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Ostdeutsche Lebensverläufe im Transformationsprozeß

The Study of Social Change and Longitudinal Studies: A Comparison of Panel and Cohort Design

Heike Solga

Arbeitsbericht 3/1997

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Das Projekt "Ostdeutsche Lebensverläufe im Transformationsprozeß" ist Teil des Forschungsprogramms "Lebensverläufe und historischer Wandel" (Leiter Karl Ulrich Mayer).
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DAS FORSCHUNGSPROJEKT

"OSTDEUTSCHE LEBENSVERLÄUFE IM TRANSFORMATIONSPROZEß"

Inhaltliche Schwerpunkte:

- die (vergleichende) Sozialstrukturanalyse individueller Lebensverläufe in Ost- und Westdeutschland
- die Analyse individueller Handlungsstrategien im Transformationsprozeß
- die Analyse der gesellschaftlichen Transformation in Ostdeutschland und ihre Auswirkungen auf individuelle Lebensverläufe

Datenbasis

Grundgesamtheit:

Die deutsche Wohnbevölkerung der Geburtsjahrgänge 1929-31, 1939-41, 1951-53, 1959-61 und 1971 in den Neuen Bundesländern im Oktober 1990

Stichprobe:

Personenstichprobe aus dem infas-Master-Sample, das im Oktober 1990 aus dem zentralen Einwohnermelderegister der ehemaligen DDR gezogen wurde

Erhebungszeiträume:

Pilotstudie: Februar/März 1991
Pretest: Mai/Juni 1991
Probeinterviews: August 1991
Haupterhebung: September 1991 - September 1992
Panelbefragung: März - Dezember 1996
Erstbefragung Kohorte 1971: März - Dezember 1996
Non-Response-Studie: ab Januar 1997

Erhebungsmethode:

Persönliche (mündliche) Interviews auf der Basis eines standardisierten Lebensverlaufsfragebogens; Aufzeichnungen der Interviews auf Tonband
Postalische schriftliche Befragung
CATI (computerunterstützte Telefoninterviews); CAPI (computerunterstützte persönliche Interviews)

Realisierte Fälle:

Pilotstudie: 34
Pretest: 71
Probeinterviews: 81
Haupterhebung: 2331
Schriftliche Zusatzerhebung: 1254
Panelbefragung: ca. 1700
Kohorte 1971: ca. 700
Non-Response: ca. 600

Introduction

The purpose of the paper is *not* to discuss the advantages and disadvantages of longitudinal surveys in general. I think there is no question that longitudinal studies are ideal frameworks in which to study social change at the micro-level, that is, "the development of the institutional, cultural, and social conditions of individual life courses" (Mayer & Huinink 1990, p. 213), and its dynamics (cf. Featherman 1979; Mayer & Huinink 1990; Rose et al. 1991a, b; Sandefur & Tuma 1987; Tuma & Hannan 1984). Assuming that social life is a conglomerate of causal and dynamic processes (Mayer 1990, p. 11), the paper focuses on the *extent to which longitudinal surveys are able to expose social change, the underlying causal mechanisms of such changes, and the social dynamics of these processes.* Longitudinal surveys can be conducted with alternative research designs -- prospective versus retrospective, individual- versus household-based. The paper compares prospective panel and retrospective cohort design.

The surveys used in the paper for exemplifying these issues are the *East German Life History Study* (EGLHS) of the Max Planck Institute for Human Development and Education in Berlin (conducted by Karl Ulrich Mayer) and the *Socio-Economic Panel for East Germany* (SOEP-EG) of the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung, Berlin). Although the paper uses a "German-German" comparison the conclusions are not restricted to the East German experience, but are of general relevance. Surveys for East Germany are in fact exceptionally useful examples since capturing social change is a very (if not the most) important issue on the social research agenda. Since changes are quite dramatical and occur in a (relatively) short period of time, analyses of the East German tranformation are very sensitive to time measures. Therefore, East Germany can be used as a good touchstone to investigate how far different longitudinal designs are able to capture the relevant changes in social life. "East Germany" is thus an insightful choice to help elucidate the advantages and disadvantages of the two longitudinal research designs -- the prospective panel and the retrospective cohort design.

The paper starts with a short description of the two surveys used. The following sections deal with the types and range of parameter estimates calculable with the two surveys, the analysis opportunities, and the quality of data. Due to space limitation, the paper concentrates in large parts only on one domain, labor market processes.

1 Short description of the East German Life History Study and the Socio-Economic Panel for East Germany

The *East German Life History Study* as well as the *Socio-Economic Panel for East Germany* are large-scale, multi-purpose surveys. The two studies collect information on different areas of social life, such as employment and education, migration, household formation and dissolution, fertility, income distribution and consumption behavior, and values and attitudes. But there are remarkable differences how they do this -- which have far-reaching consequences.

