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Comparative Employment Performance: A Fuzzy-Set Analysis

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Introduction

Much of the debate about comparative employment performance in recent decades has focused on the impact of labor market institutions and policies. A number of studies have found that institutions and policies that restrict or regulate market processes – for example, wage compression, employment protection regulations, high taxes, generous unemployment benefits – have adverse effects on employment outcomes (OECD, 1994, 2006; Nickell, 1997; Scharpf, 1997, 2000; Siebert, 1997; Iversen and Wren, 1998; Blanchard and Wolfers, 2000; Blau and Kahn, 2002; IMF, 2003; Kenworthy, 2004, 2008; Kemmerling, 2005; Nickell, Nunziata, and Ochel, 2005; Bassanini and Duval, 2006). Others question this conclusion (Glyn and Salverda, 2000; Esping-Andersen and Regini, 2000; Martin, 2004; Baccaro and Rei, 2005; Baker et al., 2005; Schettkat, 2005; Stephens and Bradley, 2005; Howell et al., 2006).

Almost without exception, quantitative macrocomparative studies on this issue have used regression as the analytical technique. We instead use fuzzy-set qualitative comparative analysis (fuzzy-set QCA). Utilizing fuzzy-set QCA, we explore the determinants of poor employment performance in low-end private-sector services in 14 countries between 1979 and 1995.

Why fuzzy-set QCA?

Fuzzy-set QCA offers several advantages. First, it is better-suited than regression for exploring *causal configurations* – situations in which variables have an impact only in combination with a high or low degree of one or more other factors. In regression analysis, causal configurations are assessed via interaction terms. However, a small N limits the number of interactions terms that can be included in a regression model.

In addition, the difficulty of interpreting interaction terms with more than two variables makes modeling complex interactions problematic. Moreover, while assessing interactions in regression requires that variables demonstrate a multiplicative effect, QCA treats any case aspects that appear together systematically – in any quantity – as potentially interdependent.

Secondly, fuzzy-set QCA allows us to identify *multiple pathways* to an outcome. Correlational techniques such as regression treat the presence of an outcome (dependent variable) without a given cause (independent variable) as negative evidence for the strength of that causal explanation. Thus, a factor that has an impact in a subset – but only a subset – of cases tends to become obscured in regression results with deflated coefficients and inflated variance. In contrast, fuzzy-set QCA can reveal causal patterns that differ across subsets of cases. This method thereby allows us to examine relatively large datasets with more complex causal narratives than are generally possible with correlational techniques.

Thirdly, whereas regression is useful for examining tendential relationships – the general tendency of a particular factor to influence an outcome of interest – fuzzy-set QCA is helpful in exploring a different kind of relationship: causal sufficiency. Fuzzy-set QCA assesses sufficiency via the logic of set-theoretic relations. Set theory is inherent (though often implicit rather than explicit) in much of social science (Ragin, 2000). Sets are simply conceptual categories like "generous government benefits" or "low income inequality." Much social science concerns itself with the relative membership of cases in such categories, the theoretical validity of a set designation, or the ways one set might subsume another. The set–subset ordering of social phenomena is key to understanding causal sufficiency. A causal factor is considered sufficient when its presence always (or nearly always) "produces" a particular outcome. Assaulting one's employer, for instance, is generally a sufficient condition for being fired. But it is not the only way to get fired: one could also stop coming to work, or embezzle, or perform poorly. In set-theoretic terms, the cause (assaulting one's employer) is a subset of the outcome (being fired): it always produces the outcome, but it is not the only pathway to it. Because sufficient causes are always subsets (or near subsets) of the outcomes they "produce," discerning subset relations points to potentially sufficient causal pathways. Thus, for instance, if all countries with strict employment protection regulations also have poor employment performance, we might consider strict employment protection a sufficient condition for bad employment performance.

Data

Because it is concerned with ordering conceptual categories rather than assessing statistical correlations, fuzzy-set QCA requires the use of set-theoretic variables. "Fuzzy sets" refer to the pseudo-continuous scale on which cases are coded. Like conventional quantitative indexes, fuzzy sets range from zero to one. But because the interest is in how strongly cases conform to theoretical categories, fuzzy coding schemes are based on connection to qualitative anchors rather than mathematical equivalence. Cases coded zero are considered "fully out" of a set, and those coded one are "fully in" the set. Membership along the continuum between zero and one can be determined qualitatively, on a case-by-case basis, or via scaling using an arithmetic formula. For each of our variables, we use three qualitative anchors of set membership: 0, 0.5, and 1. The 0.5 anchor serves as the "crossover point" from "more in than out" to "more out than in" the set. We then use a mathematical rescaling to distribute the rest of the cases between these points. The process is described in greater detail below.

Outcome

The first step is to determine the relevant conceptual set or group. Should we focus on good or bad employment performance? Because much of the scholarly and political debate has centered on understanding why some European countries have struggled with job creation, we opt for *bad employment performance* as the outcome of interest. We set out to identify causal configurations associated with slow or negative growth in employment rates.

The outcome we analyze is "poor" performance in low-end private sector service jobs during the period 1979–95. (The chapter appendix provides descriptions and data sources for all of our variables.) This includes restaurants, hotels, retail and wholesale trade, and community-social-personal services. Because productivity in these jobs tends to be low and difficult to increase, they are the most likely to be adversely affected by institutional and policy "rigidities." In addition, these jobs account for a relatively large share of the cross-country variation in both levels of employment and change in employment in recent decades. Unfortunately, data are available for only 14 countries and only through 1995.

