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Individual and Institutional Employment Patterns

Two Approaches to Understanding Control of Voluntary and Involuntary Job Shifts among Germans and Foreigners from 1991 to 1996

By Lisa M. Amoroso and Charles C. Ragin*

Summary

As social scientists we are generally interested in modeling complex social processes, yet many conventional research practices obscure complexity and thus pose obstacles to its detection and analysis. In this paper we provide an empirical example, using data from the German Socio-Economic Panel (GSOEP), to illustrate the effect of the implicit simplifying assumptions that researchers make regarding limited diversity. Both logistic regression and qualitative comparative analysis (QCA) are used to analyze the same data. Our example considers the factors that shape whether a job change is voluntary or involuntary among former East and West German citizens and foreigners for the period from 1991 to 1996.

1. Introduction

Social scientists are generally interested in modeling complex social processes, yet many conventional research practices obscure complexity and thus pose obstacles to its detection and analysis. In this paper, we examine the issues surrounding limited diversity — the fact that rampant nonorthogonality in naturally occurring data is usually ignored or bypassed. As a consequence, simplifying assumptions are often implicitly used to filter information and create an interpretation of a given phenomenon, but are not explicitly acknowledged. We provide an empirical example to illustrate the impact of the implicit simplifying assumptions that researchers make regarding limited diversity. Both logistic regression and qualitative comparative analysis (QCA) are used to analyze the same data. We consider factors that shape whether a job change is voluntary or involuntary over a five-year period in Germany.

Simplifying assumptions are necessarily used in all forms of explanation. Any representation of social life (interactions, organizations, structures) filters out certain aspects and retains others. The nature of the assumptions that inform this filtering process vary by the research strategy employed. To illustrate the effect of simplifying assumption selection on research outcomes, we work through the same data in three ways that differ in the types of simplifying assumptions employed.

The first analyses are logistic regressions using a limited set of independent variables. The second set of results is arrived at using only the evidence available, without making many simplifying assumptions. The third set makes simplifying assumptions about nonexisting cases. The results of these analyses are of substantive interest; however, a key goal of this paper is to contrast logistic regression with qualitative comparative analysis (QCA). Prior to presenting the results, we provide a brief overview of QCA.

2. Qualitative Comparative Analysis Overview

Qualitative comparative analysis uses Boolean algebra to formally construct comparisons among configurations of the independent variables (including those configurations that are logically possible but not present in the sample). Variables are not assessed in terms of their independent ability to explain variation in the dependent variable or their incremental effect on the outcome. They are considered parts of a whole, the basic elements that comprise the different configurations (Ragin 1987).

A key theoretical jump in QCA is that the researcher's focus shifts from cases to configurations. Rather than considering each GSOEP respondent as a case, the case becomes a configuration of conditions. If we have three independent dichotomous variables (A, B, and C), then we have 2^3 or eight possible configurations or combinations. An uppercase letter indicates the presence of an outcome and a lowercase letter indicates its absence. Thus, the

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three variables, ABC, can be represented as eight configurations:

ABC Abc aBc abC ABc AbC aBC abc.

Rather than starting with the assumption that A, B, and C have independent or additive effects on the outcome variable, QCA begins with the assumption that causation is multiple and conjunctural. QCA reduces complexity by comparing the outcomes for each of those configurations and determining which conditions are necessary, sufficient, both, or neither. Below is a small truth table specifying hypothetical data for our simple example of ABC. A truth table is a data matrix containing as many rows as there are logically possible combinations of the independent variables. Corresponding to the upper and lowercase notation, a "1" indicates the presence of a condition and a "0" indicates its absence.

	A	B	C	Y
1	1	1	1	1
2	1	0	1	0
3	0	1	0	0
4	0	0	1	0
5	1	1	0	1
6	1	0	0	0
7	0	1	1	1
8	0	0	0	0

We examine Y under each of the eight configurations to determine which combinations are necessary or sufficient to cause the outcome to occur. In this example, Y occurs with three configurations, ABC, Abc, and aBC (rows 1, 5, and 7, respectively). We conclude that when A and B are present or when B and C are present, the outcome Y occurs, or in equation form, $Y = AB + BC$.¹ Thus, the combination of A and B together are sufficient, but not necessary conditions for the outcome; the combination of B and C are also sufficient, but not necessary. We also know that B is a necessary condition, but not a sufficient one. Thus, we have minimized the configurations that result in positive outcomes.