The *East German Panel Study*[1] is a random sample of *households,* clustered by region. The first wave was in Spring 1990. It collected -- based on a random-walk procedure -- information on 2179 East German households and 4453 adult household members, respectively. The response rate of the first wave is 70 percent. All adults (16 years +) of these selected household are then interviewed annually. "New households" are only formed by members of the households of the original sample (i.e., households which participated in the first wave in 1990). Mobility over time is measured (regardless of domain) by comparing statuses at the time of interview. For some selected issues, information about events/transitions which occurred between two successive panel waves are collected (in these cases, measures for discrete time intervals available). One major advantage of the Panel is that researcher can have relatively fast access to the database for each year's panel wave (mostly one year after interview time).

- Figure 1: East German Life History Study -

The *East German Life History Study*[2] is a retrospective study on *individual* life courses of men and women belonging to four birth cohorts (born between 1929-31, 1939-41, 1951-53, and 1959-61). The data were gathered between September 1991 and October 1992, and include 2323 men and women. The response rate is 52 percent. A comparison with official data sources for several characteristics has shown there is no selective sample bias (Hess & Smid 1995). It is a random sample stratified by cohort and gender, but not regionally clustered. Whereas the *East German Panel Study* is based on selection out of 360 sample points (covering 217 cities and counties), the *East German Life History Study* is based on 560 sample points (covering 427 cities and counties). Data on mobility (in all domains) are continuously measured (in event history form).

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1 For detailed information see Rosenbladt & Schupp (1991); Schupp & Wagner (1991).

2 For detailed information see Hess & Smid (1995); Huinink, Mayer et al. (1995); Solga (1996).

Table 1: Response rate of the East German Life History Study, Interview 1991/92

Gross Sample	**4.750**	
Losses caused by neutral reasons (%) (dead, unknown residential mobility)	281	(5.9)
Adjusted gross sample	**4.469**	**(100)**
No contact to the household or the respondent (%)	204	(4.6)
Sick (%)	84	(1.9)
Refusal (%)	1.822	(40.1)
No answer (%)	21	(0.5)
Systematic losses (%)	2.731	(47.7)
Realized interviews (%)	2.338	(52.3)
Unusable interviews (%)	7	(0.2)
Usable interviews	**2.331**	
Response rate (%)		**52.2**

Quelle: Hess & Smid (1995, p. 21).

Additionally, 1265 persons (65 percent) -- who indicated in 1991/92 that they might be willing to participate again -- took part in the follow-up survey carried out in June 1993. The main purpose of this follow-up was to collect information for the situation in 1993 and, especially, data on personality characteristics (such as self-esteem or control belief and strategies).

Table 2: Response rate of the East German Life History Study, Follow-up 1993

Gross Sample	**1.992**	
Losses caused by neutral reasons (%)	56	(2.8)
Adjusted gross sample	**1.936**	**(100)**
No contact to the household/respondent, no answer, sick (%)	641	(33.1)
Refusal (%)	29	(1.5)
Realized interviews (%)	1.266	(65.3)
Unusable interviews (%)	1	(0.05)
Usable interviews	**1.265**	
Response rate (%)		**65.3**

Quelle: Hess & Smid (1995, p. 37).

In March of this year, a successive interview panel was started. It focuses on the life histories since December 1989[3]. In addition, it allows repeating measures of the personality characteristics (asked in 1993). It includes all persons interviewed in 1991/92 and about 700 persons of an additional birth cohort (men and women born in 1971[4]). This cohort was chosen to monitor entry into the labor market, familiy formation and fertility behavior under the extreme conditions of system transformation.

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[3] This starting point was chosen for two major reasons: (1) it is an appropriate point of reference for the East Germans to recontrust their "life after the GDR", and (2) overlapping information between December 1989 and 1991/92 allows to study recall errors. The main aim of this approach is to improve the quality of data.

[4] For this cohort the entire life course starting with birth is asked.

Both surveys are based on the same sample source. They used master samples randomly selected out of the Official Residents' Registration of the former GDR in 1990. Hence, they only include persons who have lived in East Germany in December 1989, from that point of view only the "survivors". People who left the GDR before December 1989 were excluded from sampling.

- Figure 2: Time period comparison -

One of the main differences between the two studies -- implied by the different research designs -- is that they have different time frames to observe social change in East Germany. The Panel Survey monitors social changes in East Germany wave by wave *starting in 1990.* "GDR-reality" or "GDR-resources" of the East Germans are only captured as far as it can be done by collecting information about the situation at the first interview, that is in 1990. In contrast, the Life History Study reconstructs social changes which occurred *from 1945 until 1991/92 and with limitation until June 1993*[5] in East Germany.

2 Types and range of parameter estimates

In the following, the two surveys are compared regarding the types and range of parameter estimates calculable with them. For example, do they allow us to estimate population parameters representative for East Germany, do they allow estimations across time for modelling change processes, or in which ways do they provide information on the manner in which changes come about? The following considerations are substantially influenced by a paper of Mayer (1994) presented at a seminar on the "Use of Longitudinal Studies in the Policy Process" in Trento, Italy.

