Intergenerational standard-of-living mobility in nine EEC countries

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Intergenerational standard-of-living mobility in nine EEC countries: country characteristics, competitive balance and social fluidity

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ABSTRACT In this paper it is argued that an analysis of intergenerational standard-of-living mobility tables is of equal interest to an analysis of intergenerational class mobility or status group mobility tables. Such tables are analysed for the nine countries of the European Economic Community in 1976. This is done in a log-linear analysis, modelling structural mobility (or competitive balance), circulation mobility (or social fluidity) and the interaction of specific country characteristics with these types of mobility. Countries with a more leftist political history show more circulation mobility in standard of living than countries with a less leftist history. Countries with a higher absolute level of technological development show less structural mobility than countries with a lower level of technological development. Countries with a more rapid pace of economic development display less structural mobility than countries with a slower pace of economic development.

MOBILITY RESEARCH AND WEBER'S VIEW OF SOCIAL STRATIFICATION

Although presently among social theorists Weberian sociology is on the rise, its proponents have occasionally expressed an uneasiness with Weber's view that classes, status groups and parties are phenomena of the distribution of power within a society (Weber, 1921: 531). The focal point of these misgivings has been put aptly by Collins, who stressed that seemingly the multi-dimensional approach towards stratification only yields ideal types and not causal principles, although the latter are more valuable than the former (Collins, 1975: 290). It is true that theoretical sociology often seems more concerned with concepts than with propositions. After stating his objection, Collins pointed to the possibility of incorporating types into propositions. In a 'neo-Weberian' approach this may be achieved by applying the notion of life-chances, on which current readings of Weber's work place so much stress. As long ago as 1948, Bennett and Tumin held that the analysis of a system of strata will be entirely descriptive unless one adds to it the concept of life-chances (Bennett & Tumin, 1948: 492). In a summary statement of a later textbook, Tumin held that people secure their life-chances with three major types of resources: property, prestige and political power (Tumin, 1973).

Against this background it is interesting that a similar proposition recently has been employed in empirical social research. In a review of findings on stratification in Britain between 1946 and 1976 Goldthorpe and Bevan suggested a development of the Weberian approach—that classes, status groups and parties are dimensions of the power relationships in a society—by introducing the notion of advantage as complementary to that of power (Goldthorpe and Bevan, 1977: 280–281). In a later study Goldthorpe based a model for newly collected mobility tables for Britain on the assumption that the relative desirability of a person's position is influenced by his/her economic, cultural and social resources (Goldthorpe, 1980: 99). It might be noted that in this analysis no direct measures for desirability were adduced. The tables analysed were class mobility tables.

The typology until recently associated with

Weber's name stipulates that classes, status groups and parties are phenomena of the distribution of power within a society. A neo-Weberian proposition which stays as close as possible to Weber's utterances, states that a person's economic, symbolic and political power determine his/her life-chances.[1] For a full exploitation of this neo-Weberian hypothesis in empirical social research, indicators for the different aspects of a person's life-chances must be provided. In this respect, several—approximate—measures readily come to mind: on the one hand, 'hard' indicators like the cash value of income; on the other hand, indicators like perceived standard of living.[2] An indicator of the latter type perhaps accords better with a Weberian framework because of its subjective or 'meaningful' character.

This neo-Weberian hypothesis and its corresponding indicators have several implications for mobility research. They suggest—in addition to the analysis of class mobility, status group mobility and political mobility—new kinds of mobility problems: questions about the similarity between the cash value of income of a country's inhabitants and the income of their parents and the correspondence between the standard of living of persons and their parents. Owing to a lack of data for parents, few income mobility tables have so far been analysed. Measures for standard-of-living mobility might be more easily available.

Now problems of standard-of-living mobility are definitely of interest in themselves. In addition, if the hypothesis holds that a person's standard of living is influenced by his/her economic, political and symbolical resources, then problems of standard-of-living mobility are in an important sense more comprehensive than those of status group, class and political mobility. Also, within this neo-Weberian perspective, preference in favour of class mobility and against status group mobility (cf. Goldthorpe, 1980: 115–116), makes more sense on the assumption that in present-day Western societies a person's chances in life are more strongly influenced by his/her class than by his/her status group. Empirical evidence supporting or disconfirming this hypothesis is largely lacking. It may be added that such evidence will only be obtained by way of a research design that incorporates both status group and class as variables.

This neo-Weberian frame of reference makes clear, moreover, that a focus on class mobility that is appropriate in the sense specified above still might be unduly restrictive. For while it may be true that in a country like modern Britain there is no trend towards more equal relative rates of class mobility (Goldthorpe, 1980: 85), a question remains. One might still ask whether there is a convergence in the life-chances associated with different class positions, a trend induced by, say, changing political power relationships. This final argument gives new impetus to the debate on the consequences of technological and political factors for mobility.

This paper is confined to an analysis of nine comparable tables for the member countries of the European Economic Community in 1976, which were obtained by cross-classifying a measure for a person's standard of living against one for that of his/her parents when he/she was an adolescent, that is, measures for one aspect of the neo-Weberian concept of life-chances. These tables are taken to be of interest in themselves and are analysed from the point of view of hypotheses figuring in the present-day revival of a controversy among members of the International Sociology Association (ISA) in the 1950s and 1960s. That discussion centred around the role of technological and political factors in the explanation of mobility patterns. It will be reviewed in the second section of this paper. As will be argued in the third section, the hypotheses featuring in this discussion, which originally pertained to status group and class mobility, may also be used to predict standard-of-living mobility. To what extent they yield correct predictions in this case is to be investigated by log-linear analysis in the sixth and seventh sections of the paper. The analysis here thus takes up some of the implications of a neo-Weberian perspective for mobility research. The fourth section discusses data sources and the fifth, developments in the technique of log-linear analysis.

THE DEBATE ON THE INFLUENCE OF TECHNOLOGICAL AND POLITICAL FACTORS ON STRUCTURAL AND CIRCULATION MOBILITY

After the Second World War the ISA stimulated the collection of data on social mobility, especially intergenerational status group mobility. When

mobility tables for different countries began to accumulate, some sociologists argued that industrialization produces similar patterns of mobility (Lipset and Bendix, 1959). Others assigned greater importance to political factors, such as a country's record of social-democratic government (Miller, 1960). The discussion remained unresolved at that time.