Because employment rates change only incrementally, an analysis of employment levels during or at the end of this period will be heavily influenced by employment levels at the beginning. We therefore

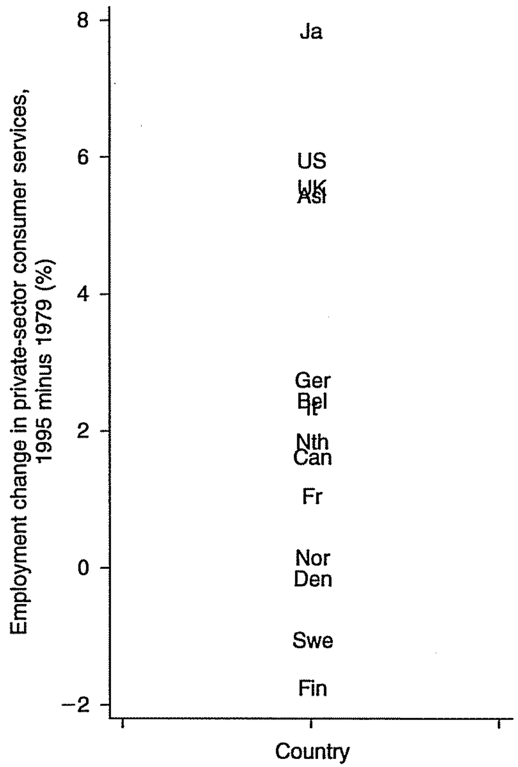

Figure 3.1 Employment change in low-end private sector services, 1979 to 1995

examine *change* in employment rates. We measure change in absolute terms: employment rate in 1995 minus employment rate in 1979.

A potential concern about measuring employment performance in terms of change over time is that there might be strong ceiling or catch-up effects. Countries that began the period with low employment rates in low-end private sector services may have found it easier to increase employment, whereas those that began with high rates might have already been near a ceiling and thus found it more difficult to increase employment. However, no such pattern is in evidence for these countries during this time period.

How do we translate absolute employment change into a qualitatively defined fuzzy set? The first step is determination of "bad" employment performance, with both substantive knowledge and raw scores as our guide. Figure 3.1 shows employment changes in all 14 countries. The

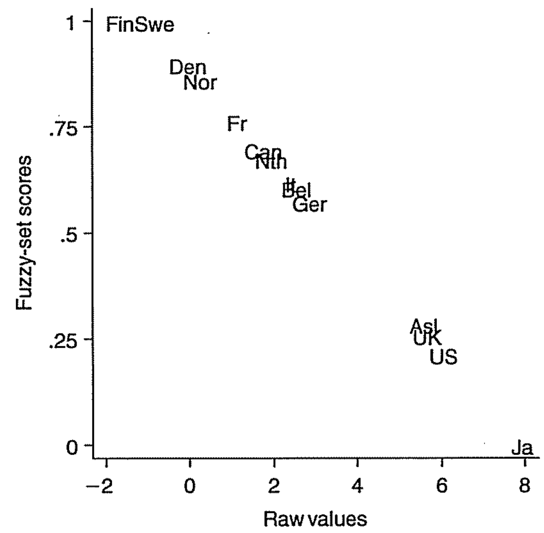

Figure 3.2 Employment change fuzzy-set scores by employment change raw values

sharpest declines were experienced in Finland and Sweden (−1.7 and −1.0, respectively). The next worst performer was Denmark, but its employment decline (−0.1) was far smaller than those of Sweden and Finland. We therefore draw the membership line around Finnish and Swedish levels, setting their fuzzy scores to "1" to signify full membership in the set of poor employment performers. In a set-theoretic analysis, once the threshold for membership in the group is established, all cases that meet the threshold are coded the same; any variation among cases within the group is treated as irrelevant.

Similarly, the sharpest break at the other end of the distribution clearly falls between Japan and the United States. Japan is therefore designated fully out of the set of bad employment performers and is coded zero.

The other anchor that is often determined qualitatively in a fuzzy-set coding is the "cross-over point": 0.5. This separates cases that are "more in the set than out" from those that are "more out than in." In this instance the obvious break point is between Germany and Australia. A simple rescaling of the values for the countries neither fully in nor fully out – using the formula (raw value – minimum value)/range – captures this break point and distributes these countries between the anchors.

Figure 3.2 shows the fuzzy-set scores for employment change plotted against raw values.

Causal conditions

There are many hypothesized determinants of cross-country variation in employment performance. We include six labor market institutions and policies that have been central in research and political debate on this issue. We describe each causal condition in a way that corresponds to how it is expected to contribute to bad employment performance.