Figure 3:
Comparison between the East German Panel Study and the East German Life History Study - Part 1 -

2.1 Estimation of Population Parameters

For estimating population parameters the population *panel design* is clearly the more appropriate basis. Nevertheless, the panel design has to solve considerable problems with population representativeness. *First*, it is a regionally clustered sample which might cause biased estimates. *Second*, due to panel mortality and attrition the sample size decreases wave by wave. Whereas in the first wave of the East German Panel (1990) 2179 household and 4453 persons participated, in the fifth wave (1994) only 1959 household (90 percent) and 3945 persons (88 percent) did so. This introduces the risk of loosing population representativeness.

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[5] In the 1993-mailed interview only information on the current situation are available.

- Figure 6: SOEP-EG -

If one wants to employ the Panel for longitudinal analyses (from 1990 until 1994), one is left with only 74 percent of the original households and 71 percent of the adult household members. *Third*, since "new households" are only formed by members of the households of the original sample (i.e., which participated in the first wave in 1990) it is problematic to speak of a *random* sample up to the second wave. Households made up of younger persons could only become participants of the Panel if the original (parents) household participated in the first wave. Other households and persons have *no* chance of entering the Panel. In this respect, the Panel contradicts the assumption of random variables -- at the household level. At the individual level, the assumption of random sample is even contradicted from the outset. The individual members of the household could only become participants of the sample if one member of the household was selected for the Panel. In this sense, there was *not an equal chance* for each person of the East German population to be selected. In any individual-based analyses, we find respondents tend to cluster by household (in other words -- the risk of strong household bias) (c.f. Cox 1992). Hence, the statistical assumption of independent cases is not adhered to.

If one takes the *longitudinal* and the *random* approach seriously the original sample size of the East German Panel decreases from 4453 participants to 2721 persons (61 percent) -- if one even allows a "quasi"-independent sample including the head of the original household *and* the partner.[6]

These three problems of panel studies should be always kept in mind when interpreting the estimates as population representative.

Estimations based on the *cohort designs (like the EGLHS)* represent only the cohorts included -- in this respect, the parameters are cohort-specific (cohort-centrism). Since cohort studies focus on members of specific cohorts, the parameter estimates and their implications may be specific for these cohorts. Therefore, the selection of certain cohorts is a strategic and far-reaching decision. As analyses based on the EGLHS have shown, the cohorts selected are appropriate cohorts to study social change within the GDR (cf. Huinink, Mayer et al. 1995; Solga 1996). To be (problem-)representative for studying social change after 1989, the new 1996-panel of the EGLHS has added one further strategic cohort, namely the birth cohort 1971 who members are faced with special problems of entry into the labor market and family formation under the condition of transformation.

In addition, for analyses of the *life courses and social changes within the "GDR"* the EGLHS is faced with a twofold problem of prior mortality. First, people who died before 1989 are

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[6] This "independent sample" is used for further comparative analyses in the paper. The similar sample size (compared to the EGLHS) makes differences and similarities more visible. The conclusions of the comparison are not affected by this restriction.

omitted, as well as (2) people who left the GDR before 1989. Hence, estimates are only representative for the "survivors".

In general, it is more reliable to make interpretation on the *entire population* based on panel surveys than on cohort design. For the latter one has to be very cautious about the generalizability from the cohorts selected -- by making interpretations for the total population.

2.2 Estimation of Population Parameters across Time

As mentioned above, for panel studies, panel mortality and migration can lead to severe problems for making reliable population estimates over time.[7] This would be no problem in the case of pure random nonresponse. But there is little reason to expect that nonresponse occurs completely at random. With regard to migration, for example, one can assume that in many cases it is connected to labor market behavior. Hence, modelling occupational mobility over time might be biased since occupationally mobile respondents may be more likely to fall out of the sample due to residential mobility connected to new jobs (cf. Sandefur & Tma 1987, p. 306f.). By thowing out incomplete cases, such systematic differences between respondents and nonrespondents cause biased estimates (Hagehaars 1990, p. 249f.; Rendtel 1989). Furthermore, because of the multi-time measurement occassion of the panel design, there is a risk of changing measurements. This can also lead to biased comparisons over time or can even make such comparisons impossible.

In the East German Panel Study, for example, the classification scheme of occupational positions changed between the 1990 wave and the 1991 wave. Whereas in 1990 there was only *one* (broad) *category for the lower service* class -- as alternative to a middle and a upper service class category --, in 1991 there were *two categories of lower service class*, one with training and one without training. Because of this change at least 13 percent of the "independent sample" were "mobile" in occupational class (see Figure 10). In the first wave they allocated themselves into the middle service category, but in 1991 (with the new option) into the "lower service category *with training*". However, these people did the *same job* at the two interview time points. [But as we will see later (see 3.2) multi-time measurement occasion of panel studies is also an advantage.]