Using Boolean algebra, QCA logically minimizes outcomes for truth tables containing more conditions and more complexity than our example. In our hypothetical example, every configuration occurs, thus we do not make any assumptions about nonexistent configurations. With a greater number of possible configurations, QCA compels the researcher to make explicit any assumptions about nonexistent configurations used to generate results. Our example also assumes that each configuration results in Y being present or absent. Real data are rarely tidy and configurations often have contradictory outcomes. The empirical example below has 47 combinations which occurred naturally, and of these only two resulted in noncontradictory results. The method used to resolve these contradictions is discussed with the empirical example.

3. Empirical Example

We consider the factors that shape whether a job change is voluntary or involuntary among former East Germans, former West Germans and foreigners for the period from 1991 to 1996. The data come from the German Socio-Economic Panel (GSOEP), an ongoing longitudinal study of households and individuals in Germany. Our interest is in the types of factors that affect individual autonomy in job mobility.

Specification of Variables

Every year GSOEP respondents are asked a series of questions about job shifts. Using responses to these questions, we construct three job change categories: voluntary, involuntary, and mutual or other. Our sample is limited to those respondents between the ages of 22 and 50, who experience some job change during this period. Therefore, most respondents in the sample have completed their education but are not likely to be forced to retire.² The data description below include all three job change indicators, however, the analyses presented include only those job shifts that are either clearly voluntary or clearly involuntary.

Data Description

About 87 percent of the GSOEP sample do not change jobs at all between 1991 and 1996; these respondents are not included in the analyses. Additionally, respondents must have been employed either full-time or part-time in the prior year in order to be included in the sample.³ Limiting the analyses to only those individuals who shift jobs allows us to focus on the factors that shape a person's control over job mobility rather than those factors which affect whether a person does or does not experience a job change. Within our subsample, there are 3,470 job changes

¹ Multiplication represents an "and" between two elements. Addition represents an "or" between two elements. So, $Y = AB + BC$ indicates that the presence of A and the presence of B or the presence of B and the presence of C results in the presence of the outcome, Y.

² Voluntary job changes include: quitting or transferring of one's own accord, accepting a pre-retirement program, and moving into retirement. Involuntary job changes include: being fired or transferred by employer, having one's company closed, and having a time-limited work contract expire. Given the undesirable nature of time-limited work contracts, the end of such an arrangement is considered involuntary on the part of the respondent. Mutual and other job changes include: completion of training, ending self-employment, and other reasons. The names of the GSOEP variables used to construct these indicators may be obtained from the authors.

³ We exclude a small percentage of the respondents (roughly 1 percent per year, about 50 respondents) who indicated that they were employed but were on leave or on holiday. In addition, 30 respondents were excluded due to missing education data. These 30 respondents are primarily male (23) and German (25).

Table 1

**Job Change Type by Nationality, Marital Status, and Gender
for Adults Who Experienced Job Change between 1991 and 1996**
(in percents, unweighted)

Job Change Type	Nationality			Marital Status		Gender
	Former West German	Former East German	Foreigners	Married	Not Married	Female
<i>Single (N = 1,883)</i>						
Voluntary	53.2	26.2	41.0	36.9	44.1	35.8
Involuntary	35.6	67.1	49.5	54.9	45.5	56.5
Mutual/Other	11.2	6.7	9.5	8.2	10.4	7.7
	100.0	100.0	100.0	100.0	100.0	100.0
<i>Multiple (N = 840)</i>						
Voluntary	67.9	19.3	45.4	35.6	50.4	40.4
Involuntary	28.2	80.3	54.6	62.5	48.5	58.6
Mutual/Other	3.8	0.5	0.0	1.9	1.1	1.0
	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' calculations using GSOEP 1997.

from 1992 to 1996 made by 2,596 individuals, allowing for multiple changes per person. Over 70 percent of the workers experienced only one job change during the period. Two-thirds of the remaining adults experienced only two job shifts. Roughly the same percentage of respondents experienced a single voluntary shift and a single involuntary shift (82.3 percent and 80.8 percent respectively). However, Table 1 indicates that former East Germans experience a considerably larger proportion of single involuntary job changes and an even larger portion of multiple involuntary job changes, than do former West Germans or foreigners. Former West Germans have significantly more single or multiple voluntary job shifts than involuntary job shifts, compared to former East Germans and foreigners. Table 1 also provides the breakdown of job change type by marital status and gender.