1. *Low earnings inequality*. Because productivity tends to be low and difficult to increase in low-end service jobs, high wages may deter employment growth. The P50/P10 earnings ratio among the full-time employed is a fairly good indicator of the level of wages relative to the country median. Lower levels of this ratio, indicating greater pay compression, are expected to contribute to poorer employment change performance.
2. *High wage increases*. Rapid growth of overall wages – or, more precisely, wages adjusted for inflation and productivity growth, i.e. real unit labor costs – is expected to deter employment growth in all types of jobs.
3. *High payroll and consumption taxes*. Payroll taxes increase employers' nonwage labor costs and consumption taxes reduce consumer demand for price-elastic goods and services. High levels of these types of taxes are thereby expected to reduce employment growth. We use payroll and consumption taxes as a share of GDP as our measure.
4. *High employment protection regulations*. If employers are less able to fire workers during bad times, they may reduce hiring during expansionary periods. Stringent employment protection regulations are thus expected to reduce employment growth.
5. *High unemployment benefit generosity*. Generous unemployment compensation programs are expected to deter employment growth from the supply side, by reducing the eagerness of benefit recipients to enter or reenter employment. To tap generosity, we utilize the percentage of former earnings replaced by (gross) benefits, averaged over the period 1980–95.
6. *High public employment*. A number of nations combat unemployment in part via creation of jobs in the public sector. Government jobs may supplant private-sector employment growth, particularly in low-end services. If so, high levels of public-sector employment may contribute to slower growth of jobs in private sector services. The measure we use is public employment as a percentage of the working-age population.

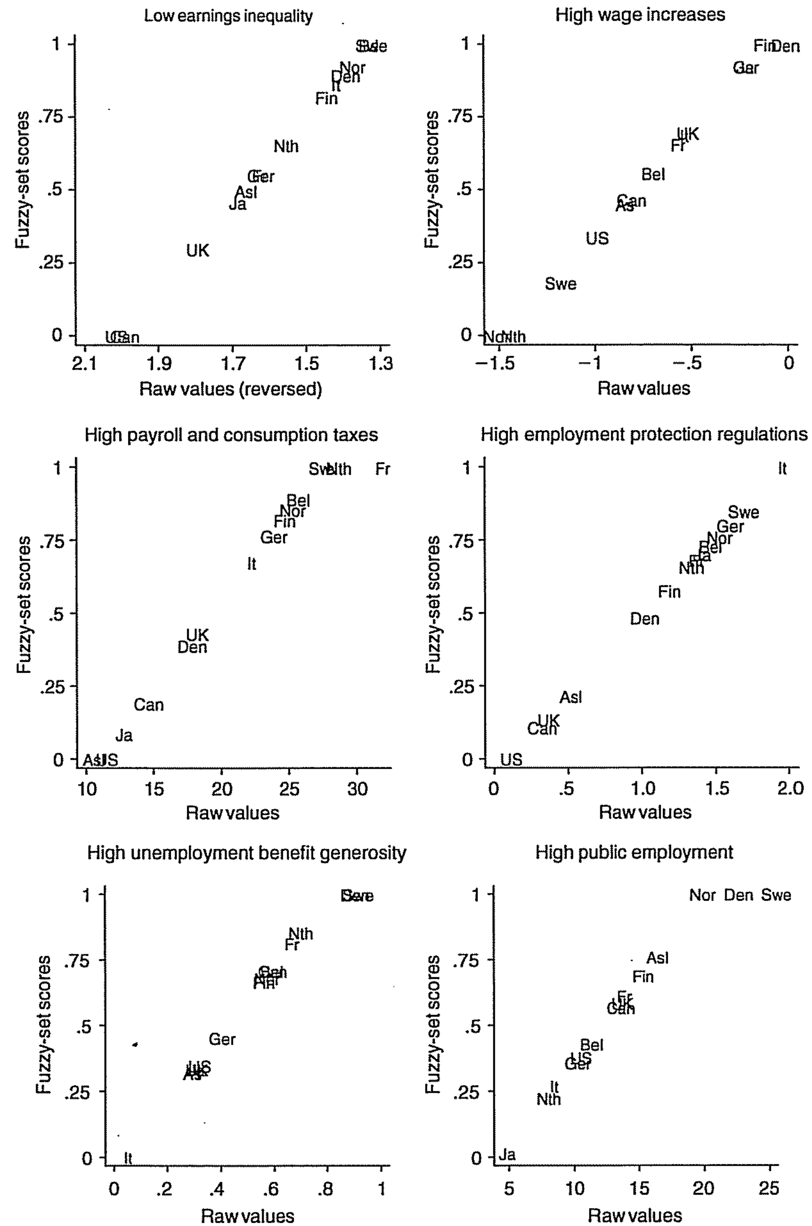

Figure 3.3 Causal condition fuzzy-set scores by raw values
Note: Descriptions of the original variables and data sources are in the text.

Figure 3.3 shows our scoring for these six causal conditions. Each chart plots the fuzzy-set scores we use for the condition by its raw values. Here our fuzzy-set coding choices were determined largely empirically. For each variable we tried a variety of different codings and used the one that fit best with the data.

Analysis

We conducted our fuzzy-set QCA analysis using the software program fs/QCA 2.0 (www.u.arizona.edu/~cragin/fsQCA/software.shtml). The program simplifies data patterns to identify potentially "sufficient" causal associations. Its ultimate products are a set of logical statements identifying factors or combinations of factors that appear as subsets of an outcome, along with mathematical measures with which to assess their utility. The researcher has discretion at several stages of analysis to refine or alter the logical rules that produce these statements and a great deal of interpretive leeway in utilizing the results. We explain each stage of that process below.

As in regression analysis, fs/QCA requires that the researcher specify a model – a set of causal conditions to be included in the analysis. To generate the broadest range of solution sets, we employed multiple models utilizing various combinations of our six causal conditions.