The consequence is that the longer the "life" of a panel survey, the higher these risks. Because of increasing questions about the risk in longitudinal panel studies (either due to panel mortality or changing measurements), Featherman (1979, p. 156) stated that "there is a tendency for prospective projects to devolve into a series of repeated cross-sections."

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[7] For example, to employ a ten-wave longitudinal sample of the West German Socio-Economic Panel leads to a loss of 50 percent of the original cases.

2.3 Estimation of (Cohort) Parameters across Time

With exception of the problem of prior mobility, life history studies are an appropriate design to estimate (cohort) parameters across time -- restricted to the cohorts considered. Because of the single measurement occassion, there is no risk of "panel attrition" and only little risk of interview breaking off midway through (only if the interview might be too long, too boring, or too hard). In addition, there is another advantage of the single occassion measurement of life history studies with respect to estimate parameters across time, that is, there is *no (risk of)* change in measurements, and there is a constant frame of reference and meaning (see section 3.4 on mobility processes).

Moreover, the respondents were asked to recall the "continuous history" of events or transitions in a series of life domains -- with month and year. In this respect, there are two restrictions to estimate unbiased parameters across time: recall errors and missing information because of memory (see section 3.3).

2.4 Reflection of Changes

- again Figure 2: Time Period Comparison -

Besides the specific problems of estimating parameters across time in the prospective design (nonresponse/changing measurements) and the retrospective design (recall errors), there is another major difference between the two designs. Panel data must be collected over a sufficiently long period of time in order to monitor change. When the panel is too "young" and, therefore, covers only a short period of history time than there is a risk of period centrism (cf. Blossfeld & Rohwer 1995, p.12; Peters 1988; Rose et al. 1991b).

In contrast, retrospective cohort studies "need" only one time point of interview and a strategically "smart" selection of cohorts to capture a long period of history (in the case of the EGLHS from 1945 to 1991/92).

2.5 Aggregation of Duration of States, Data on Continuous Trajectories

One major issue of analyses on social change is duration dependence, that is the extent to which outcomes are produced by *time spent in a certain status* (such research questions are the impact of the time of being unemployed on the chance to reenter into employment, the impact of prior working experience on the chance of upward mobility, or the impact of time spent in education on the fertility behavior).

With panel data it is difficult to capture duration dependence, because mostly only the current status is asked rather than the dates of transition. Since the panel design is based on the assumption that only one change occurred between surveys (one event per period), the panel only ask about the current status. Thus, some transitions cannot be correctly identified. Panel

data do not capture short episodes occuring between two waves, and the course of the events between surveys points remains unknown (Blossfeld & Rohwer 1995, p. 11).

Even if "time" information is asked for the current status and its relevant covariates, the opportunities for duration dependence analyses are (very) restricted. There are *three problems. First*, such time information is generally asked only if it is connected to the current status of the units at time of interview (i.e., at pre-determined survey points). To overcome this restriction, panel surveys have started to collect data on transitions and events which occurred between two waves. For example, the East German Panel asks detailed histories of "employment status transitions" over the previous year (such "employment statuses" are "employed", "unemployed", "in training", "in pension", "serving in the army" etc.). This information allows us to reconstruct a continuous history of employment statuses from the first wave until the last wave. However, there are still limits to the research issues which can be studied based on this history. For example, there is no information about *shifts between occupations* which may have occured within the episode of "being employed". There is also -- unfortunately -- no detailed information about the kind of job (such as job title and occupational positions) for employment episodes occuring between two waves. If we have a employment status history like the following: a person was "in training", then moved to "employment" and then became unemployed between two waves, we are not able to analyze the transition from training into employment in detail (for example, did the person get an adequate job etc.). The "younger" British Household Panel Study has learned from this experience and, therefore, also asks detailed histories of employment transitions *and* job characteristics over the previous year, so that a continuous quite detailed job history can be built up over time (Rose et al. 1991a, p. 32).

But -- I think -- even here there remains a *second* problem of panel data with regard to continuous histories. Because of the multi-time measurement occassion information, given in two waves about the same issue (e.g., start of the job at the current firm) are at risk to contradict each other. More generally, it is quite complicated to "re-arrange" the *discontinuous information* about statuses, events and transitions -- given in the several waves -- into a *continuous flow* of behavior.

The *third* limitation of panel surveys for time-dependent analyses is -- even though they do collect information on timing of transitions -- that each individual who is used in the analysis *must* have been interviewed during all waves of the survey (otherwise the time between measurements increases and the assumption of at most one event per interval becomes less viable) (Peters 1988, p. 493). And as we have seen above, attrition is a severe problem for panel surveys.