The lack of progress in this debate was partly due to an insufficient number of comparable data-sets. But it was also attributable to difficulties in making a specific empirical distinction within the total amount of mobility observed for a country. This was the distinction between 'structural mobility', that part of observed mobility which is necessitated by changes in a country's economic structure, and 'circulation mobility'; that is, mobility net of structural mobility, the kind of mobility that indicates genuine openness. A separation of structural and circulation mobility was held to be imperative because hypotheses on political factors referred to mobility net of that induced by supposedly autonomous economic or technological developments. A difficulty was discovered with proposed measures for circulation mobility which seemed, at first, merely technical (Blau & Duncan, 1967: 90–97). However, the difficulty persisted, and this has led some present-day authors to suppose that it was also of a theoretical nature (Noble, 1979). Indeed, an essentially residual definition (total mobility minus structural mobility) of an important concept like genuine openness is not very acceptable. Also, an attack was made on the seemingly innocent assumption that the marginal distribution for parents in a mobility table represents a historical status group or class structure (Duncan, 1966). As this is not the case, differences between the marginals for respondents and parents do not indicate mobility necessitated by changes in historical structures.

On a different point, it might be noted that quite early on one sociologist suggested that mobility rates are influenced, not so much by a country's absolute level of economic development as by its rate of change (Carlsson, 1958: 196). Indeed, if technology necessitates mobility, it is technological change that does so, not absolute level of development—which is not to deny that a higher level of technological or economic development might be associated with more mobility. In this respect, it is also noteworthy that another sociologist compared measures of mobility for several countries not only with the percentage of the total labour force working outside agriculture in a certain year, a static measure of technology, but also with rates of average economic growth, a dynamic measure (Svalastoga, 1966).

Some of the sociologists of the present generation active in a revival of the old ISA-controversy are Goldthorpe, Hauser and Heath. Heath (1981) assembled data on social mobility for 19 industrial countries in the 1970s. By way of a very simple method named the 'technique of paired comparison', an approximate measure for circulation mobility was obtained. One of Heath's conclusions was that countries with a rightist traditional culture display less circulation mobility than those with a persistent record of social-democratic government. This conclusion not only pertained to mass mobility (crossings of the class and status lines between manual and non-manual occupations), but also to elite mobility (where an elite comprises less than simply those in non-manual occupations, but does not coincide with a political elite). It is something of a drawback of Heath's investigation that its data are not strongly comparable. But the number of countries investigated is quite large.

A study of Erikson, Goldthorpe and Portocarero (1982) analysed more strictly comparable data on class mobility for Britain, France and Sweden in the 1970s. The three nations were supposed to display broadly similar levels of economic development and a highly appropriate degree of variation in their political histories. The authors applied the technique of log-linear analysis, especially the 'topological' models pioneered by Hauser (1978). They found that relative mobility chances were somewhat more equal in Sweden than in Britain and France. Given the political histories of the countries, this conclusion seems to be in line with that of Heath. Erikson, Goldthorpe and Portocarero use the expression 'relative mobility chances' to refer to the outcome of a competition between persons from different origins for different destinations. In this way they provide a positive definition of the concept of genuine openness or, as they prefer to call it, social fluidity.

In the studies of Heath and Erikson, Goldthorpe

and Portocarero there is no measurement of variables supposedly influencing aspects of a country's mobility pattern. There is an appeal to everyday knowledge. This appeal is most explicit in the latter study. Yet it is not a very convincing one. Is Britain's level of economic development really broadly similar to that of Sweden and France? Stories about economic stagnation in Britain figured prominently in the newspapers of the past decades. As already noted, hypotheses on the effect of technology on mobility have been held to refer not only to absolute level of technological development, but especially to changes in this level. Stricter measurement seems desirable here.

Hauser and Featherman (1977: 170) have argued for an inversion of the traditional problem in comparative mobility analysis. They did so when log-linear analysis of data for the USA showed no changes in relative mobility changes for men between 1962 and 1973. In that case the old question of how to account for *variation* in circulation mobility cannot be asked. They went on to propose the new problem of explaining differences in *structural* mobility.

The problem proposed by Hauser and Featherman of explaining differences in structural mobility is indeed as important as that of accounting for variation in circulation mobility. Heath was more concerned to eliminate than to explain structural mobility. Erikson, Goldthorpe and Portocarero tried to surpass the difficulty of separating structural and circulation mobility by focusing on relative mobility chances as a better measure for social fluidity than older measures of circulation mobility. However, selecting countries on a similar level of technological development, made it impossible to ask whether these chances are influenced by technological factors—an obvious topic from a structural point of view.

Given Duncan's criticism that differences between marginals for respondents and their parents do not indicate mobility necessitated by changes in historical structures, Hauser and Featherman's expression 'explaining differences in structural mobility' might seem less appropriate. However, if genuine openness is positively defined as the unequal outcome of a competition, differences between the marginals can be viewed as an aspect of the competitive situation itself. Sometimes there are more new prizes to be distributed than there are old prize-winners participating, sometimes less. This phenomenon might be termed 'the balance of a competitive structure' or, for short, 'competitive balance'. Just as presently the expressions 'circulation mobility' and 'relative mobility chances' are sometimes used as equivalents, so may the terms 'structural mobility' and 'competitive balance'. An investigation of competitive balances seems a worthwhile enterprise, and Hauser and Featherman's proposal amounts to explaining differences between countries in competitive balance. There need be no fear that an analysis of competitive balances will neglect effects of technological factors on structural and circulation mobility. After all, these factors may be measured independently of the marginals of mobility tables and have been measured in this way in the past (Svalastoga, 1966).

Yet there is no compelling reason in favour of Hauser and Featherman's proposal for an inversion of the traditional problem in comparative mobility analysis. After all, similarities in circulation (and structural) mobility may be puzzling too. The expanded traditional problem and the newly proposed one should be treated as complementary. It is desirable to focus on structural and circulation mobility in one investigation.