After model specification, the next step is examination of a "truth table." The truth table is an analytic device that displays all logically possible combinations of causal conditions and indicates cases' distribution across these combinations. Table 3.1 is a truth table produced to assess all six causal conditions: earnings inequality, wage changes, payroll and consumption taxes, employment protection regulations, unemployment benefit generosity, and public employment. The fs/QCA program originally produced a 64-row table, representing all (2^6) logically possible combinations of the causal conditions. To facilitate the presentation, we have removed those with no empirical instances.

The truth table is a simplified data map. The "number" column denotes how many cases conform to the listed combination, but the reader should not consider each row to represent only those cases.[1] Truth table rows directly correspond to the logical possibility of a particular causal combination. Graphically, imagine each row corresponding to a corner of "vector space" – a multidimensional plot representing all possible combinations of causally relevant case aspects. The 0 s and 1 s in each cell are an instruction about how to consider a case's location – its membership or *non*membership (1 minus membership) in a particular fuzzy set. Because

Table 3.1 Truth table from analysis of all six causal conditions.

Low earnings inequality	*High wage increases*	*High payroll and consumption taxes*	*High employment protection regulations*	*High unemployment benefit generosity*	*High public employment*	*Number*	*Outcome: poor employment change performance*	*Consist*
1	1	1	1	1	1	2		1
1	0	1	1	1	1	2		1
1	0	1	1	1	0	1		0.96
1	1	1	1	1	0	1		0.96
1	1	0	0	0	1	2		0.94
1	1	1	1	1	0	1		0.93
0	0	0	0	0	1	1		0.86
0	0	0	0	0	1	1		0.68
0	1	0	0	0	0	1		0.65
0	0	0	1	0	0	1		0.61
								0.58

the lines and cells are theoretical configurations, few cases conform perfectly to the conditions they denote, and any given case has partial membership in multiple rows. For example, a country with a 0.4 score on the employment protection fuzzy set also has a 0.6 membership in its negation, making it a partial member of both the last and next-to-last rows of table 1. The table thus maps *case aspects* rather than the cases themselves.

A primary purpose of the truth table is to guide the researcher in determining standards for the consistency of causal relationships. This is done with consistency scores. These are shown in the "Consist" column in Table 3.1. We are concerned in this analysis with causal sufficiency – the ability of certain configurations of policy and institutional factors to consistently produce bad employment performance. In set theoretic terms, we are interested in the extent to which particular causal factors or configurations are *subsets* of the outcome. As in regression, increases in the strength of set membership in a cause are expected to result in more complete membership in the outcome as well. If high payroll and consumption taxes are sufficient to produce bad employment performance, we should observe few or no cases with high payroll and consumption taxes (a fuzzy score of 1) and good or moderate employment performance (a fuzzy score of 0.5 or less). The consistency ("Consist") score for a configuration is a measure of this subset relationship. It is thus a measure of the extent to which membership strength in the outcome set is consistently equal to or greater than membership in the causal configuration. For each configuration (row in the truth table), minimum membership scores (causal combination versus outcome) are added for all cases. This number is divided by the sum of all minimum membership scores in the causal combination. Formally, the calculation is: Consistency $(X_i < Y_i) = \sum(\min(X_i,Y_i))/\sum(X_i)$. When membership in outcome Y is less than membership in causal configuration X, the numerator will be smaller than the denominator and the consistency score will decrease. Consistency scores range from 0 to 1, with 0 indicating no subset relationship and a score of 1 denoting a perfect subset relationship.

These consistency scores help the researcher decide which configurations should be considered reasonable subsets of the outcome. Once this decision is made for a particular configuration, the researcher enters a 1 or 0 into the cell in the blank "outcome: poor employment change performance" column in the truth table, which tells the program whether or not to treat that particular causal combination as an instance of bad employment performance. Minimum levels of set-theoretic consistency would be achieved by setting a "Consist" threshold of at least .75 (Ragin, 2004), preferably higher. Between this level and full set-theoretic consistency (1), the analyst must choose a minimum threshold. For our analysis, we utilized various thresholds between .85 and .95 for each model.

The next step of the analysis concerns the treatment of counterfactual cases (see Ragin and Sonnett, 2005). With six causal conditions, there are 64 (2^6) logically possible combinations of conditions. But only 11 of these combinations are actually represented empirically in our data. These are the 11 listed in Table 3.1. All other logically possible configurations are "remainders" – counterfactual configurations that lack empirical instances. Because remainders constitute neither positive nor negative evidence, the fs/QCA program allows the researcher to treat them as either. In the first case, remainders are treated as potentially positive evidence – cases that *could have been* – and are utilized by the program as logically simplifying assumptions. (In fs/QCA, this is referred to as the "don't care" option.) But this option assumes that all non-instantiated configurations are plausible. Where that is not the case, it is best to treat them as negative instances of the outcome. (This is referred to in the program as the "false" option.) Doing so produces less parsimonious results. In our analyses, we examined both options with all models (Ragin and Rihoux, 2004; Ragin and Sonnett, 2005).

