high level of socio-economic development (S) and a restricted suffrage (e) and electorally strong left wing parties). The + sign stands for 'or', the • sign for "and" in Boolean terminology. These two constellations cannot be further shortened.

Figure 3: Graphical presentation of QCA with 3 independent variables
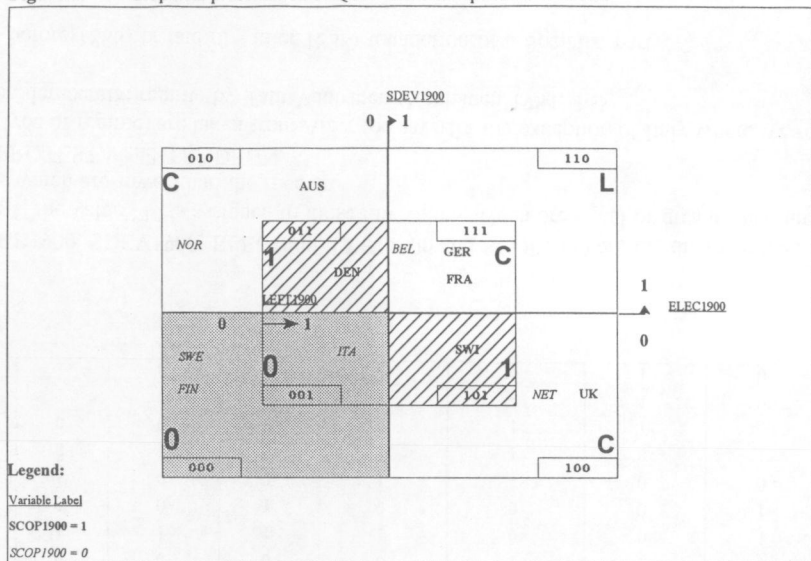
Legend:

Country labels **bold**: large scope of social security insurances (SCOP1900 = 1)
Country labels *italic*: small scope of social security insurances (SCOP1900 = 0)
Variable labels underlined

QCA-solution for Outcome 1:

QCA-solution for Outcome 0:

Table 3: **Data for QCA analysis**

Country	IND1900 (I)	URB1900 (U)	SDEV1900 (S)	ELEC1900 (E)	LEFT1900 (L)	DEMOCRAC (D)	PROTESTA	TRADEUN (T)	PART1900	SCOP1900 (outcome)
AUS	0	0	0	1	0	0	0	0	0	1
BEL	1	1	1	1	1	1	0	1	1	0
DEN	0	0	0	1	1	0	1	1	1	1
GER	1	1	1	1	1	0	-	1	1	1
FIN	0	0	0	0	0	0	1	0	0	0
FRA	1	1	1	1	1	1	0	0	1	1
ITA	0	1	0	0	1	0	0	0	1	0
NET	1	1	1	0	0	1	-	0	0	0
NOR	0	0	0	1	0	1	0	0	1	0
SWE	0	0	0	0	0	0	1	1	0	0
SWI	1	0	1	0	1	1	-	1	0	1
UK	1	1	1	0	0	1	1	1	0	1

Definition of Variables

The variables IND1900, URB1900, SDEV1900, ELEC1900, LEFT1900 and SCOP1900 are the dichotomized values of the variables presented in table 1; the value "1" is assigned to those raw values which are equal or greater than the median, the value "0" to those raw data which are lower than the median.
Albers coding is used for PROTESTA and TRADEUN.
The values for DEMOCR (type of regime) are taken from Alber too save for the exception of Italy where we resorted to the classification of Italy as non-democratic regime by Tatu Vanhanen (Vanhanen 1984: 145).

PARTI 900   Early (1 -before 1888) or late (0 - after 1888) foundation of a Socialist party.