To calculate durations or to define the date when an event/transition occurs is much easier in *the life history design* -- with its event form of data. Instead of "discrete" records of variables provided by panel surveys, retrospective surveys allow to collect continuous records for the

several life domains (Dex 1991). It is -- so to speak -- the "nature" of life history design to allow the researcher to define for each time point the status in the life domain considered as well as the relevant covariates, and to know all transitions from one status to another in this domain. The main problem of the life history design in this respect are recall errors of the dates of transitions. It is assumed that (1) events closer to the time of interview will be better recalled, and (2) episodes of longer duration will be remembered better. One cannot definitely rule out these assumptions. But as Tuma and Hannan (1984) have shown, these kinds of biases have almost no effect on estimates of the effects of covariates. Furthermore, one can improve the quality of time information. This is discussed in the last part of the comparison (see section 4).

2.6 Full Backward Life Course

Especially in the case of East Germany, one major restriction of panel surveys become extremely visible, that is the left censoring problem. Information about events before the first wave of panel surveys are very restricted, since there is no complete history available.

As one can see in Figure 2, the East German Panel Survey has only information for the end of the GDR as signaled by the information about the situation in Spring 1990 (first wave). Resources of East Germans acquired under GDR-conditions are only marginally captured. Regarding occupational resources, one only knows the highest educational and the highest occupational degree obtained.

But especially in the case of system transformation, it is an interesting research question if the life courses prior to the transformation determine the life chances under the conditions of the new system. And as analyses with the EGLHS have shown the influence of GDR-life is remarkable (Diewald et al. 1995; Mayer, Diewald & Solga 1996). Due to space limitation, I will give only one example.

- Figure 7:
Logit regression on status mobility between 1989 and 1993 in East Germany -

The investigation of mobility processes between 1989 and 1993 has shown that occupational mobility of East Germans in the 1980's had an impact on the employment status held in 1993 (see Figure 7). People with shifts in occupation in the 1980's had/have a higher risk to be unemployed in 1993 as well as a lower chance to retain in their occupational status from 1989. Furthermore, upward and downward moves which occurred in the last ten years of the GDR are also significantly important for the status mobility after 1989.

In general, causal analyses based on the East German Panel are limited to information characterizing the life course post 1990.

This incomplete backward history limitation of panel surveys is, of course, extremely severe when analyzing system transformation. But it does not only apply to East Germany or the

other transformation societies. Left censoring is also problematic for analyses of social change in "system-stable" western societies. The solution is, of course, not to eliminate all respondents with prior histories and to include only those whose first event (for example, first job) occured after the first wave. This restriction means sample selection is not random, but for most research issues age-selective. One possible solution is -- as the British Household Panel is doing (Rose et al. 1991a) -- to use the first waves of the panel to reconstruct "retrospectively" the household, family and employment history. However, in doing so, this part of the panel data is naturally faced with all problems of recall like the history studies are.

In sum, I think, there is no doubt that collecting information of the entire history to the point of the interview (from the very beginning) is one major advantage of the life history design.

2.7 Household Trajectories

In contrast, one of the major advantages of household panel studies -- like the German one -- is the ability to analyze "household trajectories". It is an outstanding tool for research that focuses on changes at the household level.

But, even at the *individual* level, social research is devoting more and more attention to the household context. An increasing number of researchers agrees now that "any analysis of individual behavior needs to make reference to the family and household context because of the strong interdependencies between family and/or household members" (Rose et al. 1991a, p. 3). In this respect, an additional strength of panel data is the opportunity to examine the consequences of household compositional changes (in various dimensions) for each member of the household.

Also retrospective longitudinal surveys often do include (more or less limited) information about the family background with regard to parents, siblings, children and/or partners as well. The East as well as the West German Life History Study collect several cross-sectional data on family members (those mentioned above). Just as panel studies are capable of learning, life history studies are as well. Compared to the *West German Life History Study*, the East German one includes much more information about the partners and children. Since so many East German women are gainfully employed, the entire employment history of all partners between 1989 and time of interview, as well as employment information for the children are collected now in the EGLHS 1996-panel interviews. But, of course, the "household income history" (especially in its detailed version collected in the German Panel Survey) cannot be asked retrospectively (see section 3.1).

This first part of the comparison between prospective panel and retrospective life course design (of cohorts) details the strengths and the weaknesses of each design. They offer unique opportunities and cannot be easily exchanged. The trick is to keep these differences in mind and to choose the appropriate data set for particular research questions. Hence, the next sec-

tion compares for selected domains the analyses opportunities provided by the two longitudinal designs.

3 Analysis Opportunities

Figure 4:
Comparison between the East German Panel Study and the East German Life History Study - Part 2 -

3.1 Income Data

Given that people are willing to report their financial resources, there is no question that household panel surveys -- compared to life history surveys -- are the better basis for income analyses. First, retrospective surveys are much less appropriate because income especially is subject to recall errors and missing information (Dex 1991). Second, since the standard of living is not only dependent on the individual income, but on the income situation of the whole household, the houshold design of panel surveys allows more appropriate income analyses. Retrospective surveys, even though they ask for *family* income, are faced with the problem that people seem to have seriuos difficulty remembering family income accurately (Dex 1991, p. 24). One of the most distinctive contributions of household panels is the opportunity to analyze the link between income dynamics and household changes (Rose et al. 1991a, p.32).