In order to construct logistic regression and QCA models that allow for easier comparison, we minimized the number of independent variables and used results of preliminary analyses to guide our variable selection. The preliminary logistic regression analyses used the following independent variables: age (> 40); education level (no education, apprenticeship, school-based vocational training, and university/technical education); citizenship (former West Germans, former East Germans, and foreigners); gender; marital status; employment status in the prior year; a class indicator (white-collar, blue-collar, civil servant, and other); an indicator of skilled work; three industry categories (service sector, manufacturing, and other); and period effects. Based on these results, we selected age, education level, citizenship, and gender to include in the analysis below.

Logistic Regression Results

The default simplifying assumptions of logistic regression include: linearity, additivity, and complete structural diversity, meaning that cases exist in every cell. While the assumption of linearity can be tested, it is more common for researchers to assume linearity or transform a variable by an accepted function (e.g., the natural log of income). The assumption of additivity can also be extended by using saturated interaction models. The problem here is that saturated interaction models can quickly run into linear dependency issues. Within logistic regression, there is no attention paid to empty spaces or nonexistent configurations. In other words, the absence of a single case in the dataset with a certain combination of characteristics does not preclude talking about the risk of being fired for a person with these traits.

We estimate three logistic regression models of voluntary job shifts (see Table 2).⁴ From the results we see that there is a considerable departure from proportionality which these factors do not explain — about 90 percent is unexplained. The additive model results for respondents experiencing one or more job changes indicate that all of

⁴ Additive, two-way interaction, and a multi-way interaction models are presented; however, three-way and fully saturated interaction models were also run. The results of the fully saturated interaction models were almost identical to the three-way interaction results. The additional interaction terms were all insignificant. The multi-way interaction models presented include only the statistically significant interaction terms.

Table 2

**Interaction Logistic Regression Results Predicting the Natural
Log Odds of Experiencing a Voluntary Job Shift^{a)}**

	Additive Model	Two-Way Interaction	Multi-Way Interaction
Age > 40 years old	-4.4385** ^{b)}	-0.3371	-0.2302 [†]
Education (reference category = no education)			
Apprenticeship	0.3756**	0.6742**	0.5267**
School-Based Vocational	0.5487**	0.9821**	0.5902**
University/Engineering	0.7647**	0.9993**	0.7503**
Citizenship (reference category = Former West German)			
Foreigner	-0.4934**	0.0417	-0.4336**
Former East German	-1.3951**	0.2754	0.1103
Female	-0.2458**	0.4029	0.0295
Age > 40* Apprenticeship	—	0.3286	—
Age > 40* Vocational School-Based	—	0.0021	—
Age > 40* University	—	0.5088	—
Age > 40* Foreigner	—	-0.2934	—
Age > 40* Former East German	—	-0.6359**	-0.5952**
Apprenticeship* Foreigner	—	0.0031	—
Vocational School-Based* Foreigner	—	-0.6774*	0.2450
University* Foreigner	—	-0.6746	—
Apprenticeship* Former East German	—	-1.1836**	-1.1017**
Vocational School-Based* Former East German	—	-1.3400**	-1.0920**
University* Former East German	—	-0.9227*	-1.0348*
Apprenticeship* Female	—	-0.2951	—
Vocational School-Based* Female	—	-0.0203	—
University* Female	—	-0.5059	—
Foreigner* Female	—	-0.4192	—
Former East German* Female	—	-0.8866**	-0.8010**
Age > 40* University* Former East German	—	—	0.7939*
Constant	0.3050*	-0.2572	0.0164
Pseudo R ² (Model X ² / Initial - 2LL) ^{c)}	8.46	9.99	9.63
^{a)} Sample of respondents who have shifted jobs at least once between 1992 and 1996 and were employed full- or part-time in prior year. N = 3,147 for all models. Sample includes respondents that experienced either a voluntary or an involuntary job change. Those 323 respondents experiencing a mutual or other type of change are excluded. — ^{b)} Unstandardized logistic regression coefficients are provided. — ^{c)} All models are significant at the 0.01 level. — [†] $\alpha < 0.10$; * $\alpha < 0.05$; ** $\alpha < 0.01$; Source: Authors' calculations using GSOEP.			