RESEARCH QUESTIONS ON STANDARD-OF-LIVING MOBILITY

The outcome so far of the present revival of the ISA-debate on political and technological factors as influences on mobility may be summarized as follows. Political factors have been shown to have some of their supposed influence on circulation mobility, but structural mobility and the supposed consequences of technological factors are relatively unexplored. The hypotheses in this debate referred to both status group and class mobility. Because of a recent emphasis in theoretical sociology on Weber's notion of life-chances, it is interesting to apply them to cash income mobility or standard-of-living mobility and to ask what results are obtained in this case. In this paper this question will be empirically answered for standard-of-living mobility.

The hypotheses mentioned are, in principle,

appropriate to an analysis of standard-of-living mobility: first, because a difference between a person's standard of living and that of his/her parents may be discounted by a general rise in the standard of living; secondly, since it is possible, after eliminating this overall shift, to gauge a more genuine disparity between someone's standard of living and that of his/her parents. These two points are analogous to the argument that, owing to an upward shift in the competitive balance, observed status group or class upward mobility may not indicate more equal relative mobility chances. Thirdly, the hypotheses are applicable because, just as the balance of a structure of competition for class positions or membership in status groups may be determined by autonomous technological factors, so may the balance of a competition for a higher standard of living. Fourthly, they are appropriate because political factors may not influence circulation status-group and class mobility, but also circulation standard-of-living mobility.

The main question to be answered in the final sections of this paper, by an analysis of nine intergenerational standard-of-living mobility tables, is therefore a twofold one. First, does more rapid economic or technological development in a country lead to more structural mobility or a more favourable competitive balance, and (perhaps) to more circulation mobility or more equal relative mobility chances? Secondly, does a stronger left-wing political climate lead to more circulation mobility, and (possibly) to more structural mobility? These questions are intended to capture the main hypotheses in the ISA-debate reviewed above. The bracketed qualifiers are inserted to indicate the less important part of the claim behind each question. In addition this paper seeks to answer a subsidiary question which is prompted by Carlsson's somewhat neglected point that technological change, not absolute level of technological development, necessitates mobility. Is a country's level of technological or economic development unrelated to its structural and circulation mobility?

It is to be noted that a country's political history, as an explanatory factor in current macro-sociological hypotheses, may readily be incorporated within a neo-Weberian perspective as a type of political power relationship. This is not as easily done in the case of a country's level of technological development, another independent variable in present-day macro-sociological assumptions. A reinterpretation within a neo-Weberian framework of this variable might hold that it stands for a different distribution of educational resources, and, therefore, changed economic power relations. However, questions about the empirical merits of such a reinterpretation are not part of the research questions of this paper.

SOURCES AND QUALITY OF THE DATA

The survey[3] *Eurobarometer No. 5* undertaken in May–June 1976 for the Commission of the European Economic Community contained a question on a person's standard of living. It was posed to 8,627 persons aged 15 years and older who were representative of the inhabitants of the nine member states of the EEC. The exact wording (in English) of this question was: 'Taking everything into account, at about what level is your family situated as far as standard of living is concerned? (Show card). You may answer by giving me a figure between 1 and 7—number 1 means a poor family and number 7 a rich family. The other numbers are for positions in between'. In this survey people 25 and over were also asked: 'Could you indicate on the same card where your parents were situated—or the family where you were brought up—as far as their standard of living was concerned when you, yourself, were between 15 and 18 years old?'. The cross-classifications of the answers given to both of these questions by 6,836 male and female inhabitants of the nine EEC countries are presented in Table 1.

Table 1 does not present very hard 'objective' indicators of cash income, but more subjective appraisals of standard of living. The subjective character of these data should not be overstressed. The standard of living people reported for themselves, accords strongly with the money income they reported (Riffault and Rabier, 1977: 27). Also, averages of standard-of-living scores for countries (Riffault and Rabier, 1977: 27) agree pretty well with measures for purchasing power of *per capita* money income (Eurostat, 1980: 89). The exact wording of the survey questions does not suggest much subjectivity either. The question was at what level one's family was situated, not at what

TABLE 1 *A Person's Standard of Living (Columns) and that of His/Her Parents (Rows) in the Nine Countries of the European Economic Community, for Persons 25 Years or Older in 1976*

Belgium

poor						rich	
9	7	17	13	2	0	0	48
0	15	56	56	11	0	0	138
1	4	55	96	39	0	0	195
2	4	11	119	39	8	0	182
1	2	7	26	63	9	1	109
0	0	3	10	12	22	1	48
0	1	1	3	4	3	2	14
13	33	150	232	169	42	4	734

Denmark

poor							rich
3	4	16	38	18	10	8	97
2	4	10	78	34	15	8	151
3	4	25	48	67	25	15	187
1	1	7	71	42	27	17	166
1	2	7	12	66	17	10	115
0	1	1	9	16	19	2	48
0	0	1	10	15	7	21	54
10	16	67	266	258	120	81	818

France

poor						rich	
14	22	53	47	12	0	1	149
1	19	109	105	22	0	0	256
2	5	81	133	42	1	3	267
0	9	24	104	32	8	1	178
2	3	19	51	18	2	1	96
0	1	2	20	6	7	1	37
0	0	0	2	7	1	2	12
19	59	288	462	139	19	9	995

Federal Republic of Germany

poor							rich
6	3	14	13	4	1	0	41
0	12	50	73	28	3	2	168
0	8	45	111	80	16	0	260
1	4	11	112	79	10	4	221
2	1	12	19	54	9	0	97
2	0	9	12	10	6	0	39
0	0	0	0	2	5	0	7
11	28	141	340	257	50	6	833

Irish Republic

poor						rich	
10	13	34	19	4	0	0	80
4	12	51	77	9	1	0	154
7	7	41	74	49	2	0	180
4	9	18	122	41	10	1	205
0	2	17	33	52	9	1	114
0	0	3	10	8	5	1	27
0	0	2	2	1	1	1	7
25	43	166	337	164	28	4	767

Italy

poor							rich
16	26	35	15	1	0	0	93
3	21	73	67	18	2	1	185
5	10	58	79	25	4	0	181
2	3	14	81	23	11	1	135
0	2	4	20	43	11	1	81
0	0	1	6	5	13	0	25
0	0	2	4	2	2	7	17
26	62	187	272	117	43	10	717

