„Macro-quantitative vs. macro-qualitative methods in the social sciences – testing empirical theories of democracy“

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Abstract

There are some new attempts to bridge the divide between quantitative and qualitative methods in the social sciences. My paper explicitly illustrates and tests some of these methods like regression, cluster, or discriminant analysis, on the one hand, and more recent case- and diversity-oriented methods like QCA, Fuzzy Sets and similar ones, on the other. This is done by using examples and data for different empirical theories of democracy such as those by Lipset, Vanhanen, or Moore/Stephens. In this way, the specific strengths and weaknesses of the respective methods and theories are demonstrated.

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 availability of sufficient material (for example the OECD states, certain regions of the Third World, etc.) is often even more limited. At the same time, these systems and the interactions which are taken into account, exhibit a high level of complexity. Thus, the classic 'many variables - small N' dilemma of this sub-discipline of Political Science comes into being (see Lijphart 1971, 1975; Collier 1993; Aarebrot/Bakka 1997).

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). 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.

This paper, first, outlines the central tenets and concrete procedures of both positions. It, then, exemplifies these methods by testing some current empirical theories of democracy as they have been developed in the last few decades by major authors like Seymour M. Lipset (1959), Tatu Vanhanen (1984, 1990, 1997), and Barrington Moore (1966) or in its later somewhat modified version by Dietrich Rueschemeyer, Evelyne Huber Stephens and John D. Stephens (1992). The data set used for this purpose has been derived from a larger international research project dealing with the conditions of authoritarianism, fascism and

democracy in Europe in the inter-war period (see Berg-Schlosser/Mitchell 2000, and Berg-Schlosser/Mitchell forthcoming). The concluding section, finally, points to some of the consequences of the application of such methods for theory building in the social sciences and some future prospects in this regard.

2. Basic characteristics and assumptions of the opposing paradigms

2.1. 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 1997).

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' political areas, random sampling, which forms 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, strictly speaking, out of the question. This consequence is often ignored at peril.

Such data can provide useful descriptive averages of certain frequency distributions or serve as a basis for presumably 'universal' explanations based on the actual number of cases, such

as in linear (also an often unjustified assumption) regressions. Specific characteristics of individual cases are usually not taken into account using such methods. If such characteristics differ too crassly in the observed distributions, 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 World Bank, the OECD, the national statistical offices etc., 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' on the basis of a limited and prejudiced selection of variables are, therefore, no rare occurrence.

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 have been known for a long time. 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 thus came 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.

2.2. Macro-Qualitative Methods

Over the last decade, „macro qualitative" and „diversity-orientated" methods have been more intensively employed and improved using new technological developments (see Ragin 1987, Drass/Ragin 1992, Ragin/Berg-Schlosser/De Meur 1996, Ragin 2000), by developing systematic 'most different' and 'most similar' research designs (see Przeworski/Teune 1970, De Meur/Berg-Schlosser 1994, 1996), 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). Some of the techniques presented here rely 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 for this purpose or a number of 'dummy' variables be formed (as for the conversion of nominal characteristics to variables for certain statistical procedures 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 strongly 'deviating' cases 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 'qualitatively' orientated researcher will soon reach his/her 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, see below) offers the further possibility of including hypothetically possible case constellations ('logical remainder cases') in the analysis and of developing at least a hypothetical generalisation over and above the cases taken into account.

3. Applications testing empirical theories of democracy

Among the large variety of approaches dealing with the more general conditions favouring the emergence of democratic political systems in different parts of the world (see, e.g., Dahl 1971, 1989; Diamond 1999; Schmidt 2000; Berg-Schlosser forthcoming) I have selected some of the major ones concerned with some of the overall socio-economic and "structural" factors in this regard as they have been proposed by Lipset, Vanhanen or Moore, for example. In addition, of course, for any more comprehensive account other factors such as specific historical and cultural conditions, intermediate organisations, institutional arrangements, actor-related aspects, etc. must also be considered (for an application of such a more comprehensive design see also Berg-Schlosser 1998). For our present purposes, however, some illustrations using the mentioned approaches will do.

3.1. Lipset's indicators:

The most influential relatively early study dealing with the more general socio-economic preconditions of democracy has been S. M. Lipset's Political Man (1963), in particular his chapter on "Economic Development and Democracy." There, he (re)stated the general hypothesis that "the more well-to-do a nation, the greater the chances that it will sustain democracy" (p. 31). Indeed, among the "stable European democracies" analyzed by Lipset were cases like Belgium, the Netherlands, Sweden and Great Britain, which all showed high levels of wealth, industrialization, education, and urbanization. Under his (very broad) category of "unstable democracies and dictatorships" figured countries like Greece, Hungary, Italy, Poland, Portugal, and Spain, with lower levels in this regard. However, he also noted that "Germany is an example of a nation where growing industrialization, urbanization, wealth and education favoured the establishment of a democratic system, but in which a series of adverse historical events prevented democracy from securing legitimacy and thus weakened its ability to withstand crisis" (p. 20). This statement certainly applies to Austria as well, but the kind of "adverse historical events" and their specific roots were not investigated by Lipset any further. Similarly, the fact that countries like Czechoslovakia, Finland, and France, which also had higher levels of development and democratic institutions and which,

as far as internal factors were concerned, survived the economic crisis of the 1930s, were grouped in the same "unstable" category, was not very helpful from an analytical point of view.

In later years, Lipset's work was followed by a number of conceptually and statistically more refined studies and drew considerable criticism as well. However, when he later reviewed his original study, he still found its basic tenets confirmed (Lipset 1994, see also Diamond 1992).

The basic data for our analysis are presented in Table 1.