the additive terms have a statistically significant effect on the likelihood of experiencing a voluntary job shift. German citizenship affects individual job autonomy significantly. Foreigners experiencing a job shift are 75 times more likely to be forced out than a former West German. Former East Germans experiencing a job shift are about four times more likely to be forced out of a job than their West German counterparts.⁵ The additive model also indicates that being over 40 years of age or female affects individual labor market autonomy in a negative way. The additive model suggests that job changers over the age of 40 are about

1.5 times more likely to be forced out than to voluntarily leave a job. Women are 1.25 times more likely to be forced out of a job. Any amount of education significantly increases one's odds of a voluntary separation rather than an involuntary one. The increase in one's odds is around

⁵ To determine the multiplicative change in one's odds of being forced out of a job, we take the inverse of the exponential of B. The percentage change in the odds can be calculated by looking at the percentage increase in the multiplicative change in the odds: $((e^B - 1) * 100)$ (Allison 1984).

1.5 for those with an apprenticeship educational and 1.7 for those with school-based vocational training. The odds for those with a university education increase by a factor of 2.15 compared to those with no formal education.

The extended models indicate that these effects are more complex. Age is no longer an important trait independently. Being over 40 and East German significantly decreases one's odds ($B = -0.5952$), while odds are increased for those older East Germans who are university-educated ($B = 0.7939$). In fact, every significant interaction term in Model 3 includes the East German flag. With the exception of the positive effect on the odds of a voluntary departure of older university-educated East Germans, all the terms decrease an individual's likelihood of leaving his or her job voluntarily. Consistently across these models education increases workers' control over job mobility; however, this increase is entirely negated for former East German citizens by the interaction terms. All three education and former East German interaction terms have strong negative effects on the odds of shifting voluntarily. The interaction between age and former East German has a strong negative effect on worker autonomy.

Recall that Table 1 indicated that a disproportionate number of former East Germans who experienced a job shift between 1991 and 1996 experienced an involuntary job shift, and an even larger percentage experienced multiple involuntary shifts. Thus, the prevalence of the East German indicator in the model containing all job shifts (Model 3) is not surprising. Note, however, that being a former Easterner matters only in conjunction with other factors. This supports the idea that starting with a more complex notion of causation is fruitful.

From these logistic regression results, we cannot tell what structural types did or did not exist. This model uses seven dichotomous indicators; therefore, there are 2^7 or 128 logically possible combinations. Two of the independent variables, education and citizenship, are sets of dummy variables, so certain configurations cannot by definition occur (e.g., being a former East German and being a foreigner). Once, we have eliminated the empirically impossible combinations, for cases to exist in every logically possible cell, 48 combinations are possible. Only one of these possible configurations is not found in this sample. We seem to have a situation of almost complete diversity; however, keep in mind that a configuration is counted as existing if a single case from the sample of 3,147 matches the configuration. We do not feel comfortable drawing conclusions when only a few cases out of thousands fall into a particular configuration. For example, only two respondents are over age 40, have a university education, are foreign and male (in Boolean notation: $O \bullet EU \bullet CF \bullet f$). In both cases, the individual experienced an involuntary job shift. We do not feel comfortable drawing any conclusions about the individuals with this infrequent combination of traits based on a sample size of 2. Even in a situation where a sufficient number of cases exist in every logically possible cell,

the problem then becomes our conclusions about causation. We cannot tell if any single measure is necessary for the outcome to occur; it seems from the logistic regression results that several may be sufficient.