The fields marked with a C (e.g. 1,1, 1) describe constellations with a contradictory outcome (cases with a high development of the welfare state are written in bold type). The considered variables cannot explain these constellations. In order to solve this contradiction other variables must be introduced. These must also be chosen according to meaningful theoretical hypotheses. The capital L denotes 'logical remainder cases'. In this case the constellation 1, 1,0, which in this study did not describe any of the covered cases. The inclusion of such 'logical remainder cases' using QCA can possibly help to dramatically reduce the formulas so produced.

QCA can also calculate much more complicated constellations than the graphically simple one shown here. In the programme version QCA 3.0 a maximum of 12 independent variables can be included simultaneously. In practice the memory limits of the PC only allow for 10 variables at present. The calculation time can take several hours, depending the computer. The immense complexity of the calculation becomes clear when one considers that in the case of 10 variables $2^{10} = 1024$ possible constellations must be considered.

Continuing the study using QCA and including further variables in order to solve contradictions and remaining conscious of possible 'logical remainder cases' gave the following result for the positive outcomes:

$$1 = E \cdot d \qquad + \qquad e \cdot T \cdot \begin{Bmatrix} D \\ I \end{Bmatrix} \qquad + \qquad g \cdot \begin{Bmatrix} L \cdot D \\ E \cdot L \\ I \cdot L \\ U \cdot E \\ I \cdot E \end{Bmatrix}$$

(AUS, DEN, GER)   (SWI, UK)   (FRA)

For the total of 6 variables taken into consideration, industrialisation (I), urbanisation (U), left wing parties (L), extension of suffrage (E), strength of Unions (T) and democracy (D) the contradictions could be eliminated. This was achieved after several attempts by including further variables such as Protestantism and the early foundation of workers' parties, among others. These could not, however, solve the contradictions or lead to a further shortening of the formula. This formula should be read as follows:

Three cases (Austria, Denmark and Germany), which are given in the brackets, are explained by the constellation E • d (a large extent of suffrage in a constitutional-dualistic monarchy). QCA is capable of identifying the cases which belong to this group separately. Such a constellation coincides with Alber's theory of 'social politics from above' coinciding with heavy political pressure (socio-economic factors do not play a role here). The cases of Great Britain and Switzerland are described by two alternative formulas e • T • I or e • T • D (that is each having a relatively limited level of suffrage but a high

level of union organisation and a high level of industrialisation or démocratisation). Which formula is the more suitable must be decided qualitatively in individual cases by the informed researcher. This type is typical of the majority of developed liberal democracies of this period, although with limited voting rights. The last five formulas all describe the last case, France. Here we are concerned with a relatively developed democracy with a large extent of voting rights and strong left wing parties, but with still weakly developed union structures.

In the case of a weak development of the welfare state, QCA produces with the same variables the formula:

$$0 = l \bullet t \bullet D \quad + \quad e \bullet \begin{Bmatrix} i \\ d \end{Bmatrix} \quad + \quad T \bullet D \bullet \begin{Bmatrix} E \\ U \bullet L \end{Bmatrix}$$

(NET, NOR) (FIN, SWE, ITA) (BEL)

A weak development of the welfare state was present in the democratic states the Netherlands and Norway, which also had a low level of union organisation and a low level of left wing votes (socio-economic differences are also shown here to be of little importance). A further pattern is demonstrated by authoritarian states with a low level of voting rights, Finland, Italy and Sweden. The third rather complicated pattern relates to Belgium. Here we are dealing with an economically developed democracy with a high level of suffrage and well organised unions, which displays, however, only a limited inclination towards a welfare state. Thus, this pattern contradicts several of the theories propounded by Alber. Remembering that in the discriminant analysis reported, Belgium had also been an unexplained case!