3.2 Attitudes, Values, Personality

Attitudes, values, personality characteristics, and psychological states are not irretrievable (Featherman 1979, p. 162). As non-factual characteristics of individuals' life courses, motivational, attidudinal, cognitive, or affective states are problematic -- if not impossible -- to be approximated at later periods (Hannan & Tuma 1979). As time-bound phenomena they can only be collected at given state at the time of interview. Therefore, to investigate changes in non-factual characteristics one needs multi-time measurements. Panel surveys satisfy this requirement by its "nature" of repeated waves. They are ideal for monitoring behavioral and personality development (Featherman 1979, p. 155).

Life history surveys have only two opportunities to study such non-factual personality characteristics. First, they have the cross-sectional opportunity to collect such data at the time of interview. Second, they have the chance to study changes in values, norms and so on if they conduct at least one successive panel interview (as a two time point comparison).

Since value change and development of personality characteristics under such extreme conditions of system transformation are obviously interesting research issues, the East German Life History Study tried to realize such longitudinal measurement with its three interview time points (1991/92, 1993 and 1996). In the first interview in 1991/92, the Inglehart's material-

ism-postmaterialism scale -- which was frequently used in social research in the 1980s' -- was asked. Even though there were significant effects in several statistical models, the theoretical framework of the Inglehart scale made it difficult to find appropriate interpretations for East Germany. Therefore, the mailed follow-up in 1993 did not reuse this scale, but collected data for three other personality scales (which beforehand were proved to be meaningful for the East German context). These scales are the Rosenberg's self-esteem scale, the Heckhausen's control-beliefs scale, and the Brandstädter and Renner's tenaciousness-flexibility scale. All three scales have been reworked into an understandable (everyday) language (cf. Diewald, Huinink & Heckenhausen 1996). In the 1996-panel interview, these scales will be collected for the *second* time in the 1996-panel interview.

As the example of the East German Life History Study demonstrates, multi-time measurement occassions do not only have the advantage of repeated interviews, but also the risk of changing measurement. In the case of the EGLHS, it was certainly appropriate to change the (psychological) measurements. But, in doing so, the opportunity to compare information of three time points was lost. This shows how (small) changes can have important consequences for later research strategies (see section 3.4).

Finally, although multi-time measurement occassion is the apropriate design to collect data on value and behavioral development, there is nevertheless the problem of reinterviewing effects, in other words "response consistency effects" which can cause biased results (Sandefur & Tuma 1987, p. 263; Featherman 1979).

3.3 Open Questions

Of the standardized quantitative longitudinal designs life history surveys are really the only ones which include open-ended questions. It is almost impossible to include such questions in anually repeated panel waves. There are at least two reasons for this. First, since in panel surveys respondents are interviewed each year, interview time plays an important role for panel attrition -- and answering open questions, of course, takes more interview time than answering closed (item) questions. Second, open questions require an enormous effort in personnel and time resources for coding them. In panel surveys, coding resources are restricted due to the short interval between successive waves (see section 4.2).

Thus, the East German Panel includes only two open questions, the job title and the economic branch in which the respondents is employed at time of interview. In contrast, the EGLHS includes -- besides the the job titles for respondents, their parents and partners -- several open questions, for example, the reasons for migration or changing jobs, the evaluation of the life conditions under the GDR-regime (regarding work and family) and of the respondent's life so far, and the question of five important life goals of the respondents.

3.4 (Occupational) Mobility Processes

Besides the opportunity of time- and duration-dependent analyses, one cannot study social change *without mirroring the mobility processes adequately.* The timing of events and transitions and the "content" of transitions are both necessary in order to capture social change. In order to investigate mobility processes, for example, the data collected must accurately reflect the time dimension *as well as* the changes in qualitative (co-)variables of these processes. The time dimension and its reliability in the two designs compared have been already discussed in section 2. The considerations of this section focus on the "content" dimension, in other words, on the accuracy of the measures of the relevant status characteristics.

The prevailing assumption is that especially the panel design is more reliable in the measures of employment histories and labor market participation, household structure and residential mobility of the life course (cf. Rose et al. 1991a, p. 30). For example, Rose and his colleagues state: "These data are collected much more reliably in a panel study than in long term retrospective history surveys, but it does imply that many questions in a panel survey will be concerned with events in the period between interviews, rather than with the current situation at the time of interview" (Rose et al. 1991a, p. 30). Even if the last requirement is properly fulfilled, there are severe disadvantages of panel design with respect to mobility processes.

The disadvantages of the repeated panel design or the advantages of the single measurement life history design, respectively, are the following. Let us take job mobility in East Germany -- one of the main research issues at the agenda of tranformation research -- as an example.