QCA Process and Results

We use statistical criteria to determine two things: first, are there enough cases to realistically consider whether the configuration exists; second, given that the configuration exists, can we state with probabilistic certainty that the outcome either occurs (1) or does not occur (0). Table 3 provides the answers to these questions, along with the number of times a given configuration occurred within this dataset. The logically impossible configurations are not included in this table.

We considered all configurations with at least 25 cases as sufficient to be counted as existing. This results in less than 6 percent of the sample being excluded.⁶ Given the large N size, it is not surprising that most configurations had both positive and negative outcomes. Thus, we want to state with some level of certainty that an outcome of 1 is a probable outcome. We use probabilistic criteria to set up thresholds or benchmarks for when a configuration has a sufficient number of present outcomes to code the outcome as present in the truth table. We use the probability of making a voluntary change for the overall sample (0.444) as the first benchmark. We use a 0.625 probability of a voluntary change as a second benchmark in order to look at those configurations with the greatest likelihood of experiencing a voluntary change. This second benchmark allows us to consider the upper tier of causal combinations that result in higher job mobility autonomy.

We determine a z-value for each configuration (or cell) with a sufficient number of cases using the following formula:

$$Z = \frac{(p_c - p_b) - \frac{1}{2(f_c)}}{\frac{\sqrt{p_b(q_b)}}{f_c}}$$

where p_c is the proportion of cases in a cell experiencing the outcome, p_b is the selected benchmark (0.444 or 0.625), f_c is the number of cases in a cell, and $q_b = 1 - p_b$.

We use an alpha level of 0.05 and a one-tail test to determine if the z-value was sufficient. If the z-value exceeds the critical value then the probable outcome for a specific configuration is coded as 1 (indicating that the shift was voluntary). This same procedure was used to determine with some certainty that an outcome of 0 (the job shift was involuntary) is probable.⁷ Table 3 provides the truth table for

⁶ The logistic regression analyses were re-run excluding the same 6 percent sample and the results were similar, with some minor differences in magnitudes.

⁷ Results are available from the authors upon request.