(Table 1 about here)

For each of the four main dimensions discussed by Lipset (wealth, industrialization, education, and urbanization), we have selected one major indicator as listed in this table. When we employ, as a first step, some of the common *statistical* ("macro-quantitative") procedures we obtain the following results (see Table 2):

(Table 2 about here)

Thus, in line with Lipset's arguments, the more general "wealth" of a nation (as measured by GNP per capita) turns out to be the single most highly correlated factor concerning the survival of democracies in the inter-war period, followed by levels of literacy, urbanization, and industrialization (as measured by the share of the industrial labour force). In a *factor analysis*, these variables also load on a single "modernization" dimension. This more comprehensive factor, however, has a somewhat lower correlation than GNP per capita alone. When we apply these variables in a *multiple regression*, again GNP per capita turns out, by far, to be the single most important one. The total variance explained (R^2), however, only is about 0.6 which already points to some "unexplained" cases.

For this reason, we also employed a more sophisticated recent technique, *discriminant analysis*, to shed some more light on this situation. Discriminant analysis groups cases around the poles of a single axis indicating the respective outcome (here: the survival or breakdown of democracy) and assessing the relative weight of the different variables. Here, again, GNP p.c. turns out to be the single strongest factor (as expressed by the lowest value for Wilk's

lambda), followed by literacy and urbanization and having by far the strongest weight when applied jointly (as expressed in the canonical discrimination function). Discriminant analysis also lists, however, those cases which could *not* be classified, i.e. 5 out of our 18 including Czechoslovakia, Finland and Ireland among the survival and Austria and Germany among the breakdown cases. For these, at least, we must look for a different explanation!

Similarly, a *logistic regression* which is also based on a dichotomized dependent variable, could not classify three out of our eighteen cases (FI, CZ, GE). The other 83% were "predicted" correctly.

As a final step among the "macro-quantitative" methods, we, therefore, employed *"cluster analysis"* to possibly reveal some specific configurations among our cases. The results are given in the dendrogram in Figure 1:

(Figure 1 about here)

Here, our clear-cut breakdown cases (ranging from Spain to Italy in the upper half) are grouped together. The second grouping, however, combines the survival cases of Finland, Czechoslovakia and Ireland with the breakdown case of Austria, all of which already had been identified as "problematical" by discriminant analysis. Similarly, the German breakdown case is grouped together with Sweden and, in a further step, with the successful democracies in the Netherlands, the United Kingdom, France and Belgium. Over and above this graphical illustration of some problematic groupings this procedure, which operates as a kind of a "black box", does not tell us *which* variables were responsible for the respective grouping.

All in all, therefore, with these procedures we have identified one major factor (GNP p.c.), followed by literacy, and some problematic cases which cannot be explained so easily. For this reason, more "diversity-oriented" macro-*qualitative* procedures can, at least, meaningfully supplement such an analysis and point to specific constellations of cases and factors in the sense of specific "conjunctural" causations, but may also help, in the longer run, to develop more refined theories.

We first employed "Qualitative Comparative Analysis" (QCA) for this purpose (see also Ragin 1987, Ragin/Berg-Schlosser/De Meur 1996). QCA is a technique based on Boolean algebra which can reduce variables related to a specific outcome to its minimal "prime implicants" also allowing for possible "conjunctural causations" in this regard. In order to prepare our data set for a Boolean type of analysis, we had to dichotomize each variable according to certain thresholds (of "high" or "low") (see Table 3).

(Table 3 about here)

The particular thresholds chosen, which seem to be in line with Lipset's basic arguments, are indicated at the bottom of the table. The presence (1) or absence (0) of each factor is listed here for all of our cases, along with the respective outcome, that is, the survival (1) or breakdown (0) of democracy. In the resulting reduced formulas the presence of a factor is expressed by a upper case and the absence by a lower case letter.

In this way, it already becomes apparent that Lipset's (positive) conditions are fulfilled in a "pure" sense in only three of our eighteen cases (Belgium, Great Britain, and the Netherlands). However, this is contradictory to the German case, which also satisfies these conditions. In a negative sense, Lipset's hypothesis is confirmed in the cases of Greece, Hungary, Italy, Poland, Portugal, Romania, and Spain. Czechoslovakia is a (democratic) case which ranks high on all indicators, except for wealth which is somewhat below the threshold. Ireland, another "survival" case, has relatively low values of urbanization and industrialization. The cases of Finland (democratic) and Estonia (breakdown) have identical values for all indicators and rank high only on literacy. Similarly, France and Sweden (democratic) and Austria (breakdown) show a contradictory constellation being relatively developed, except for urbanization.

This descriptive pattern is reproduced by QCA giving the term $g \cdot u \cdot l \cdot i$ for the clear-cut breakdown cases. If "logical remainder cases", i.e. potential combinations of factors which are not represented by any of our actual empirical cases, are included in the analysis (for four dichotomized variables there are $2^4 = 16$ potential combinations) then QCA produces the term l, i.e. a low level of literacy, as the single major condition for the breakdowns.

The prime implicants for the democratic survival cases are:

G · u · L · i (IR) + g · U · L · I (CZ) (the + here stands for a logical "or")

If, again, logical remainder cases are included we obtain the (somewhat) reduced formula:

$$G \cdot i\ (IR) + \left\{ \begin{array}{ll} g \cdot U & \\ & (CZ) \\ g \cdot I & \end{array} \right\}$$

All in all, therefore, Lipset's sweeping "modernization" hypothesis is reduced to a lack of literacy for the majority of breakdown cases and some specific constellations for the (few) clear-cut survivals. Furthermore, there are 9 (i.e. half of our universe of cases) instances which remain contradictory and cannot be explained in this way.

It can be argued, that some part of this result is due to the relatively crude dichotomization procedure and the particular thresholds chosen which always entails a certain loss of information. We, therefore, employed another, still more recent procedure, *"Espresso"*, (originally developed by electrical engineers at Berkeley), which is based on the same principles as QCA but employs a somewhat different (and faster, which is important for greater numbers of variables) algorithm which also allows to use more differentiated multi-value variables.