Once these choices have been made, the program then utilizes set–subset logic to simplify the patterns of association displayed in the truth table. Recall the first row of Table 3.1, where a configuration of all six causal conditions was a perfect subset of the set of bad employment performers. How do we discern which of these six conditions really matter, and which are superfluous? Note that in the following six rows, there are three cases of the outcome that do not include the high wage increases or high public employment causal conditions. We could reasonably conclude that both of these case aspects are superfluous "ingredients" in the causal pathways these rows express. Similarly, there are two cases of the outcome that do not include the high unemployment benefit generosity causal condition, and one that does not include high payroll and consumption taxes. Depending on the choices described above – about consistency thresholds and simplifying assumptions – the fs/QCA program will offer several simplified formulations of these causal pathways by eliminating causal factors that appear superfluous and identifying combinations that consistently appear sufficient to produce the outcome.

Table 3.2 shows two such simplified "solution sets." The first modeled all six causal conditions using a 90 percent consistency threshold and the

Table 3.2 Examples of solution sets.

	Coverage		
	Raw	*Unique*	*Consistency*
Solutions (no simplifying assumptions)			
Low earnings inequality * absence of high wage increases * High payroll and consumption taxes * High employment protection regulations * High unemployment benefit generosity	0.37	0.26	0.90
Low earnings inequality * High wage increases * High payroll and consumption taxes * High employment protection regulations * absence of high public employment	0.31	0.15	0.95
Low earnings inequality * High wage increases * absence of high payroll and consumption taxes * absence of high employment protection regulations * High unemployment benefit generosity * High public employment	0.18	0.11	0.94
Solution coverage: 0.67			
Solution consistency: 0.96			
Solutions (simplifying assumptions)			
Low earnings inequality	0.84	0.84	0.83
Solution coverage: 0.84			
Solution consistency: 0.83			

Note: * = logical "and." Coverage and consistency are explained in the text.

"false" option favoring empirical complexity. The second solution set differs only in that it was derived using the "don't care" option, which favors parsimony. These two solutions, the parsimonious and the complex, can be viewed as the two endpoints of a continuum. In between these two endpoints are various intermediate solutions, which are also valid. By definition, an intermediate solution must be a superset of the complex solution (no simplifying assumptions used) and a subset of the parsimonious solution (all possible simplifying assumptions used, regardless of their plausibility).

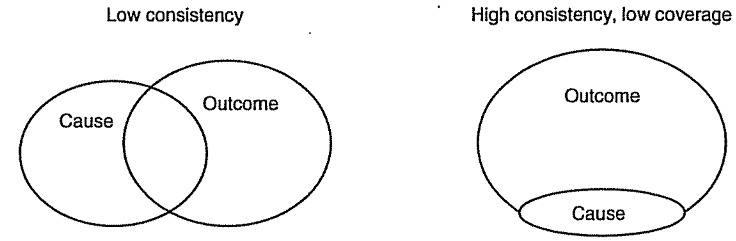

Figure 3.4 Consistency and coverage

The primary way to assess the value of these causal explanations is to examine their *consistency* scores. Like consistency scores in a truth table, "consistency" in the results produced by fs/QCA refers to a causal combination's consistency as a subset of the outcome. In the simplest terms, low consistency means that there is no subset relation between a combination of case aspects and the outcome. This relationship is depicted in the first illustration in Figure 3.4. As with the assessment of the consistency of truth table rows, scores closest to "1" represent the strongest connection, while those below .85 should be treated with caution.

This assessment should also be guided by case knowledge. The fourth solution in Table 3.2 – the presence of income inequality – is on the threshold of acceptable consistency, with a .83 score. If we had reason to believe that an outlying case – a country with very low inequality but very good employment performance – affected this score without challenging the causal story we want to tell, we could consider this solution set as a strong contender. Note that this is the same logical process we would follow in any comparative case study research. The mathematical markers that QCA provides merely guide our logical comparisons.

The second tool for assessing results is the *coverage* score. Coverage refers to the proportion of the sum of the membership scores in an outcome that a particular configuration explains. Very low coverage scores indicate that even if a causal configuration is consistent with the outcome, it is substantively trivial. This is depicted in the second illustration in Figure 3.4. Coverage and consistency often are inversely related to one another, because very particular or exact explanations (which may be highly consistent) tend to be less generalizable. In Table 3.2, "raw coverage" scores refer to the proportion of the outcome scores covered by an explanation by itself, while "unique coverage" refers to the proportion of outcome scores covered, net of that solution's coverage overlap with the other solutions identified.

Utilizing coverage scores also entails the use of substantive and theoretical knowledge. Because QCA allows us to find "clusters of commonalities across subsets of cases" (Ragin, 2000, p. 75), it also allows us to consider the possibility that different causal stories work for distinct subsets of cases. These stories can be pieced together into a larger narrative about the differential factors driving a phenomenon across countries or regions. How to balance the complexity of that narrative with the mandate of parsimony is a matter of judgment. In the next section we compare coverage scores with scatterplots to match causal pathways to the countries best explained by them.

The next step in processing the fs/QCA program's results involves the elimination of theoretically implausible terms using counterfactual analysis. Essentially, this process involves using only select subsets of simplifying assumptions to produce solutions that are *intermediate* between the parsimonious solution (all simplifying assumptions permitted) and the complex solution (no simplifying assumptions permitted). The program analyzes casual conditions in both their present and absent states when it considers all logically possible combinations of causal conditions. After all, the absence of a particular case aspect might be just as important in determining employment trends as its presence. In our analysis, however, all causal conditions are expected to contribute to poor employment performance only when they are present, and we have coded them so that high membership scores should be linked to poor performance. For this reason, we eliminated absent conditions from our complex solutions in order to generate our intermediate solutions, while respecting the rule that intermediate solutions must be subsets of the parsimonious solutions. For instance, the first solution listed in Table 3.2 is: high earnings inequality * absence of high wage increases * high payroll and consumption taxes * high employment protection regulations * high unemployment benefits generosity. Following the procedure just described (and Ragin and Sonnett, 2005), the intermediate solution is: high earnings inequality * high payroll and consumption taxes * high employment protection regulations * high unemployment benefits generosity.