Table 3

Truth Table

O ^{a)}	EA ^{a)}	EV ^{a)}	EU ^{a)}	CF ^{a)}	CE ^{a)}	F ^{a)}	V ^{a)}	(0)		(1)		Total Number of Cases	Sufficient for Existence (N ≥ 25)	Probable Outcome	
								Frequency	PCT	Frequency	PCT			benchmark = 0.444	benchmark = 0.625
0 ^{b)}	0	0	0	0	0	0	C ^{b)}	46	55	37	45	83	Y	0	0
1 ^{b)}	0	0	0	0	0	0	C	2	50	2	50	4	N	—	—
0	1	0	0	0	0	0	C	103	40	152	60	255	Y	1	0
1	1	0	0	0	0	0	C	31	48	33	52	64	Y	0	0
0	0	1	0	0	0	0	C	32	31	72	69	104	Y	1	0
1	0	1	0	0	0	0	C	4	33	8	67	12	N	—	—
0	0	0	1	0	0	0	C	22	29	55	71	77	Y	1	0
1	0	0	1	0	0	0	C	9	28	23	72	32	Y	1	0
0	0	0	0	1	0	0	C	61	57	46	43	107	Y	0	0
1	0	0	0	1	0	0	C	20	69	9	31	29	Y	0	0
0	1	0	0	1	0	0	C	24	38	40	62	64	Y	1	0
1	1	0	0	1	0	0	C	2	40	3	60	5	N	—	—
0	0	1	0	1	0	0	C	21	50	21	50	42	Y	0	0
1	0	1	0	1	0	0	C	6	50	6	50	12	N	—	—
0	0	0	1	1	0	0	C	3	38	5	62	8	N	—	—
1	0	0	0	1	0	0	0	2	100	0	0	2	N	—	—
0	0	0	0	0	1	0	C	8	44	10	56	18	N	—	—
1	0	0	0	0	1	0	0	3	100	0	0	3	N	—	—
0	1	0	0	0	1	0	C	211	60	141	40	352	Y	0	0
1	1	0	0	0	1	0	C	111	11	34	23	145	Y	0	0
0	0	1	0	0	1	0	C	58	60	39	40	97	Y	0	0
1	0	1	0	0	1	0	C	58	82	13	18	71	Y	0	0
0	0	0	1	0	1	0	C	26	49	27	51	53	Y	0	0
1	0	0	1	0	1	0	C	31	63	18	37	49	Y	0	0
0	0	0	0	0	0	1	C	41	51	39	49	80	Y	0	0
1	0	0	0	0	0	1	C	15	47	17	53	32	Y	0	0
0	1	0	0	0	0	1	C	81	25	150	65	231	Y	1	0
1	1	0	0	0	0	1	C	22	34	43	66	65	Y	1	0
0	0	1	0	0	0	1	C	31	29	75	71	106	Y	1	1
1	0	1	0	0	0	1	C	6	24	19	76	25	Y	1	0
0	0	0	1	0	0	1	C	15	35	28	65	43	Y	1	0
1	0	0	1	0	0	1	C	9	45	11	55	20	N	—	—
0	0	0	0	1	0	1	C	31	53	27	47	58	Y	0	0
1	0	0	0	1	0	1	C	28	70	12	30	40	Y	0	0
0	1	0	0	1	0	1	C	21	50	21	50	42	Y	0	0
1	1	0	0	1	0	1	1	0	0	1	100	1	N	—	—
0	0	1	0	1	0	1	C	10	43	13	57	23	N	—	—
1	0	1	0	1	0	1	C	14	74	5	26	19	N	—	—
0	0	0	1	1	0	1	C	4	57	3	43	7	N	—	—
1	0	0	1	1	0	1	L ^{b)}	—	—	—	—	—	—	—	—
0	0	0	0	0	1	1	C	6	43	8	57	14	N	—	—
1	0	0	0	0	1	1	0	14	100	0	0	14	N	—	—
0	1	0	0	0	1	1	C	208	82	46	18	254	Y	0	0
1	1	0	0	0	1	1	C	135	85	24	15	159	Y	0	0
0	0	1	0	0	1	1	C	64	66	33	34	97	Y	0	0
1	0	1	0	0	1	1	C	52	87	8	13	60	Y	0	0
0	0	0	1	0	1	1	C	37	77	11	23	48	Y	0	0
1	0	0	1	0	1	1	C	11	52	10	48	21	N	—	—

^{a)} O = age 40; EA = apprenticeship training; EV = school-based vocational training; EU = university training; CF = foreigner; CE = former East German; F = female; and V = voluntary job change. Total = 3,147 cases, including multiple job changes. —

^{b)} 0 = Outcome absent in all cases; 1 = Outcome present in all cases; C = Contradictory outcomes; L = Logically possible but did not occur. The 80 logically impossible combinations (such as apprenticeship training and school-based vocational training) are not included on this table.

Source: Authors' calculations using GSOEP.

all respondents experiencing one or more job shifts. In Tables 3 and 4, an O indicates that the individual is over 40 years of age, EA indicates apprenticeship training, EV indicates school-based vocational training, EU indicates university training, CF indicates a foreigner, CE indicates a former East German, F indicates a female, and V indicates a voluntary job change.

Table 4 provides the QCA results. The results using the proportion benchmark = 0.444 correspond to the logistic regression results, which suggest that former East German, when interacting with education, age, and gender, is a crucial factor in controlling job mobility. The QCA results (which make no assumptions about nonexistent configurations, see Table 4, column 1) do not negate the logistic regression results; however, we can see that it is both the absence of being a foreigner or an East German that is a common characteristic of five of the six configurations resulting in a voluntary job shift. The QCA results that employ simplifying assumptions (Table 4, column 2) correspond more closely to the logistic regression results. The six configurations arrived at without assuming anything about non-existent cases are reduced to four less complex configurations when QCA is used. To illustrate this, reconsider the earlier hypothetical example. Suppose row 5 was logically possible, but did not occur in the sample. Assuming that row 5 does not produce the outcome allows us to reduce the table to $Y = BC$. If we are unable to take this

shortcut, the solution is the more complex $Y = ABC + BC$, which may overstate the necessity of C and understate the importance of A. Thus, employing assumptions about configurations which either did not occur or which had fewer than 25 cases allows us to come up with simpler answers. However, these answers may not be valid if the exclusion assumptions are, in fact, false.