Just to exemplify its use, we divided the GNP variable into four categories (g4=below $400.-, g3=400.- to 600.-, g2=600.- to 800.-, g1=above 800.-) and ran the same procedures together with the other (still dichotomized) variables. Now, a more differentiated picture emerges. First of all, the number of contradictory constellations is reduced to only two cases (Finland and Estonia) still remain contradictory. The positive outcomes are expressed by the formula:

L·I·G1(BE, NL, UK, FR, SW) + u·L·i·G2 (IR) + U·L·I G3 (CZ)

If we include "remainders", this is reduced to:

G1 + i·G2 + I·G3

which means that either a high level of income and industrialization (Lipset's "classic" cases, so to speak) or a medium income with low industrialization or a lower income with industrialization favour the survival of democracy.

Conversely, the breakdowns are represented by the formula:

L·I·**G**2 (AU, GE) + u·l·i·G3/G4 (RO, PR, SP, GR, PL, IT, HU)

When remainders are included, this leads to:

I·G2 + l

Thus, again, the "classic" low income, low literacy countries are separated from the more mixed and controversial cases of Austria and Germany[1)].

Another recent software, developed by Charles Ragin and Kriss Drass, is based on *"fuzzy sets"* (Ragin 2000). Here, too, the original dichotomization of variables for "crisp" sets is relaxed to allow for differentiated values. This is not done, however, on a "dummy" basis (as with QCA or, implicitly, also "Espresso"), but on the basis of re-calibrated scales for each variable. Thus, for example, the original values of GNP per capita are transformed into a five-fold ordinal scale ranging from "very low" and "low" over a "crossover point" in the middle to "high" and "very high". Arithmetically, this can be represented by values ranging from 0.17 and 0.33, a middle value of 0.5 to 0.67 and 0.83. For some variables, where this makes sense, an absolute value of 0 and of (practically) 1 (i.e. 100%) can be included to form a seven-point scale.

This re-calibration, in addition to providing more information, is justified for variables which, even though the original data may be metric, create an impression of a "false precision". This is true, for example, for the still most commonly used GNP per capita indicator. In addition to the fact that this variable usually does not reflect, in view of the varying international exchange rates, actual purchasing power (or has to be adjusted for this purpose as in the "Human Development Index" HDI, see UNDP 1990 ff.) and does not include non-monetary

[1)] These "Espresso" results could be confirmed by using the original Quine/McCluskey algorithm for this still relatively low number of variables entering the different levels of GNP as "dummies". In the present version, the available "Espresso" software does not produce all possible minimal outcomes, including certain alternatives, each time.

or non-registered transactions as in the "informal" sector or concerning subsistence production or household work, it also measures differences in income, e.g. between $500.- and $1.000.- p.c. or between $14.500.- and $15.000.- p.c., in a purely metric way, even though the difference in living standards is very considerable in the first instance and relatively marginal in the second. For many social science purposes, therefore, it makes more sense to speak of "low", "middle", and "high" incomes in a somewhat vaguer ("fuzzy") sense than to insist on metric numbers.

Based on such insights, "fuzzy set analysis" allows for different levels on such scales to find out whether under such somewhat relaxed ("probabilistic") circumstances a variable can be considered to be a "necessary" and/or "sufficient" condition for any particular outcome. Necessary conditions are those (like "constants" in any particular causal pattern) which *must* be present for any particular outcome to occur. Sufficient conditions concern those factors which, combined, produce the specific outcome.

In our example, concerning the original Lipset hypothesis, "modernization" or one of its components may be such a necessary, even though not always sufficient, condition for democratization. In this more relaxed form we can, again, test this hypothesis with the (still not fully operational) "FS/QCA" software. For this purpose, we have transformed and "re-calibrated" the original data for our 18 European interwar cases in the following way (see Table 4).

(Table 4 about here)

A first run, with the default values of a probability of 80% and a significance level of $p<0.05$ in the FS/QCA software, did not identify any necessary or sufficient conditions neither concerning Lipset's original four indicators nor the combined "modernization" factors. Only when we relaxed the probability to 0.60 then a high level of literacy was identified as a necessary condition for the survival of democracy. When we also modified the outcome variable taking account of the situation in 1929, i.e. before the world economic crisis, when some of the major breakdowns (as in Austria or Germany) had not yet occurred and allowing for a "low" level of democracy in countries like Hungary or Romania where some kind of

democratic "façade" was maintained in this period, again the default values did not produce any necessary or sufficient conditions. Now, however, at a level of 0.70 literacy was again identified as the single necessary variable.

This finding thus coincides with and supplements to some extent the QCA and Espresso results where for the clear-cut breakdown cases (including "logical remainders") a low level of literacy had been identified as the single most important factor. In none of these procedures, however, any "sufficient" conditions could be identified indicating the limited nature of this "theory".

On the whole, therefore, these socioeconomic indicators have a rather limited explanatory power. They discriminate relatively little between the actual instances of democratic survival and breakdown in the universe of cases analyzed. The industrialization variable, for example, adds very little over and above the differentiations already provided by the other three indicators (serving only to distinguish Austria from Sweden among the mixed cases and to avoid one contradiction). Accordingly, for the purposes of a genuinely qualitative and categorical (and not merely statistical) analysis more discriminating and comprehensive variables are called for. These variables may also prove capable of resolving some of the remaining contradictions.