Findings

How did we utilize the tools and procedures described in the previous section to reach and interpret results? First, we gathered the multiple solutions generated by (1) multiple models (that is, various combinations of case aspects), (2) multiple consistency thresholds, and (3) different treatment of counterfactual cases (remainders). We then eliminated solutions with consistency scores below 0.85 and coverage scores below 0.30. Next, we crafted intermediate solutions suing the procedures described above. This process yielded five causal pathways.

Each of these five pathways was then coded as its own fuzzy set. Each country's score in each pathway is determined by its weakest membership in the conditions that constitute the configuration. Why? To conclude that a particular causal factor generated an impact requires that factor to be present *at least* at the level ascribed to the entire combination. So, if there are three factors in the configuration and a country's scores on them are .50, .85, and .25, the country is coded .25 on the configuration fuzzy set.

Each of these configuration fuzzy sets was then run through the fs/QCA program to assess its specific consistency and coverage. The rest of our analysis is based on evidence from scatterplots and judgments about parsimony.

The five solutions and their consistency and coverage scores are shown in Table 3.3. The first four solutions point to one fairly simple explanation: a combination of low earnings inequality and high payroll and consumption taxes was a sufficient condition for generating poor low-end private sector service employment performance. This solution accounts for 75 percent of the sum of the membership scores in poor employment performance. It has slightly lower set-theoretic consistency than the first three, but much higher coverage. It also is the logical superset of the first three solutions, subsuming their more complex causal narratives into a more parsimonious explanation.

Figure 3.5 shows four scatterplots, each with fuzzy employment change scores on the Y axis and one of the first four solutions from Table 3.3 on the X axis. The higher consistency scores for the first two configurations – #1 and #2 from Table 3.3 – are evidenced by the fact that more countries are located above main diagonal line in these two charts than in the lower two charts. "Perfect" causal sufficiency would be in evidence if every case were located above the main diagonal. That is not true for any of the four configurations, but only two countries lie below the line for configurations 1 and 2, versus three below the line for configuration 3 and four below the line for configuration 4.

What cases do these explanations cover? Using rough cutoffs indicated by the dotted 45-degree lines, we determined three broad levels

Table 3.3 Five causal pathways.

	Consistency	*Coverage*
1. Low earnings inequality * High payroll and consumption taxes * High employment protection regulations * High unemployment benefit generosity	0.96	0.58
2. Low earnings inequality * High wage increases * High payroll and consumption taxes * High employment protection regulations	0.96	0.42
3. Low earnings inequality * High payroll and consumption taxes * High employment protection regulations	0.95	0.67
4. Low earnings inequality * High payroll and consumption taxes	0.93	0.75
5. High unemployment benefit generosity	0.87	0.85

Note: * = logical "and." Coverage and consistency are explained in the text.

of coverage: "clearly conforming" cases, "potentially conforming" cases, and "clearly not conforming" cases. Low earnings inequality combined with high payroll and consumption taxes, shown in the lower-right chart, explains the most cases. Japan, the United Kingdom, Italy, Germany, the Netherlands, Norway, and Sweden all are on or very close to the central line – the point of perfect correspondence between cause and outcome. The United States, France, Finland, Belgium, and Australia are close enough to the line that these cases are "potentially" covered by this story. Only Denmark and Canada clearly do not conform.

The fifth causal configuration in Table 3.3 consists of a single causal factor: high unemployment benefit generosity. This solution has very high coverage, at 85 percent, but a questionable consistency level of .87. Recall that consistency scores are calculated for a solution's set-theoretic consistency across *all* cases. Even a solution with relatively low consistency might explain *some* cases very well. The scatterplot in Figure 3.6 indicates that high unemployment benefit generosity covers most of the cases in our data set reasonably well. Its consistency is relatively low because so many cases have slightly higher levels of membership in the high unemployment benefit generosity fuzzy set than they do in the set of poor employment performers (they lie to the right of the central line