Luxembourg

poor						rich	
2	1	6	12	3	1	0	25
0	0	11	18	13	1	0	43
0	1	9	21	10	3	0	44
0	0	1	14	10	4	0	29
0	0	0	2	33	7	0	42
0	0	0	0	2	9	1	12
0	0	0	0	2	0	1	3
2	2	27	67	73	25	2	198

Netherlands

poor							rich
7	3	20	26	5	3	0	64
0	11	36	72	15	3	2	139
0	2	36	92	42	8	2	182
1	5	6	145	58	12	4	231
0	1	9	16	36	10	4	76
1	0	1	8	5	6	4	25
0	0	1	5	3	2	4	15
9	22	109	364	164	44	20	732

United Kingdom

poor						rich	
9	18	54	30	2	0	0	113
3	19	83	122	20	1	0	248
7	10	68	163	55	3	1	307
8	17	33	134	49	5	0	246
3	3	13	28	33	2	1	83
1	1	6	14	11	2	0	35
1	2	0	2	4	1	0	10
32	70	257	493	174	14	2	1042

level one would place one's family or how one would evaluate one's family's standard of living. In fact, the marginals of Table 1 display the usual features of status group and class mobility tables. And even if one still has doubts about the 'hard' character of these data, it may be argued that meanings attached to money income are an important aspect of life-chances and form a proper subject for stratification research. This is not to gainsay the value of research into intergenerational cash income mobility. It is to be noted that there is a check on the measurement of a person's standard of living, but none on the measurement of parental standard of living. Indeed, if information on cash income for parents had been available too, income mobility tables might have been analysed.

There were no particular difficulties in obtaining useful indicators for specific country characteristics. It was decided to use two indicators for each of the three independent variables. Given the small number of research units, nine countries to be exact, from the point of view of soundness of conclusions an increase in the number of independent observations on these units was held to be desirable.

To measure the pace of a country's economic or technological development, current practice was followed. First, for each EEC country the average annual rate of increase in *per capita* energy consumption during the period 1951–1975 was computed. Secondly, for these countries and for the same period, the average annual growth rate of *per capita* gross domestic product (at constant prices) was determined.[4] The period 1951–1975 was chosen, in view of the year of investigation and the average length of a generation.

The two measures for a country's absolute level of economic development are similar to the ones for changes in this level. The first indicator is the average *per capita* energy consumption of a country for the period 1971–1975. The second measure is one of the type '*per capita* gross domestic product'. The difficulty in making data for different countries comparable has been solved, not by using official exchange rates, but by using purchasing-power parities. The averages of figures for 1970 and 1975 were computed.[5] For both indicators averages were used in order to lessen the difficulty of short-term fluctuations in figures.

For the determination of a country's political climate, current practice was followed too. Using various sources, for every EEC country the number of years of social-democratic government during the period 1951–1975 was counted.[6] One year of participation in a coalition government was counted as a half year. An additional measure was taken from Korpi and Shalev (1979). They computed, for capitalist nations, the percentage of votes in parliamentary elections for left-wing parties (usually votes for socialist and communist parties) during the period 1945–1970.[7]

The scores of the nine EEC nations on these six measures are presented in Table 2. Luxembourg is an outlier on the measure for average *per capita* energy consumption. Tables 1 and 2 make it possible to check all computations and to perform additional analyses.

MOBILITY TABLES AND THE TECHNIQUE OF LOG-LINEAR ANALYSIS

For about a decade now, mobility tables have been analysed by way of log-linear models. Of late, this technique has been improved in some respects. Four of these improvements will now be outlined.

A first improvement in log-linear analysis is the development of log-linear models for mobility tables that include not just circulation mobility, but structural and circulation mobility simultaneously. They were pioneered by Hope in the early 1980s. Hope (1981, 1982) decomposed origin and destination effects in mobility tables into 'halfway' and 'difference' effects, the first measuring structural constancy and the second structural differences. The last effects are considered to represent structural mobility. Hope also proposed a linear constraint on the structural differences called 'shift'. In this way it became possible to include structural mobility in a log-linear model. Hope proposed to capture circulation mobility by log-linear models assuming 'equal distances' and 'quadratic distances'. These models embody, each in their own way, the simple hypothesis that the larger the distance travelled, the less frequent mobility will be (holding structural effects constant). Models incorporating both structural and circulation mobility fit the data for Britain remarkably well. Theoretical and simple, they are alternatives to the earlier somewhat a-theoretical

TABLE 2 *Indicators for Technological Change, Level of Technological Development and Political History in the Nine Countries of the European Economic Community*

	B	D	F	G	IR	I	L	NL	UK
IEC	3·1	4·1	3·6	3·6	3·5	9·0	3·2	5·0	1·0
IDP	3·3	3·0	3·8	4·3	2·7	4·4	1·4	3·5	1·9
CE	6021	5471	4221	5625	3289	2979	17907	5683	5440
DP	2680	3051	2779	2920	1547	1911	3199	2736	2438
SG	7·5	9·5	2·0	4·5	3·0	4·0	7·5	6·5	6·5
LV	38	45	42	38	13	38	45	34	46

Key:

B = Belgium
D = Denmark
F = France
G = Federal Republic of Germany
IR = Irish Republic
I = Italy
L = Luxembourg
NL = Netherlands
UK = United Kingdom

IEC = average annual rate of increase of *per capita* energy consumption, 1951–1975
IDP = average annual rate of increase of *per capita* gross domestic product, 1951–1975
CE = average *per capita* energy consumption, 1971–1975
DP = average of 1970 and 1975 *per capita* gross domestic product
SG = number of years of socialist government participation, 1951–1975 (a year of coalition government counted as a half year)
LV = average annual percentage of votes case for socialist or other left-wing parties, 1945–1970

models of Hauser and the earlier complex models with a theoretical grounding of Goldthorpe.

In 1985 Sobel, Hout and Duncan, modelled structural mobility in a way similar to Hope's earlier proposals.[8] An important difference between the new and old proposals is an assumption Sobel, Hout and Duncan make about the data. Circulation mobility is defined as exchange mobility; that is, equal flows between pairs of cells (i, j) and (j, i). This implies the assumption of symmetry. Structural mobility is defined as marginal heterogeneity; that is, differences between marginals. A combination of both definitions (symmetry and marginal heterogeneity) yields the assumption of quasi-symmetry. Models with quasi-symmetry are parameterized by Sobel, Hout and Duncan (1985) in such a way that certain parameters map the notions of structural and circulation mobility. The main difference with Hope's proposals is the all-eclipsing assumption of quasi-symmetry. It might be noted that equal distances and quadratic distances models are a subset of quasi-symmetry. With these proposals of Hope and Sobel, Hout and Duncan, the problem of including structural and circulation mobility in one log-linear model appears solved.