3.2. Vanhanen's indices:

The most comprehensive longitudinal study of socioeconomic factors contributing to the emergence of democracy has been conducted by Tatu Vanhanen (1984). He constructed three major indices: an index of occupational distribution (IOD) which refers to the overall division of labor in a society, an index of knowledge distribution (IKD) in which indicators of literacy and the extent of university education are combined, and an index for family farms (FF) showing the percentage of independent small-scale landholdings in the agricultural sector. These three factors were found to correlate strongly with the emergence of broader-based democratic political systems. In Vanhanen's words they

> "Indicate three different dimensions of political relevant power resources. ... Together they measure the social conditions and structures on which the nature of a political system depends. If the social conditions and structures are such that the most important power resources are concentrated in the hands of a small group, or if these resources are scarce, it is difficult to form opposition groups and to challenge the position of the ruling group. On the other hand, if the resources are more widely distributed among competitors, the competing groups must be content to share power if they do not want to destroy each other in continual attempts to suppress rivals by force." (p. 36).

His data for 17 out of our 18 cases are documented in Table 5. [2)]

(Table 5 about here)

On this basis, we again first employed some "macro-quantitative" statistical procedures. The results are summarized in Table 6:

(Table 6 about here)

When correlated with the final outcome, the "Index of Knowledge Distribution" (IKD) turned out to be the single most highly correlated and only significant factor, followed by the "Index of Occupational Distribution" (IOD) and a (quite low) value for "Family Farms" (FF). A *multiple regression*, basically, showed the same result with a high beta value for IKD. The explained variance, however, remained relatively low (R^2=0.38). *Discriminant Analysis* also gave, by far, the strongest weight (as expressed by the standardized canonical discrimination function coefficient) to IKD. Austria, Germany and Hungary could not, however, be

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[2)] Vanhanen had not included Estonia in his data set. Because his data are based, to some extent, on his own sources and judgements, we could not make up for these missing values. In the "rougher" Boolean version (see Table 6) we have substituted some "guesstimates" for Estonia for reasons of comparability and completeness.

classified in this way. *Logistic regression*, similarly, was unable to classify Austria and Germany correctly. When Vanhanen's combined "Index of Power Resources" (IPR), an aggregate of his three original factors, was employed the correlation and the variance explained were even lower.

Vanhanen, for his own purposes, has also developed a separate "Index of Democratization" (ID) which groups together, as more or less objectifiable indicators in line with Dahl's basic criteria of "polyarchy", the level of political participation (as measured by electoral turnout) and the level of political competitiveness (i.e. the smaller parties' share of the vote in parliamentary elections). The correlations with this index and the variance explained for the year 1920 (Vanhanen only provides data on a decennial basis), i.e. the year towards, the beginning of the period considered in our project, are considerably higher. But the later breakdowns of democratic regimes in the (relatively) high ranking cases of Austria, Germany, Poland and (probably) Estonia (Vanhanen himself sets a threshold of 5.0 on this index for a regime to qualify as a democracy) could not be captured (let alone "explained") in this way.

To show the possible groupings of cases according to Vanhanen's indices we also ran a *cluster analysis*. The resulting dendrogramm is given in Figure 2:

(Figure 2 about here)

Three major groupings can be discerned among the first 6 or 7 iterations: the "less developed" cases at the bottom including the majority of our clear-cut breakdown cases, but also the "contradictory" case of Finland; the "highly developed" countries and stable democracies (BE, NL, UK) in the middle; and a "mixed" group including four survivors and three breakdowns (AU, GE, HU) at the top. Again, such a picture is at best suggestive and indicates certain contradictory constellations, but the precise factors at work at each iteration remain in the "black box".

We also subjected his data to the described "macro-qualitative" procedures. For QCA, the respective Boolean values are documented in Table 7:

(Table 7 about here)

Thus, all in all, there are only three clear-cut survivor cases (BE, FR, UK) which, however, do not fully correspond to his original hypothesis (with a low value for family farms). The cases where all of his conditions are fulfilled remain contradictory (the Netherlands with a positive and Austria and Germany with a negative outcome). The breakdown cases of Greece, Italy, Portugal, Spain and (with some modification) Poland and Romania confirm his hypothesis. The survivor cases of Czechoslovakia, Finland, Ireland and Sweden and the breakdowns of Estonia and Hungary, however, are still grouped in the same contradictory category.

When we, again, employed QCA the following terms were identified:

iod · ikd for the clear-cut breakdowns (GR, IT, PO, PR, RO, SP), when "remainders" were included this was reduced to ikd;

and IOD · IKD · ff for the survivors (BE, FR, UK), which could be reduced to IOD · ff + IKD · ff for the remainders.

Thus, all in all, there are only three clear-cut survivor cases (BE, FR, UK) which, however, do not fully correspond to his original hypothesis (with a low value for family farms). The cases where all of his conditions are fulfilled remain contradictory (the Netherlands with a positive and Austria and Germany with a negative outcome). The breakdown cases of Greece, Italy, Portugal, Spain and (with some modifications) Poland and Romania confirm his hypothesis. The survivor cases of Czechoslovakia, Finland, Ireland and Sweden and the breakdowns of Estonia and Hungary, however, are still grouped in the same contradictory category.

To further test his theory in a somewhat more differentiated manner, we also utilized *"Espresso"*. For this purpose, we subdivided Vanhanens's most significant factor, IKD, into three categories of K3="low" (<30), K2="medium" (30-40), and K1="high" (>40). This resulted in the following truth table:

(Table 8 about here)

This procedure, thus, differentiates somewhat further among the clear-cut breakdown cases, but, in this instance, it does not eliminate any more contradictions. The respective minimized formulas are as follows:

Breakdowns: iod·K2/K3, if remainders are included this is reduced to K2/K3.

Survivors: IOD·ff·K1, with remainders this result remained the same in Espresso, the Quine/McCluskey algorithm differentiated further to:

IOD · ff+ff · K1

Finally, we also converted Vanhanen's data into fuzzy values (see Table 9).