The *first* problem of the panel design is that missing information on job titles (see Figure 8 and section 4.1) reduces the sample size of complete-case analysis -- especially in the longitudinal perspective -- and can lead to biased results. Taking the East German Panel as example, only 71 percent of the persons who were employed in 1990 and 1991 have an usable ISCO-code (see Figure 10, first and second columns). In contrast, in the EGLHS -- with its interviewer-guided interviews (see section 4.1) -- 88 percent of the persons are usable for studying occupational mobility. In addition, persons who have a missing ISCO-code are not randomly sampled. About 50 percent of them are unskilled or skilled *white-collar employees*, and only about 20 percent are skilled blue-collar workers (see Figure 9). This problem -- as can be seen in Figure 9 -- is not specific to the East German Panel, but applies also to the EGLHS. In general, this selectivity demonstrates that in the German case the ISCO has severe problems capturing (lower and middle status) white-collar occupations. In sum, both surveys have to cope with sample bias from only using cases with complete job information[8], but the number of incomplete cases is much higher in the panel design than in the retrospective design.

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[8] This was one reason the researchers of the EGLHS developed a GDR-specific classification for occupations (cf. section 4.2).

The *second,* and may be even more, serious disadvantage of the panel design in studying mobility processes is that -- even though exactly the same question is asked in each wave -- there is a *risk of inconsistency* in the frame of reference and meanings of instructions. Besides the fact that a single measurement design (as applied in retrospective surveys) is not faced with the risk of panel mortality and its implications (see section 2), this design has a very important advantage: The instruments are applied consistently and have nominally equivalent meanings. Respondents use a temporally *constant frame of reference in interpreting questions and instructions* (Featherman 1979, p. 162; Dex 1991, p. 2). This seems to be trival but has far-reaching consequences for the results of mobility analyses.

Using the two East German surveys, this difference between multi-time and single measurement occassion becomes obvious. Both surveys ask job title (coded by the ISCO) and occupational position/class ("Berufliche Stellung") for each employment episode captured by the two designs.

- Figure 11: Example -

Let us use a very simple example to demonstrate the difference between the two designs (see Figure 11). Imagine there is a person who has one job episode characterized by occupation X and occupational class Y lasting from time t_1 to time t_2. The interpretation of this mobility process would be: 'Stability in occupation and occupational class'. Given the person remembers this job episode at all, in the *single measurment design* the reporting would be: one job episode characterized by occupation X^* and occupational class Y^* lasting from time t_1^* to time t_2^* -- where the star signals that there might be some variation. But, in the last instance, we have the report of 'stability in occupation and occupational class' -- just like the real situation. What are the possible response patterns in the multi-time measurement design? To make it as simple as possible, we assume that there are two panel waves within the time period of this job episode. Figure 11 shows, there are (at least) four different response patterns possible -- whereby only one of them corresponds to the real situation. The latter is the case if the person reports in both panel waves the same occupation and the same occupational class membership. But since there is some time between these two interviews, the meaning of instructions or the quality of answers could have changed. If this is the case, the respondents might report a different occupation, a different occupational class, or a different occupation and occupational class in the second wave. In all three cases we would find "mobility" as a result instead of stability! Probably the highest risk of changing response in contradiction to reality is the respondents' allocation into a certain occupational class within a pre-defined classification scheme -- since this is a (theoretical) sociological contruct which does not automatically have the same and, thus, constant meaning for the respondents.

- Figure 10: Wave comparison of occupation and occupational class -

This problem becomes obvious when comparing the percentages of persons who have no change in occupation but reported a change in occupational position. The contrast between the two surveys is extremely striking. In the East German Panel, 28 percent reported the same occupation but different occupational class positions in 1990 and 1991. In the EGLHS only 2 percent changed their occupational class without changes in the ISCO (this might be true as, for example, they were employed in 1990 and became self-employed in 1991 -- but this explanation cannot hold true for the 20 percent higher figure in the Panel).

This example shows how in single measurement design 'stability' and 'mobility' are *constructed by the respondents themselves*, whereas the multi-time measurement design imposes *the risk of artificial mobility* -- since each time of interview a new framework of meaning can be employed. That only *one* framework of codes and meaning is systematically used in reporting histories is a unique advantage of the retrospective design. This adds a further argument to the difficulties in building up continuous histories based dicontinuous measures (see section 2.5).

3.5 Causal Analysis of Outcomes

Prospective as well as retrospective surveys as longitudinal designs provide appropriate data to model causal relationships between life events and conditions. The limitations of the two designs -- stated regarding estimations across time (see sections 2.2, 2.3, 2.4), backward history (see section 2.6) and household context (see section 2.7) -- also restrict the capacity for such causal modelling. Panel surveys do this by connecting the information of the successive waves. Prior history as far as it is captured can be employed for explaining later events or transitions. Life history surveys do this by collecting histories in several domains.

3.6 Causal Analysis of Transitions (Timing, Time varying co-variates)

The major advantage of life history studies is the ability to analyze the timing of transitions and the impact of time varying co-variates on these transitions (cf. section 2.5). Due to their "event oriented observation design", "they provide the most complete data possible on changes in qualitative variables" (Blossfeld & Rohwer 1995, p. 17). Nevertheless, there is still the risk of recall biases (see section 4.3).