The solution of the contradiction between France and Belgium, which in other areas demonstrate very similar constellations, thus turned out to be difficult and led to relatively complicated formulas. This may point to the fact that in addition to the variables used in this analysis, based on Alber's selection, we should have included other factors which may have led to simpler and more conclusive explanations. Another pointer in this direction is for example Josef Schmid's (1995) discussion dealing with the structural effects of church-state conflicts in modern welfare states. In this way, the strong separation of church and state in France (in contrast to the strongly 'verzuiled', but state-supporting position of the Catholic camp in Belgium with a corresponding social buffer within this camp) could have contributed to the observed divergence. In the same way a strong union organisation could lead to a higher degree of social security within the corresponding 'socialist camp', which could explain the 'lagging-behind' of Belgian welfare state development

(see Esping-Andersen 1990: 44-47, 65-69). However, these hypotheses cannot be followed up using the present data. In any case, the detailed knowledge of the respective country experts is required here for a better judgement

Summary and Conclusion

The previous analysis and discussion has shown that with the help of macro-quantitative methods, the importance of certain influencing factors for the development of the welfare state at the end of the last century can be demonstrated. The extent of voting rights and the strength of left wing parties, that is of political factors, could be emphasised in the sense of Alber's findings. When analysed more closely however, it became clear that these results are extremely dependent on the cases considered. Thus, the German case of Bismark's social security laws turned out to be a definite 'outlier', which led to a distortion of the results as a whole. A differentiation according to authoritarian or democratic systems showed a combination of political and socio-economic factors to be at work in the more developed 'bureaucratic-authoritarian' systems. Discriminant Analysis further showed that important individual cases, such as Belgium or Norway, remained unexplained. Beyond the relative rough and of necessity more general influence of the factors picked out by Alber, therefore a more case-orientated analysis which exhibits a more differentiated pattern of relationships becomes necessary.

As a supplement and in a more differentiated manner, a macro-qualitative analysis of these results was thus carried out with the help of QCA. In part, this supported Alber's results, but also exposed some differing patterns and uncovered, with regard to the four main variables applied by Alber, important contradictory constellations. This applied for example to the cases of Belgium and France, which in their initial conditions were more or less similar, but which showed a different development of their social security systems. This pointed to existing theoretical deficits and remaining necessary refinements. The consideration of further variables, such as the differing role of the catholic church in both states and the different development of the unions, could solve the contradictions. However, apart form such ad hoc possible explanations, it would be useful to carry out a further test of these variables including further case studies. This was not possible here.

We were rather more concerned to demonstrate the relative strengths and weaknesses of the macro-quantitative method using this example. Beyond the rough indications of the macro-quantitative method, therefore, the supple-mentary results of a macro-qualitative analysis, in particular for small and medium sized case numbers, are indispensable. A method such as QCA can fulfil three important functions:

1) It supplies a complete description of all individual cases with regard to the chosen variables in the shortest possible ('most parsimonious') form.
2) It can test the central hypotheses of different theoretical explanations and expose existing deficits and contradictions.
3) It can produce the shortest possible description of differing constellations ('prime implicants') and so of differing patterns of conditions, which may lead to more sophisticated theories.

In this way, QCA fulfils the most important aims of a scientific method, that is systematic description, falsification of existing hypotheses and the development of new differentiated patterns of explanation, which may also lead to better theories. Some of QCA's weaknesses, such as a loss of information for the dichotomisation of variables, and a relatively limited number of variables which can be dealt with at the same time, have also been indicated.

The results thus demonstrate the complementary nature of both methods explicitly emphasising the specific range of the theoretical explanations. In contrast to the often not to be falsified 'big theories', e.g. of a Habermasian or Luhmannian kind (see Esser 1993, in relation to the 'Third World' also Menzel 1992) on the one hand and often ad hoc fabricated explanations of 'country experts' on the other, which appear if an acute political crisis in the media needs to be commented on, in our view, the methods used here constitute a potentially fruitful field of systematic-comparative theory formation with precise 'ranges' in time and space. The polemic mentioned at the beginning of this article should therefore give way to a more sober discussion including a stronger consideration of qualitative elements. Stein Rokkan's historically informed, methodically differentiated and theoretically orientated method, and Rokkan himself, whom Karl Deutsch once introduced at the IPSA-World Congress in Munich in 1970 as 'literate in letters and numbers', can still serve as a source of inspiration in this regard.

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