Secondly, the technique of log-linear modelling may not only be used for descriptive purposes, but also for more explanatory goals. There is no need to regard the goodness of fit and parameters of a model for structural and circulation mobility in one table for one country as the end-products of a log-linear analysis. It is possible to make one model for several mobility tables, introduce into this model exogenous variables like level of technology, political history or other specific country characteristics, and then estimate their effects on parameters for structural and circulation mobility. A model including specific country characteristics may yield a better fit than one that does not. Such

an analysis is not only attractive because it moves beyond descriptive ends, but also because it improves upon a visual comparison of, say, a row of figures for circulation mobility with one for political history. The latter was, in effect, the way Heath proceeded.

A log-linear analysis of mobility tables incorporating political and technological factors has been proposed by Hope (Hope, 1982). Grusky and Hauser (1984) entered technological and political variables into a log-linear model of three-stratum intergenerational mobility tables for 16 industrial countries in the 1960s and 1970s. By employing models incorporating specific country characteristics, they contributed to making log-linear analysis of mobility tables more explanatory. Grusky and Hauser's analysis pertained to circulation mobility. The problem of explaining differences in structural mobility was not addressed. It might be added that the tables analysed by Grusky and Hauser were not strongly comparable. The strata distinguished were farm, manual and non-manual. For different strata opposite effects of social democracy were found. This does not accord fully with the findings of Heath and Erikson, Goldthorpe and Portocarero.

Thirdly, in a comment on Grusky and Hauser's paper, Raftery (1986) suggested a better way of judging the goodness of fit of log-linear models. Until now, log-linear analysis of mobility tables has struggled with choosing between non-fitting models. Especially when performing log-linear analysis on large samples, it was a problem how to select a model when none, except the fully saturated one, fits according to standard probability levels. Raftery states that the commonly employed log-likelihood ratio (LR) is ill-suited to the task of model selection, and recommends an 'automatic' way of making the often difficult and subjective trade-off between the LR and the number of degrees of freedom (df). This is done by introducing a measure labelled BIC.[9] If the BIC for a model is smaller than zero, this model is more likely to hold than the saturated one. When comparing several non-saturated models, the one with the most negative BIC-value should be preferred. If no model has a BIC below zero, the saturated model is accepted. Raftery's proposal helps solving the difficulty of choosing between models in log-linear analysis.

In the fourth place, a less exclusive focus on the fit of models and more emphasis on their parameters is held to be desirable. Some of the measures of circulation mobility employed by ISA-sociologists in the 1950s and 1960s were wrong because they were goodness of fit statistics, not model parameters (Featherman and Hauser, 1978: Ch. 4). A concentration on the fit of models is still discernible in Hope (1981, 1982). Hout (1982) compared parameters for genuine openness in father-son and husband-wife tables for the USA. Grusky and Hauser (1984) also interpreted parameters. By looking at fit measures they established that specific country characteristics has some effect, and by looking at the signs of parameters they were able to say whether or not effects went into the predicted direction.

Given the present state of the discussion on more technical issues in the study of social mobility, the questions outlined in the third section of this paper will be answered by way of a log-linear analysis. This analysis will model structural and circulation mobility simultaneously and will include specific country characteristics. The fit of these models will be judged by BIC-measures and model parameters will be interpreted.

LOG-LINEAR ANALYSIS

In this section a log-linear analysis of the data described above is presented. Three 'series' of log-linear models are fitted. In the first series models and parameters for structural and circulation mobility are constrained to be identical for all nine countries. These models embody, in various ways, the assumption that structural and circulation mobility in a country are unaffected by specific country characteristics. The best fitting models of this series are yardsticks for judging results of further modelling. The LR, df and BIC-measure for each of the models of this first series are presented below in Table 4, Panel A.

The second series of models is presented in Table 4, Panel B. They loosen constraints on parameters: the same models are fitted, but their parameters are allowed to differ from country to country. The results of this second series are compared with those of the first. These comparisons indicate to what extent countries differ in

TABLE 3 *Design Matrices for Halfway Model (H), Difference Model (D), Shift Model (S), Polarization Model (P), and a Uniform Association Model (U), in a Seven-by-Seven Mobility Table*

Halfway model

2	1	1	1	1	1	1
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0

0	1	0	0	0	0	0
1	2	1	1	1	1	1
0	1	0	0	0	0	0
0	1	0	0	0	0	0
0	1	0	0	0	0	0
0	1	0	0	0	0	0
0	1	0	0	0	0	0

0	0	0	1	0	0	0
0	0	1	0	0	0	0
1	1	2	1	1	1	1
0	0	1	0	0	0	0
0	0	1	0	0	0	0
0	0	1	0	0	0	0
0	0	1	0	0	0	0

0	0	0	1	0	0	0
0	0	0	1	0	0	0
0	0	0	1	0	0	0
1	1	1	2	1	1	1
0	0	0	1	0	0	0
0	0	0	1	0	0	0
0	0	0	1	0	0	0

0	0	0	0	1	0	0
0	0	0	0	1	0	0
0	0	0	0	1	0	0
0	0	0	0	1	0	0
1	1	1	1	2	1	1
0	0	0	0	1	0	0
0	0	0	0	1	0	0

0	0	0	0	0	1	0
0	0	0	0	0	1	0
0	0	0	0	0	1	0
0	0	0	0	0	1	0
0	0	0	0	0	1	0
1	1	1	1	1	2	1
0	0	0	0	0	1	0

0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
1	1	1	1	1	1	2

Difference model

0	−1	−1	−1	−1	−1	−1
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0
1	0	0	0	0	0	0

0	1	0	0	0	0	0
−1	0	−1	−1	−1	−1	−1
0	1	0	0	0	0	0
0	1	0	0	0	0	0
0	1	0	0	0	0	0
0	1	0	0	0	0	0
0	1	0	0	0	0	0