(Table 9 about here)

The subsequent fuzzy set analysis did not show, however, that any of the factors was either necessary or sufficient, even at the relatively low level of a probability of 0.60.

3.2. Social structural theories, the Moore/Stephens approach

Beyond these necessarily crude assessments of socioeconomic development on a fairly general level, a broad spectrum of approaches has been developed which looks at the more specific social structural dynamics of historical development (which are largely defined in an "objective" sense), including certain characteristic sequences and paths. These historical-materialist approaches have, of course, been significantly shaped by the works of Karl Marx and his successors. Today, a great variety of authors can be found within this tradition. They range from (still) fairly orthodox Marxist writers through more diversified and sophisticated (neo-) Marxist thinkers to social-structurally and historically oriented authors who do not share the major epistemological assumptions of Marxist thinking (see Skocpol 1984).

Longer-term systematic studies of the special structural roots of fascism, authoritarianism, and democracy have remained relatively rare. Among these, Barrington Moore's (1966) work still is the most outstanding example. Moore outlined three major routes to modernity: the bourgeois-democratic route, the authoritarian-reactionary route (which later culminated in fascism), and the peasant-based communist route. In each case, the particular transition from

feudalism to modernity, during which time a specific alliance of class forces emerged, shaped later events. More recently, John Stephens (1989, 2002) has attempted to extend and differentiate Moore's argument and apply it to a larger number of cases, including many of those which we have considered. He examined the democratizing impact of various social forces and their specific alliances, pointing out that the bourgeoisie and the middle classes could not always be considered as the major democratizing factors. Stephens argues that the working classes (which were largely neglected in Moore's perspective) also played a major role which, however, was not in itself decisive. Rather, the respective weights and the potential alliances of the different groups determined the final outcome, "each group [working] for its own incorporation [into the political system, but being] ambivalent about further extensions of democracy" (1989: 1063). The failure or breakdown of democratization did not necessarily lead to fascism but could, as Moore had postulated, lead to other forms of capitalist authoritarianism. Stephens thus concluded that:

> "the agrarian class relations and patterns of state-class alliances of the nineteenth and early twentieth centuries were necessary though not sufficient causes of the breakdown of democracy in interwar Europe. The existence of a large landed class changed the alliance options for other classes in both the late nineteenth century and in the twenties and thirties and as a consequence changed the political outcomes. It both opened up authoritarian options for the bourgeoisie and, to the extent that the landlord-state-bourgeois alliance affected the politics of the middle class and peasantry, it closed off options for the working class" (1989: 1070).

Such arguments can also be tested with the help of our method and data. More specifically, Stephens lists four major factors which in his view permit a differentiated analysis of the social structural patterns leading to authoritarianism or democracy in Europe's pre-World War II political development. These factors are the existence of a politically significant landed upper class engaged in labor repressive agriculture, a strong bourgeoisie which,

however, is less powerful than the landed class and thus remains a dependent partner in this coalition, and the occurrence or absence of a revolutionary break with the past. These factors can, to a certain extent, be operationalized with our data. For our purposes, we can summarize these "qualitative" data in the following truth table:

(Table 10 about here)

We thus find Moore's "classical" democratic cases in the first two lines with the slight modification as far as the (lesser) role of the landed upper class in France towards the end of the 19th century is concerned. The next two lines include Moore's potentially "fascist" constellation with Germany and Italy as the most significant cases but also including Austria, Hungary, Poland, Portugal and Spain which were not discussed by Moore. The final two constellations, including the remaining smaller countries, remain contradictory, however.

Based on Moore's and Stephens' rather broad qualitative assessments it does not make sense to subject these data to any more detailed "macro-quantitative" analyses. We can, however, test the strength and range of this theory with some of our "macro-qualitative" procedures. QCA produces the following results:

Survivors: aerepr·bolsae·bodepend·BREAK (FR, UK), and, when remainders are included, the very much shortened term BREAK, i.e. the occurrence of a bourgeois revolution.

Breakdowns: AESIGN·AEREPR·BOLSAE·BODEPEND·break (AU, GE, HU, PL, PR, SP)

+ AESIGN·AERERR·bolsae·bodepend·break (IT)

When we also included the logical remainder cases, this was reduced to the formula:

$$\text{BODEPEND} + \left\{ \begin{array}{l} \text{AEREPR·bolsae} \\ \text{+AESIGN·bolsae·break} \end{array} \right\}$$

This means, there was either a dependent bourgeoisie as the major single factor (as in the six first-mentioned cases) or some alternative mixed constellation as in the Italian case.

This theory thus points out in a more detailed manner some of the major social structural forces shaping the future political destiny of these countries. The number of remaining contradictions (9) remains, however, as large as with the explanations by Lipset or Vanhanen.

A final step, testing Stephens's claim that these class relations were necessary but not sufficient causes for the breakdown of democracy, could be taken with the "veristic" procedure available in the *Fuzzy Set Analysis* (we do not have any sufficiently differentiated data to warrant any "probabilistic" assessment). There, it turned out that the lack of dependence of the bourgeoisie on the landed upper class was a *necessary* condition for all of the successful democracies. If there was also a revolutionary break with the past (as in France) or a significant agrarian elite which is not engaged in labour-intensive repressive agriculture (as in the United Kingdom) then this is also a *sufficient* condition.

4. Conclusions:

When we summarize the substantive findings of these tests, it becomes apparent that *Lipset's* theory based, mainly, on a correlation between GNP p.c. and stable democracy is the vaguest and, in this sense, the relatively weakest one. Its postulates remained contradictory for 9 out of our 18 cases. In a "pure" sense, concerning all four of his variables, it does apply to only three of the survival and seven of the breakdown cases. The more sophisticated "discriminant analysis" showed that at least five cases remained "unexplained" and problematical. The even more diversity-oriented "macro-qualitative" techniques could identify these particular constellations more clearly. Furthermore, it turned out that it was not so much a differentiated level of wealth, but a lack of literacy as the most important factor for the majority of the breakdown cases.