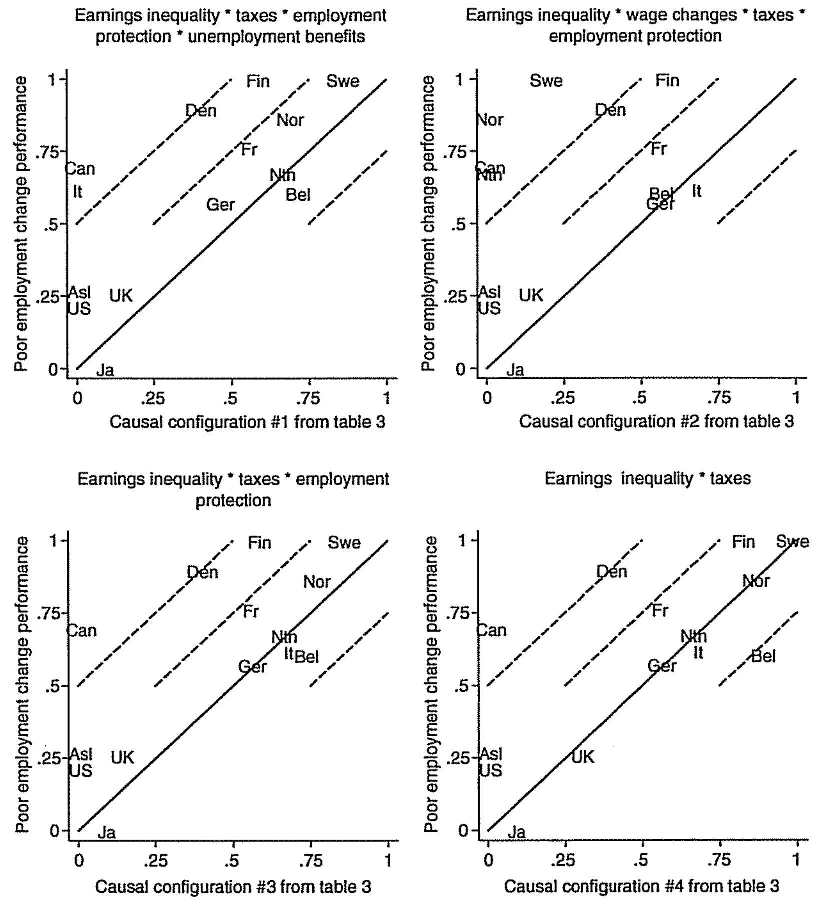

Figure 3.5 Poor employment change performance by causal configurations 1–4 from Table 3.3
Note: Lines are 45-degree lines.

in the scatterplot). This discrepancy is potentially the result of coding error, but in any event it is fairly small. All cases except Japan, Finland, and Italy are at least potentially covered. Only Italy is clearly not conforming. Denmark and Canada, which are not covered by any of the solutions shown in Figure 3.5, are among the cases that clearly conform to the high unemployment benefit story.

Our analysis thus highlights two causal pathways in accounting for poor employment performance among these 14 countries from 1979 to

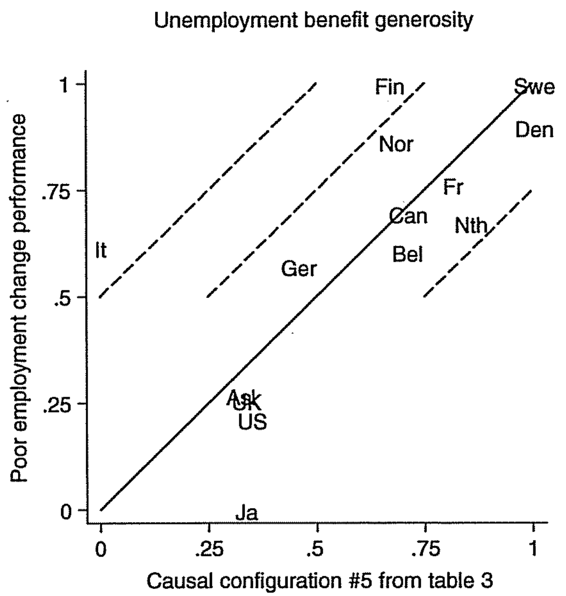

Figure 3.6 Poor employment change performance by causal configuration 5 from Table 3.3

1995. The first is low earnings inequality coupled with high payroll and consumption taxes. This configuration appears likely to have been key to poor employment growth in low-end private sector services in Sweden, Norway, Finland, France, Italy, Germany, and the Netherlands. The second is high unemployment benefit generosity. This appears to have been the main contributing factor for Denmark, Canada, and Belgium, but perhaps also for France, Germany, the Netherlands, Sweden, and Norway.

Conclusion

In the introductory section of this chapter we highlighted three advantages of using fuzzy-set QCA to analyze comparative employment performance. The first is the technique's utility in exploring causal configurations. In the end, our results centered on one simple causal configuration and another singular causal factor: (1) low earnings inequality combined with high payroll and consumption taxes; (2) high unemployment benefit generosity. The inequality–taxes configuration could have been captured reasonably well with the type of multiplicative

interaction term usually used in regression. Indeed, such a multiplicative term correlates at .98 with the fuzzy-set causal configuration scores shown on the horizontal axis in the lower-right chart in Figure 3.5 above. Yet it is not always the case that the causal story yielded by a fuzzy-set QCA analysis will end up so simple. It is much less likely that an analyst using regression would have identified one of the more complex causal configurations from Table 3.3. Even our modest results, attained with relatively limited data, point to a combination that deserves further attention in regression-oriented work. Indeed, one potential use of fuzzy-set QCA is to identify combinations of case aspects that deserve further scrutiny in quantitative studies.

The second advantage of fuzzy-set QCA is that it can identify multiple paths to an outcome. While regression's focus on average net effects tends to obscure causal relationships that do not operate across all or most of a sample, QCA locates causal pathways that may be distinct to smaller clusters of cases. In our analysis, two pathways emerged as most important. Each helps to account for a number of countries, but not the entire group. Canada and Denmark clearly do not fit the low earnings inequality combined with high payroll and consumption taxes explanation. Similarly, Finland and Italy are not well accounted for by the high unemployment benefit generosity explanation. In other analyses a larger number of pathways may be needed to explain the variety of case outcomes.