0	0	1	0	0	0	0
0	0	1	0	0	0	0
−1	−1	0	−1	−1	−1	−1
0	0	1	0	0	0	0
0	0	1	0	0	0	0
0	0	1	0	0	0	0
0	0	1	0	0	0	0

0	0	0	1	0	0	0
0	0	0	1	0	0	0
0	0	0	1	0	0	0
−1	−1	−1	0	−1	−1	−1
0	0	0	1	0	0	0
0	0	0	1	0	0	0
0	0	0	1	0	0	0

0	0	0	0	1	0	0
0	0	0	0	1	0	0
0	0	0	0	1	0	0
0	0	0	0	1	0	0
−1	−1	−1	−1	0	−1	−1
0	0	0	0	1	0	0
0	0	0	0	1	0	0

0	0	0	0	0	1	0
0	0	0	0	0	1	0
0	0	0	0	0	1	0
0	0	0	0	0	1	0
0	0	0	0	0	1	0
−1	−1	−1	−1	−1	0	−1
0	0	0	0	0	1	0

0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
0	0	0	0	0	0	1
−1	−1	−1	−1	−1	−1	0

Shift model

0	1	2	3	4	5	6
−1	0	1	2	3	4	5
−2	−1	0	1	2	3	4
−3	−2	−1	0	1	2	3
−4	−3	−2	−1	0	1	2
−5	−4	−3	−2	−1	0	1
−6	−5	−4	−3	−2	−1	0

Polarization model

0	5	8	9	8	5	0
−5	0	3	4	3	0	−5
−8	−3	0	1	0	−3	−8
−9	−4	−1	0	−1	−4	−9
−8	−3	0	1	0	−3	−8
−5	0	3	4	3	0	−5
0	5	8	9	8	5	0

Uniform association model

9	6	3	0	−3	−6	−9
6	4	2	0	−2	−4	−6
3	2	1	0	−1	−2	−3
0	0	0	0	0	0	0
−3	−2	−1	0	1	2	3
−6	−4	−2	0	2	4	6
−9	−6	−3	0	3	6	9

structural and circulation mobility. With these models one ascertains differences, but does not yet explain them.

The third series of models attempts to explain differences in parameters by including exogenous variables in the analysis. As exogenous variables, the six specific country characteristics discussed earlier are used. As *per capita* energy consumption, *per capita* gross domestic product and number of years of socialist government are cumulative measures, their logged values are entered into the analysis. The LR's, df's and BIC-measures for this third series of models are presented in Table 4, Panel C. These models are to be compared with those of the first and second series. These comparisons indicate how much is explained by including exogenous variables. The parameters of the models of the third series constitute a corroboration or falsification of the hypotheses figuring in the ISA-debate on the effects of technological and political factors on mobility. These parameters are presented in Table 5. There now follows an explanation of the specific models fitted in these three series, and a presentation of results. Models were fitted using GLIM (Baker and Nelder, 1978).

The first two models of the first series assume no structural mobility and fit for circulation mobility according to statistical independence.

(1) Marginals are assumed to be equal for respondents and parents and identical for all countries; this model is denoted by {C+H}, where C stands for country and H for halfway, that is, Hope's and Sobel, Hout and Duncan's manner of equalizing marginals.

(2) Equal marginals for respondents and parents in separate tables, but different marginals for the nine countries {C*H}.

The following models of the first series constrain for structural mobility.

(3) A linear shift in the marginals that is the same for all countries, i.e. a uniform upward or downward shift (S) in the marginal frequencies for respondents relative to those of their parents {C*H+S};

(4) A compression or polarization (P) of the marginal frequencies that is identical for all countries; the model fitted here is not a pure polarization model, but a model that combines shift with polarization {C*H+S+P}.

As already noticed, shift models have been introduced by Hope. A polarization model was developed to obtain a stronger test of hypotheses on effects of political factors. It is, after all, possible to argue that a social-democratic government lowers the number of very rich and very poor persons; that is, compresses the distribution of standard-of-living scores. Something similar might be held of technological factors.

As to models for circulation mobility, this paper limits itself to simple models and only fits models of uniform association (cf. Hout, 1983). A model of uniform association decomposes a n-by-n mobility table into all possible two-by-two tables made up of adjacent rows and columns. The model holds that the association in each of these two-by-two tables is identical to that in every other of these tables, and therefore uniform across the whole table. It might be demonstrated that a model of uniform association is quasi-symmetric and equivalent to Hope's model of quadratic distances. In the first series of models two models with uniform association are applied.

(5) Marginal frequencies predicted by an assumption of identical shift plus polarization, and uniform association {C*H+S+P+U}.

(6) Observed marginal frequencies (with D standing for structural differences) and uniform association {C*H+C*D+U}.

Design vectors for all models are presented in Table 3.

According to Panel A of Table 4, model (4) for structural mobility, which specifies a shift plus a polarization that is identical in all countries, fits decidedly better than the pure shift model (3). Model (4) may be taken as a yardstick for judging later models of structural mobility. In cases without contraints on parameters for structural mobility, model (6) may be considered a yardstick for circulation mobility; model (5) is a yardstick if shift, polarization and uniform association constraints are applied. It is important to note that in terms of BIC all models, except the two structural constancy models (1) and (2), have values lower than zero.

TABLE 4 *Log-Likelihood Ratios (LR), Number of Degrees of Freedom (df) and BIC-Measures for Models with Equal Stuctural and Circulation Mobility Among Countries (Panel A); for Models with Unequal Structural and Circulation Mobility Among Countries (Panel B); and for Models for the Relation Between Specific Country Characteristics and Structural and Circulation Mobility (Panel C)*