This latter finding is supported when we look at the results of the tests of Vanhanen's theory. His theory of a "distribution of power resources" is more detailed and, in this sense, more plausible than Lipset's. Being based both on aspects of more general socio-economic development these two need not necessarily be contradictory, but Vanhanen's approach explicitly takes distributive aspects into account which are "averaged out" in Lipset's

correlations. (As the saying goes, if your head is in the oven and your feet in a deep-freezer your body temperature may be quite normal "on the average"!) Among Vanhanen's three major factors, it is the "distribution of knowledge resources" (including literacy and university education) which turns out to be the strongest and most significant. Nevertheless, again 9 out of the 18 cases remain contradictory. Again, our macro-qualitative procedures were helpful to further identify these constellations.

Finally, the Moore/Stephens approach also looks at socio-economic factors not so much in a quantitative sense but rather concerning the dynamic interactions of the major socio-economic groupings over time as the structural context for the emergence and stability of democratic systems or their authoritarian (including fascist) alternatives. This approach, from the beginning, is much more historically-grounded and "qualitatively" oriented. It could show quite clearly that a dominant landed class and, where it existed, a dependent bourgeoisie were the major factors responsible for the failures of democracy in the majority of our cases. Here, it turned out with the help of Fuzzy Set Analysis that the absence of this constellation was a necessary condition for the survival of democracy. If, in addition, there was also a revolutionary break with the past, this is also a sufficient condition.

Nevertheless, as with the other two theories, 9 out of 18 of our cases remained contradictory and could not fully be explained in this way. This points to the fact that "structural" theories of this kind only can explain broader social contexts, the "opportunity set" in Jon Elster's words, in which more detailed interactions between the micro-level of individual actors and their perceptions, the meso-level of intermediate organizations and the final "macro"-outcome in each individual case have to be taken into account. A conceptualization of such interactions is, for example, provided by James S. Coleman's "bath-tub" (see Coleman 1990 and Esser 1993). For the 18 cases of the inter-war period a comprehensive and detailed systematic account can also be found in Berg-Schlosser 1998 and Berg-Schlosser/Mitchell (forthcoming).

As far as the strengths and weaknesses of our methodological tools are concerned, these also could be exemplified quite clearly. The "averaging out" of most statistical procedures

certainly is a major weakness when we deal, as almost by necessity in comparative politics at the macro level, with a limited and small number of cases. Correlations and regressions then may be quite misleading when influenced by some strong outliers (another example is also discussed in Berg-Schlosser/Quenter 1996). Conversely, QCA and similar tools are helpful for a more diversified "variation-finding" in Tilly's sense. At the extreme, however, they may only lead to "individualizing" results describing the historical uniqueness of each case. Between the extremes of over-generalizing and "universalizing" macro-quantitative approaches, on the one hand, and purely individualizing case-oriented approaches, on the other, a meaningful "medium-range" social science can be built which, at the same time, has a higher explanatory power and a greater social and political relevance. For this purpose, we have to continue to test our theories, improve our methods and replicate or modify our findings!

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Figure 1: Dendrogram Lipset's Indicators