The third advantage of QCA that we noted at the outset is its focus on sufficient causal conditions. For researchers interested solely in "tendential" relationships, this is a drawback rather than an asset. But an interest in sufficiency is in fact implicit in a nontrivial amount of empirical work in the social sciences.

A fourth benefit of fuzzy-set QCA, unexplored here but fruitful for further analysis, is that unlike regression it does not assume causal symmetry at the two "ends" of the dependent variable. That is, the causes of low values of the outcome are not seen as the inverse of the causes of high values. Each is assumed to require a separate theoretical argument and empirical analysis. Though we have not conducted an analysis of the determinants of good employment performance, such an investigation might yield results that are not simply the inverse of the causes of poor employment performance identified here.

Of course, like any analytical technique, fuzzy-set QCA has limitations. Some it shares with regression. Perhaps the most important is that QCA too suffers from a small-N problem: with a relatively small number of cases (14 here), only a limited number of causal conditions can be included in an analysis. This leaves analyses open to concern about "omitted variable bias" (see the Hicks and Kenworthy chapter on family policies in this volume). As with regression, there also is a danger that researchers will mechanically utilize results produced by the fs/QCA program without drawing on theoretical and case knowledge. Though grounded in the case study tradition, this method is no less susceptible to such an approach. QCA offers the greatest insight when paired with careful consideration of theory and cases. QCA also has limitations relative to regression and other types of correlational analysis: it is not designed to examine net effects or tendential relationships. If a researcher's interest is in identifying the tendential impact of a particular hypothesized cause on an outcome, regression is a more appropriate technique.

Perhaps most important, we want to emphasize that the choice of method in macrocomparative research is not an either/or decision. Each technique has strengths and drawbacks. Which is most appropriate will depend on the substantive question and the way in which the researcher wants to approach it. Sometimes this will call for regression, sometimes for QCA, sometimes for other strategies or techniques, and sometimes for the use of multiple methods.

Appendix

Poor employment change performance. Raw values: absolute change (1995 value minus 1979 value) in employment in private sector consumer-oriented services – wholesale and retail trade, restaurants and hotels, and community/social/personal services (ISIC 6 and 9; ISIC revision3 50–2, 55, 90–3) – as a percentage of the population age 15 to 64. Unfortunately, private sector employment can be distinguished from public sector employment in these industries only through 1995, so the time series for this variable ends in that year. *Source*: Torben Iversen, Department of Government, Harvard University, calculated from OECD data. For discussion see Iversen and Wren (1998).

High earnings inequality. Raw values: P50/P10 ratio for earnings among full-time employed individuals. Averaged over 1979–95. *Source*: OECD unpublished data set.

High wage increases. Raw values: year-to-year percentage change in employee compensation, adjusted for changes in productivity and for inflation (real unit labor costs). Averaged over 1979–95. *Source*: Authors' calculations from data in OECD (2004a).

High payroll and consumption taxes. Raw values: government revenues from social security contributions, payroll taxes, and taxes on goods

Table 3A.1 Fuzzy-set scores.

	Poor employment change performance	Low earnings inequality	High wage increases	High payroll and consumption taxes	High employment protection regulations	High unemployment benefit generosity	High public employment
Australia	.27	.49	.45	.00	.22	.32	.76
Belgium	.61	1.00	.56	.88	.73	.71	.43
Canada	.70	.00	.47	.19	.11	.71	.57
Denmark	.90	.90	1.00	.39	.49	1.00	1.00
Finland	1.00	.82	1.00	.82	.58	.67	.69
France	.76	.55	.66	1.00	.68	.81	.60
Germany	.57	.55	.92	.77	.80	.45	.36
Italy	.62	.87	.69	.68	1.00	.00	.25
Japan	.00	.46	.92	.09	.70	.33	.00
Netherlands	.67	.66	.00	1.00	.66	.85	.23
Norway	.87	.93	.00	.86	.76	.68	1.00
Sweden	1.00	1.00	.18	1.00	.85	1.00	1.00
United Kingdom	.26	.30	.69	.42	.14	.33	.58
United States	.21	.00	.34	.00	.00	.35	.38

Note: Variable descriptions and data sources are listed below.

and services (consumption) as a share of GDP. Averaged over 1979–95. *Source*: OECD (2004b, pp. 74 and 77, tables 14 and 20).

High employment protection regulations. Raw values: index capturing the strictness of employment protection laws. Range is 0 to 2, with higher scores indicating greater strictness. Averaged over 1979–95. *Source*: Baker et al. (2004) update of data in Nickell and Nunziata (2002).

High unemployment benefit generosity. Raw values: proportion of a worker's former earnings (pretax) that is replaced by unemployment compensation and related benefits – for a worker with earnings at two-thirds of the national median (for example, the 33rd percentile) in the first year after losing the job. Averaged over 1979–95. *Source*: OECD unpublished data set; see Martin (1996) for discussion.

High public employment. Raw values: public employment as a share of the population age 15 to 64. Averaged over 1979–95. *Source*: Authors' calculations from data in OECD (2004a).

Note

1. The number column is useful in larger-N studies, where researchers ought to consider eliminating rows from consideration because too few cases conform strongly to their conditions. With an N of only 14, narrowing the data set would be inappropriate.

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