(A)	Model	LR	df	BIC
(1)	{C+H}	5108	426	1346
(2)	{C*H}	4247	378	909
(3)	{C*H+S}	2993	377	− 336
(4)	{C*H+S+P}	2521	376	− 799
(5)	{C*H+S+P+U}	1495	375	−1816
(6)	{C*(H+D)+U}	993	323	−1859
(B)				
(7)	{C*(H+S)}	2950	369	− 308
(8)	{C*(H+S+P)}	2366	360	− 813
(9)	{C*(H+S+P+U)}	1096	351	−2003
(10)	{C*(H+D+U)}	837	315	−1944
(C)				
(11)	{C*H+IEC*(S+P+U)}	1465	372	−1820
(12)	{C*H+IDP*(S+P+U)}	1479	372	−1806
(13)	{C*H+CE*(S+P+U)}	1442	372	−1843
(14)	{C*H+DP*(S+P+U)}	1351	372	−1934
(15)	{C*H+SG*(S+P+U)}	1395	372	−1890
(16)	{C*H+LV*(S+P+U)}	1431	372	−1853
(17)	{C*(H+D)+IEC*U}	972	322	−1872
(18)	{C*(H+D)+IDP*U}	985	322	−1859
(19)	{C*(H+D)+CE*U}	992	322	−1852
(20)	{C*(H+D)+DP*U}	963	322	−1880
(21)	{C*(H+D)+SG*U}	978	322	−1866
(22)	{C*(H+D)+LV*U}	974	322	−1869

Key:

C = country
D = structural mobility or structural differences
H = structural constancy (halfway)
S = uniform shift in structural mobility
P = polarization in structural mobility
U = uniform association
For an explanation of the other abbreviations, see Key to Table 2.

In the second series of log-linear models, for models (3) to (6) the constraint of identical parameters is loosened and the constraint that models are equal is maintained. This yields models (7) through (10) in Panel B of Table 4. Again, no model fits well in terms of LR. However, in terms of BIC all results except one are satisfactory. Model (7) has a less negative BIC than model (3) and therefore is unsatisfactory. In terms of BIC, model (9), which specifies a different parameter for shift, polarization and uniform association for every country, turns out to be the best-fitting model of the second series.

Comparison of models (3) through (6) in the first, and of models (7) through (10) in the second series makes clear that there are important

reductions in terms of BIC. If constraints on structural mobility parameters are imposed, models including differences across countries in the shift- and polarization-parameters, should be favoured. The same holds when focusing on circulation mobility. This means that countries differ in parameters for structural *and* circulation mobility.

Panel C of Table 4 presents models each including one specific country characteristic. The effects of these characteristics on a combination of shift, polarization and uniform association are included in models (11) through (16). These models may be compared with models (5) and (9). Specific country characteristics are also included in models that saturate for structural mobility and specify uniform association. These models (17) through (22) are to be compared with models (6) and (10).

Judged by reductions in LR and lost numbers of df when moving from model (5) to models (11) through (16), and from model (6) to models (17) through (22), the effect of every country characteristic is significant. A comparison with the relevant entries in Panels A and B of Table 4 shows that the reductions obtained with the models in Panel C of Table 4 are not very substantial. In terms of BIC none of the models (11) through (16) 'supersedes' model (9). In addition, models (17) through (22) have a less negative BIC than model (10). However, in five out of six cases, the BICs of models (11) through (16) are more negative than the BIC of model (5). Again in five out of six cases, the BICs for models (7) through (22) are more negative than the BIC of model (6). This means that most specific country characteristics have some effect on structural or circulation mobility. The country characteristics with doubtful effects are increase in *per capita* gross domestic product and average *per capita* energy consumption.

The BICs in Panel C of Table 4 show that the two measures for absolute level of technological development on the whole explain better than the two for relative changes in the level of technological development. This is a falsification of Carlsson's idea that if mobility is necessitated, it is so by changes in levels, not by levels of technological development as such. Of the two measures for absolute level of technological development, the one for *per capita* gross domestic product explains better. Of the two measures for change in technological level, the one for energy consumption explains better. Of the two measures for political climate, the one for years of socialist government might be held to explain somewhat better than the one for left-wing voting. Finally, the best measure for level of technological development explains better than the best measure for political climate.

MODEL PARAMETERS

These results on the fit of models incorporating specific country characteristics may be applied when interpreting the parameters of these models. That is to say, it is most worthwhile to look primarily at the parameters for those models incorporating increase in *per capita* energy consumption, average *per capita* gross domestic product and number of years of socialist government. Models with other country characteristics will therefore be neglected from now on. To let a reader judge for him/herself, parameters of all 12 models with specific country characteristics, that is, models (11) through (22) are presented in Table 5.

To interpret Table 5, it must be noted that a positive sign for parameters for an interaction of a country characteristic with uniform association indicates less circulation mobility, and a negative sign more circulation mobility. (More circulation mobility is indicated by a lower value of the parameter for uniform association.) A positive sign for parameters for an interaction of a specific country characteristic with shift stands for a strengthening of an upward shift or a lessening of a downward shift, and a negative sign for a less strong upward shift or a stronger downward shift. A positive sign for parameters for an interaction between a country characteristic and polarization implies an increase of a polarization or a decrease of a compression, a negative sign a weakening of a polarization or a reinforcement of a compression. Parameters at least twice their standard error are called significant. Parameters now will be interpreted so as to answer the questions raised in the third section of this paper.

First there is the question of whether a more rapid change in a country's level of technological development leads to more structural mobility, but perhaps not to more circulation mobility. The

TABLE 5 *Parameters for the Interaction Between Specific Country Characteristics and Shift, Polarization and Uniform Association; in Panel A Shift Plus Polarization Plus Uniform Association Models and in Panel B Saturated Marginals Plus Uniform Association Models (Standard Errors in Brackets)*

Model number and country characteristic	S	P	U
(A)			
(11) IEC	–0·0222* (0·0061)	–0·0026 n.s. (0·0024)	0·0265* (0·0052)
(12) IDP	–0·0287* (0·0133)	0·0071 n.s. (0·0059)	0·0473* (0·0118)
(13) CE	–0·1667* (0·0361)	0·0194 n.s. (0·0156)	–0·0409 n.s. (0·0289)
(14) DP	–0·2648* (0·0534)	–0·0141 n.s. (0·0230)	–0·3337* (0·0501)
(15) SG	–0·0923* (0·0229)	–0·0438* (0·0096)	–0·1106* (0·0201)
(16) LV	–0·0023 n.s. (0·0013)	–0·0003 n.s. (0·0005)	–0·0065* (0·0012)
(B)			
(17) IEC	#	#	0·0244* (0·0054)
(18) IDP	#	#	0·0368* (0·0125)
(19) CE	#	#	–0·0396 n.s. (0·0304)
(20) DP	#	#	–0·2793* (0·0522)
(21) SG	#	#	–0·0865* (0·0214)
(22) LV	#	#	–0·0052* (0·0012)

Key:

For model numbers and abbreviations, see Keys to Tables 2 and 4.
\# = no parameter possible, given model specification,
* = parameter at least twice its standard error,
n.s. = parameter not significant (less than twice its standard error).

answer to this question is a firm 'no'. The parameter of model (11) for interaction between increase in *per capita* energy consumption and shift is significant and unexpectedly negative. There is a non-significant parameter for interaction with polarization and a significant parameter for interaction with uniform association. The positive sign for the last parameter indicates that technological change unexpectedly decreases social fluidity. This parameter has the same sign in model (17).