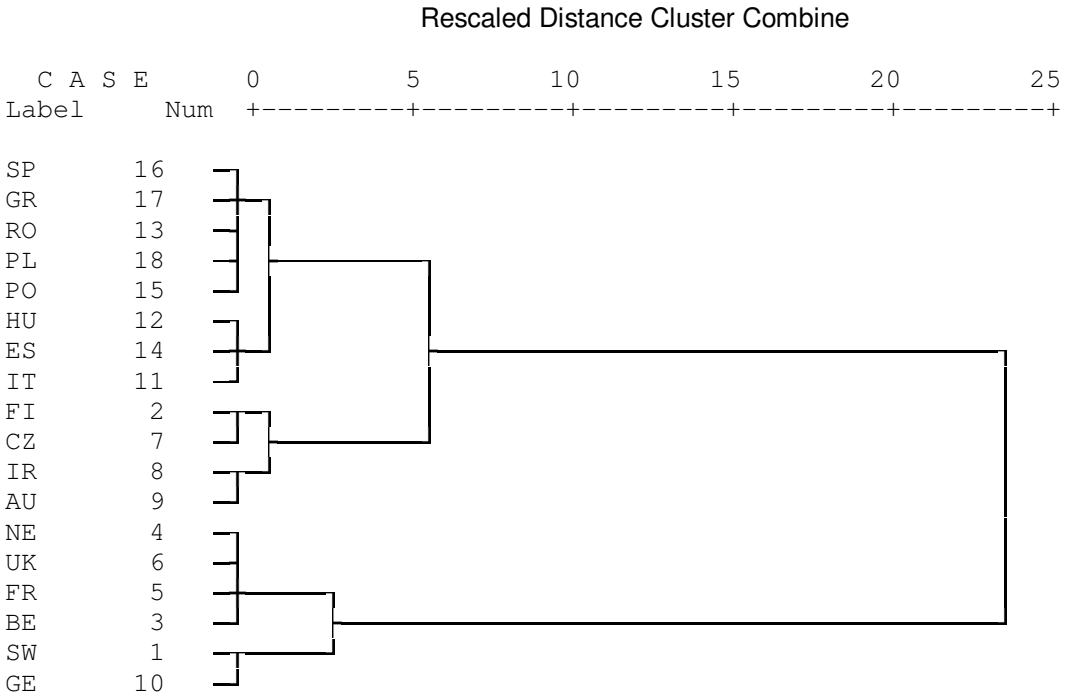

Figure 2: Dendrogram, Vanhanen's Indices

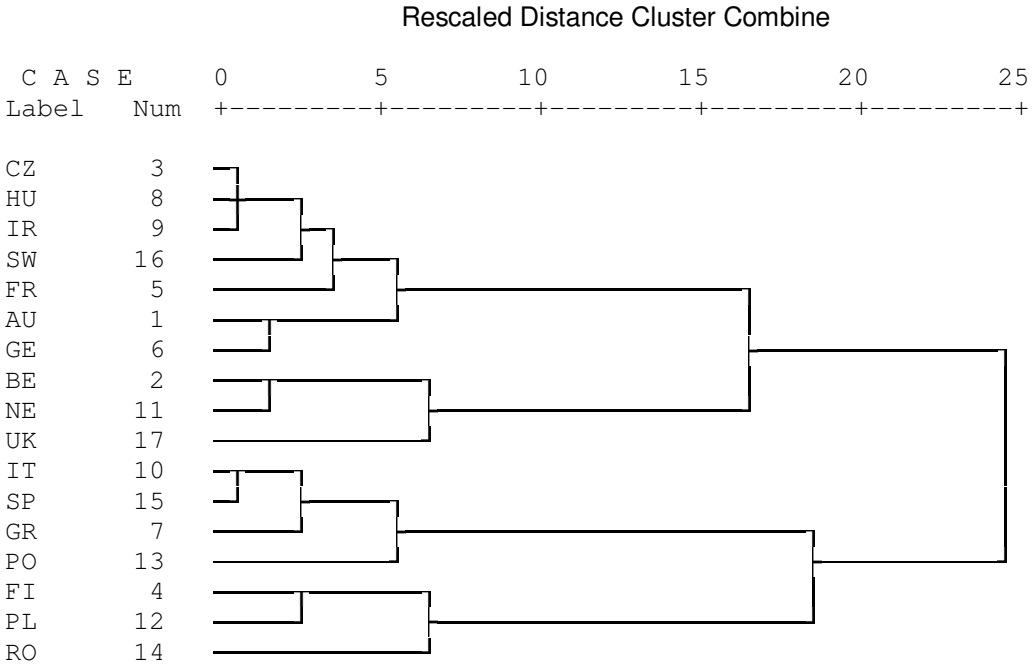

Table 1: Lipset's indicators, raw data

Case	GNP / cap.	Urbaniz-ation	Literacy	Industria-lization	Outcome
SW	897.00	34.00	99.90	32.30	1.00
FI	590.00	22.00	99.10	22.00	1.00
BE	1098.00	60.50	94.40	48.90	1.00
NE	1008.00	78.80	99.90	39.30	1.00
FR	983.00	21.20	96.20	34.80	1.00
UK	1038.00	74.00	99.90	49.90	1.00
CZ	586.00	69.00	95.90	37.40	1.00
IR	662.00	25.00	95.00	14.50	1.00
AU	720.00	33.40	98.00	33.40	.00
GE	795.00	56.50	98.00	40.40	.00
IT	517.00	31.40	72.10	29.60	.00
HU	424.00	36.30	85.00	21.60	.00
RO	331.00	21.90	61.80	44.66	.00
ES	468.00	28.50	95.00	14.00	.00
PO	320.00	15.30	38.00	23.10	.00
SP	367.00	43.00	55.60	25.50	.00
GR	390.00	31.10	59.20	28.10	.00
PL	350.00	37.00	76.90	11.20	.00

Sources:
Handbooks used to prepare the tables are Peter Flora et al., eds., *State, Economy and Society in Western Europe 1815-1975: A Data Handbook* (London: Macmillan, 1983). vol. 1; Peter Flora et al., eds., *State, Economy and Society in Western Europe 1815-1975* (London: Macmillan, 1987), vol. 2; League of Nations. *Statistical Yearbooks* (Geneva, various years); Brian R. Mitchell, *European Historical Statistics 1750-1975* (London: Macmillan, 1891); Statistisches Reichsamt, *Statistisches Handbuch der Weltwirtschaft* (Berlin: 1936).

Table 2: Testing Lipset's indicators, statistical procedures

	Procedures:				
				Discriminant analysis	
Variable:	Bivariate correlations	Multiple regression (beta)	Logistic regression R	canonical discriminat-ion function	Wilks' lambda
GNP / cap.	0.739 ***	0.950	0.563	1.256	0.453
Urbanization	0.494 *	0.109	0.163	0.256	0.756
Literacy	0.629 **	0.043	0.455	0.074	0.604
Industrialization	0.473 *	-0.380	0.287	-0.699	0.776
		$R^2 = 0.591$			
"Modernization" (single factor)	0.662 **	0.588 ($R^2 = 0.438$)	0.488		
			(not classified: FI, CZ, BE)	(not classified: CZ, FI, IR, AU, GE)	

levels of significance:
*** = p < 0.001
** = p < 0.01
* = p < 0.05

Table 3: Lipset's Indicators, Boolean version

Variables				Outcome	Countries	QCA charac-teristic
G	U	L	I			
0	1	1	1	1	CZ	1
1	0	1	0	1	IR	
0	0	1	0	1	FI	C
0	0	1	0	0	ES	
1	0	1	1	1	FR, SW	
1	0	1	1	0	AU	
1	1	1	1	1	BE, NL, GB	C
1	1	1	1	0	GE	
0	0	0	0	0	IT, PO, SP, GR, RO, PL, HU	0

Thresholds:

G=0: gross national product / capita (ca. 1930) below 600$; 1 if above.

U=0: urbanization (population in towns with 20.000 and more inhabitans) below 50%; 1 if above.

L=0: literacy below 90%; 1 if above.

I=0: industrial labour force (incl. mining) below 30% of active population; 1 if above.