From the QCA analysis we extend the logistic regression findings and state that being a West German is a virtually necessary condition for a worker to voluntarily change jobs. The single exception (when being West German is not a necessary condition) is for male workers under the age of 40 who have apprenticeship education. These workers can be either West German or foreign and still have a probable outcome of voluntarily shifting jobs. The higher benchmark (0.625) results in only a single minimized term: $o \bullet EV \bullet cf \bullet ce \bullet F$. Consequently, we are highly confident that individuals who are aged 40 or under have a school-based vocational education, are West German, and female possess a large degree of autonomy with respect to job mobility.

4. Conclusions

This paper asserts that simplifying assumptions are employed in all forms of empirical analysis in the social sciences in order to draw generalizations about the world.

Table 4

Qualitative Comparative Analysis Results for Experiencing a Voluntary Job Change^{a)}

Benchmark	Alpha	Without Simplifying Assumptions (allows for multiple job changes; N = 3,147)	With Simplifying Assumptions
Voluntary			
0.444	0.05	$EV \bullet cf \bullet ce \bullet F + EA \bullet cf \bullet ce \bullet F + o \bullet EU \bullet cf \bullet ce + EU \bullet cf \bullet ce \bullet f + o \bullet EV \bullet cf \bullet ce + o \bullet EA \bullet ce \bullet f$ factored: $cf \bullet ce (EV \bullet F + EA \bullet F + o \bullet EU + EU \bullet f + o \bullet EV) + o \bullet EA \bullet ce \bullet f$	$EU \bullet ce + EV \bullet cf \bullet ce + EA \bullet cf \bullet ce \bullet F + o \bullet EA \bullet ce \bullet f$ $cd(EU + EV \bullet cf + EA \bullet cf \bullet F + o \bullet EA \bullet f)$
0.625	0.05	$o \bullet EV \bullet cf \bullet ce \bullet F$	$o \bullet EV \bullet ce \bullet F$
Involuntary			
0.444	0.05	$EV \bullet CE + EA \bullet CE + o \bullet EU \bullet CE + EU \bullet CE \bullet f + O \bullet EA \bullet cf \bullet f + ea \bullet eu \bullet CF + o \bullet ev \bullet eu \bullet CF \bullet F + ea \bullet ev \bullet eu \bullet ce \bullet F + o \bullet ea \bullet eu \bullet CF + o \bullet ea \bullet ev \bullet eu \bullet ce$	$CE + CF \bullet F + ea \bullet CF + O \bullet eu \bullet f + ea \bullet ev \bullet eu$
0.625	0.05	$EV \bullet CE + EA \bullet cf + o \bullet EU \bullet cf + EU \bullet cf \bullet f + ea \bullet ev \bullet eu \bullet CF + o \bullet ev \bullet eu \bullet ce + o \bullet eu \bullet ce \bullet f + O \bullet eu \bullet cf \bullet ce \bullet F$	$CE + O + ev + f$
^{a)} O = age >40; EA = apprenticeship training; EV = school-based vocational training; EU = university training; CF = foreigner; CE = former East German; F = female; and V = voluntary job change. Sample is limited to cells with 25 or more cases. Source: Authors' calculations using GSOEP.			

The use of simplifying assumptions is not necessarily a problem; it becomes a problem when the method (and the reader) ignore issues of limited diversity. The comparison of logistic regression with qualitative comparative analysis explicitly identifies a kind of complication which usually arise in situations of limited diversity. In our empirical example, we demonstrate how logistic regression points to being a former East German as the most salient factor in autonomy with respect to job mobility. Our QCA results using simplifying assumptions indicate that not being a

former East German is a characteristic common to all of the configurations of individuals who voluntarily make a job change. Yet, the QCA approach, which makes no assumptions about nonexistent cells, indicates that it is really the combination of being neither a foreigner nor an East German that results in a higher level of autonomy over job mobility. This demonstrates the need for researchers to be explicit about the kinds of assumptions by (or their methods) employ in constructing depictions of social processes.

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