Secondly, there is the question of whether a

left-wing political climate increases circulation mobility, but possibly not structural mobility. On the basis of the parameters for model (15) the answer to this question is a qualified 'yes'. The parameter for the effect of years of socialist government on uniform association is significant and negative. The sign of this parameter says that for this country characteristic the predicted effect has been found. The negative sign of the parameter for interaction of socialism with uniform association is confirmed by the sign of the corresponding parameter of model (21). According to the negative sign of the significant parameter for interaction with shift, socialism leads to a significant downward shift in marginals. Given the negative sign for the significant parameter for interaction with polarization on top of this downward shift, socialist government effects a significant compression of competitive balances. Parameters with these signs for the interaction of number of years of socialist government with structural mobility were not expected.

Finally, there is the question of whether a country's absolute level of technological or economic development is unrelated to its structural and circulation mobility. The parameters of models (14) and (20) tell against Carlsson's guess that mobility is not necessitated by absolute level of development. The parameter for the interaction of average *per capita* gross domestic product and shift is significant and negative. The parameter for interaction with polarization is not significant, and that for interaction with uniform association is significant and negative. A more rapid pace of economic development does not lead to more structural mobility, but it does lead to more circulation mobility.

DISCUSSION

By incorporating specific country characteristics in log-linear models of intergenerational standard-of-living mobility tables for the nine member countries of the European Economic Community, this paper has shown that some of the relationships postulated in the macrosociological literature on mobility, when applied to intergenerational standard-of-living mobility, are contradicted by the data. There are falsifications for the hypothesis that countries with a higher level of technological development have more structural mobility, and for the hypothesis that countries experiencing more rapid economic changes will have some structural mobility. However, a confirmation was found for the hypothesis that prominence of the left in the political history of a country leads to more circulation mobility in that country.

This conclusion as to political history and circulation standard-of-living mobility is in agreement with earlier ones as to political history and relative chances of status groups and class mobility. But apart from the dimension along which mobility was ascertained, two other differences with earlier research have to be noted. First, in comparison with Erikson, Goldthorpe and Portocarero, Grusky and Hauser and Heath, the sample of countries in this paper is quite different. Secondly, the data analysed in this paper pertained to the standard of living of both male and female respondent's *families*, whereas the data analysed by the authors mentioned pertained to males only, and class position or membership in a status group was measured by reference only to the respondent himself.

The finding that a country's political history might influence structural mobility, shows that, as Hauser and Featherman have argued, more attention to questions of structural mobility seems desirable. In the light of the findings of this paper, the present neglect of the influence of technological factors does not seem warranted either. The effects of technological factors on structural mobility presented in this paper are far from obvious. It remains to be seen to what extent analysis of other data yields similar parameters for interaction between technological factors and structural mobility. The finding that a longer leftist political history for countries compresses competitive balance is perhaps not all that surprising.

This paper has shown that an analysis of a new mobility table, suggested by a neo-Weberian framework, leads to conclusions that are different from those obtained by analysis of more traditional mobility tables. However, this paper has only been concerned with one aspect of a person's life-chances, that is, his/her subjective standard of living at several points in time. This paper has not considered more objective measures of life-chances. Nor has this paper been attuned to the question of the relative influences of different types

of power or resources on life-chances in different countries. These questions, which may also be asked within a neo-Weberian framework, await further research.

NOTES

1. The number of power bases might be increased by adding social capital. This resource is implied by the occupational scale reported in Stewart, Prandy and Blackburn (1980).
2. A persons's cash income is, of course, a fallible indicator of his/her life-chances. When it became accepted that income differentials between manual and non-manual workers had decreased in capitalist societies, some sociologists maintained that a person's income is no longer a valid indicator of his/her life-chances. Often quoted in the British literature in this respect is Wedderburn and Craig (1974). It is to be noted, however, that this empirical study does not provide trend data.
3. We gratefully acknowledge the *Belgian Archives for the Social Sciences* in Louvain-la-Neuve for providing us with a copy of this survey and applaud the E.E.C. for making its surveys available for secondary analysis.
4. The source for the energy figures is the United Nations (1976: 94–99). The data on *per capita* gross domestic product for the 1950s were taken from the *Statistical Yearbook of the United Nations* for 1960 and 1961. Data for the 1960s came from the same publication for 1971 and 1973 (and in the case of the United Kingdom for 1972); data for the 1970s came from the 1977 instalment. The series on gross domestic product for Luxembourg lacks one observation, that for Ireland three. Series on energy consumption seem more homogeneous than those on gross domestic product.
5. The source for energy figures is again the United Nations (1976: 94–99). The source for the data on gross domestic product *per capita* is Eurostat (1980: 89).
6. The main sources were De Swaan (1973) and *Keesing's Historisch Archief*, with occasional additions from standard reference works.
7. Korpi and Shalev (1979) do not give data for Luxembourg. These were taken from *Keesing's Historisch Archief*.
8. Luijkx (1985) showed the equivalence in parametrization used by Hope and Sobel, Hout and Duncan.
9. The measure for goodness of fit proposed by Raftery is:

$$\text{BIC} = -2 \ln \frac{[\text{Prob } M_1 \text{ is true}]}{[\text{Prob } M_0 \text{ is true}]}.$$

In this expression, M_0 is the saturated model, and M_1 the model under discussion. The large-sample estimate of BIC is: BIC = LR – (df) ln N; that is, BIC is the log-likelihood ratio minus the product of the number of degrees of freedom and the natural logarithm of the number of cases.

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