Table 4: Lipset's Indicators, Fuzzy values

Case	GNPCAP	URBANIZA	LITERACY	INDLAB	GULI_FAC	Out1938
NE	0.83	0.83	1.00	0.83	0.90	1.00
BE	0.83	0.67	1.00	0.83	0.85	1.00
SW	0.83	0.33	1.00	0.67	0.70	1.00
FR	0.83	0.17	1.00	0.67	0.66	1.00
FI	0.67	0.17	1.00	0.33	0.50	1.00
IR	0.67	0.17	1.00	0.17	0.45	1.00
UK	0.83	0.83	1.00	0.83	0.90	1.00
CZ	0.67	0.83	1.00	0.67	0.80	1.00
ES	0.33	0.33	1.00	0.17	0.40	0.00
GE	0.67	0.67	1.00	0.83	0.80	0.00
AU	0.67	0.33	1.00	0.67	0.66	0.00
PL	0.17	0.33	0.83	0.17	0.29	0.00
SP	0.17	0.33	0.67	0.33	0.28	0.00
PO	0.17	0.17	0.33	0.33	0.10	0.00
HU	0.33	0.33	0.83	0.33	0.39	0.00
IT	0.33	0.33	0.83	0.33	0.39	0.00
GR	0.17	0.33	0.67	0.33	0.28	0.00
RO	0.17	0.17	0.67	0.17	0.18	0.00

Table 5: Vanhanen's Indices, raw data

Case	iod	ikd	ff	ipr	outc1938
AU	51.50	55.00	45.00	12.70	0
BE	64.00	51.50	30.00	9.90	1
CZ	38.50	49.00	40.00	7.50	1
FI	21.50	46.50	47.00	4.70	1
FR	48.00	50.50	35.00	8.50	1
GE	53.00	54.00	54.00	15.50	0
GR	34.00	28.00	28.00	2.70	0
HU	37.00	47.00	40.00	7.00	0
IR	33.50	46.50	40.00	6.20	1
IT	38.00	39.50	22.00	3.30	0
NE	61.00	51.50	40.00	12.60	1
PL	17.50	37.50	53.00	3.50	0
PO	30.50	18.50	20.00	1.10	0
RO	16.50	25.00	41.00	1.70	0
SP	35.00	33.00	20.00	2.30	0
SW	39.50	52.50	50.00	10.40	1
UK	78.50	50.00	25.00	9.80	1

Table 6: Testing Vanhanen's indices, raw data

	Procedures:						
	Correlations with		Multiple Regress. (beta)		Discriminant Analysis		Logsitic regression
Variables:	Outc1938	ID20	Outc1938	ID20	Wilks' lambda	canonical discrim. funct.	Outc1938 R
IOD	0.41	0.55*	-0.13	0.54	0.832	-0.252	0.190
IKD	0.57*	0.79**	0.79	0.20	0.678	1.356	0.385
FF	0.11	0.53*	-0.30	0.54	0.987	-0.612	0.000
			R^2 = 0.36	0.68	not classified: AU, GE, HU		AU, GE
IPR	0.38	0.82**	0.36	0.82			0.129
			R^2 = 0.14	0.65			

** = p < 0.01
* = p < 0.05

Table 7: Vanhanen's Indices, Boolean version*

Variables			Outcome	Countries	QCA charact.
IOD	IKD	FF			
1	1	0	1	BE, FR, UK	1
0	0	0	0	GR, IT, PO, SP	0
0	0	1	0	PL, RO	0
1	1	1	1 0	NE, GE, AU	C
0	1	1	1 0	CZ, FI, IR, SW, ES, HU	C

* A threshold of 0.40 for the dichotomisation of these variables, which turned out to be the most discriminating, has been chosen here.

Table 8: Vanhanen's Indices, Espresso truth table

Variables					Outcome	Countries	Espresso charact.
IOD	FF	K1	K2	K3			
1	0	1	0	0	1	BE, FR, UK	1
0	0	0	1	0	0	IT, SP	0
0	0	0	0	1	0	GR, PO	0
0	1	0	1	0	0	PL	0
0	1	0	0	1	0	RO	0
1	1	1	0	0	1 0	NE, GE, AU	C
0	1	1	0	0	1 0	CZ, FI, IR, SW, ES, HU	C

Table 9: Vanhanen's Indices, fuzzy values

Case	ID30	IOD	IKD	FF
NE	1.00	0.33	0.67	0.67
BE	1.00	0.83	0.83	0.33
SW	1.00	0.33	0.67	0.67
FR	1.00	0.17	0.33	0.83
FI	1.00	0.17	0.67	0.67
IR	1.00	0.67	0.83	0.33
UK	1.00	0.83	0.83	0.17
CZ	1.00	0.33	0.83	0.83
ES	1.00	0.83	0.83	0.67
GE	0.33	0.33	0.33	0.17
AU	0.17	0.17	0.17	0.67
PL	0.00	0.67	0.83	0.83
SP	0.00	0.17	0.67	0.83
PO	0.00	0.67	0.83	0.67
HU	0.00	0.33	0.67	0.67
IT	0.00	0.33	0.33	0.17
GR	0.00	0.33	0.17	0.17
RO	0.00	0.33	0.17	0.17

Table 10: Stephens' social structural conditions, truth table

Variables					Outcome	Countries	OCA charac.
AESIGN	AEREPR	BOLSAE	BODEPEND	BREAK			
0	0	0	0	0	1	FR	1
1	0	0	0	1	1	UK	1
1	1	1	1	0	0	AU, GE, HU, PL, PO, SP	0
1	1	0	0	0	0	IT	0
0	0	0	0	0	1	BE, FI, IR, NE, SW, GR	C
					0		
1	1	1	0	0	1	CZ, ES, RO	C
					0		