Panel surveys are not so appropriate for analyzing time sequencing of causal effects, as they provide "incomplete" histories which makes it difficult to calculate durations and to determine dates of events (see section 2.5). This is especially problematic if changes in independent variables can occur more than once and when several changes are possible between successive waves -- as can be assumed for job shifts (cf. Sandefur & Tuma 1987; Blossfeld & Rohwer 1995).

3.7 Historical Specificity

Panel as well as life history studies allow us to study the impact of historical periods (events) and lifecycle effects. One can distinguish between period, age and cohort effects (cf. Hagenaars & Cobben 1978; Mayer & Huniunk 1990; Peters 1988). Period effects are those which indicate the exceptional impact of certain time periods on life chances -- but are the same for all respondents irrespective of their age (such periods effects are known for the world economic crisis or the second world war). Age effects signal that chronological age determines the outcomes studied. Here, we have variation across age but the same impact of variables for all respondents with equal age. Finally, cohort effects reveal that life conditions and opportunity structures changed over time; this means, members of the same (birth) cohort are faced with the same conditions, but these conditions are different than those ones of other cohorts. Cohort analysis is an useful means to study societal change (Mayer & Huinink 1990, p. 212). The impact of social change is conceptualized as time-dependent opportunity structures -- specific to cohorts (Mayer & Huinink 1990, p. 213).

The *panel design* allows us to specify age and period effects. The estimation of both kinds of effects, however, is only possible with restrictions. The limitation of estimating *age effects* is the fact that the older the cohort, the higher the probability of incomplete information ("history") prior to the first interview wave. One of the limitations of *period effects* is, first, that it takes many years of panel data collection before researcher have anything resembling a "history" (Peters 1988, p. 489) -- and in this respect, different social periods. The second limitation is that only social change which occurs up to the first wave can be captured.

- Figure 2: Time Period Comparison -

In the case of the East German Panel Study that means the data allows us to investigate effect of system transformation. But period effects which apply to social change in the GDR cannot be investigated.

Cohort effects are very problematic to estimate with *panel data*. The sample size becomes too small when aggregating the data by cohorts, or the cohort definitions becomes too broad in order to include sufficient cases. In addition, the older the cohort is, the higher the risk of incomplete history prior to the panel wave. In contrast, by design estimating cohort effects is the advantage of *retrospective cohort studies*. This design also allows us to estimate age and period effects. But there are limits. Since in life history surveys, there is generally not the chance to conduct repeated interviews, (1) the life courses of the younger cohorts remains as "short" as the time of interview is fixed, and (2) the period effects which can be catch up by the data are also determined by the time of interview, that is, all of them are prior to the interview. In contrast to panel design, there is no chance to monitor (or "follow") social change.

In sum, the comparison of the prospective panel and the retrospective life history design points out that the two designs offer quite unique analysis opportunites. The strengths of the

panel design are issues which need multi-time measurements (e.g., income, changes in values and attitudes). The strengths of the life history design are issues where single measurement occassion is advantageous (mobility processes, timing of events and transitions, time varying covariates). Furthermore, the life history design -- and especially in its multi-cohort version -- is preferable for analyzing long-term social change, whereas the panel design is favorable for monitoring social change. In this perspective, the prospective (repeating) design provides the opportunity to verify hypotheses about changes occurring in future.

4 Quality of Data

The next two sections deal with more technical issues of the two designs. But they are important because they have tremendous impact on the reliability of the parameter estimates obtained, the analysis opportunites provided, and the feasibility of the two designs under the condition of always restricted resources.

Figure 5:
Comparison between the East German Panel Study and the East German Life History Study - Part 3 -

4.1 Interviewing method

The respondents of panel as well as life history surveys are interviewed by a questionaire consisting of a set of (mostly) standardized questions. But the interviewing methods used are different. Retrospective interviews are always interviewer-guided, either by person or by phone. Due to personnel-efficient reasons as well as interview time boundaries, panel surveys use face-to-face interviews for the household questionaire (i.e., measures at the household level) and individual self-completed questionaires for measures at the individual level. The last ones are subject to uncontrollable interview situations, and missing or incorrect (unusable) information.

- Figure 8: Missing data on occupational situation -

One example of the last risk is the higher number of incomplete or missing information of job characteristics (unusable for ISCO-coding) in the East German Panel compared to the EGLHS (see Figure 8, cf. section 3.4). Whereas almost 20 percent of the ISCO-codes are missing in the several panel waves, only half of this number (about 10 percent) are missing (at comparable time points) in the EGLHS.[9] Since employment history and career mobility is one of the

[9] Figure 8 also shows how the standardized (closed) question can reduce the problem of missing or unusable information in self-completed questionaires. In contrast to the high figure of missing ISCO-codes, the amount of missing information on occupational position is relatively small.

major issues of the EGLHS, the interviewers were specially trained in collecting the appropriate information on the job characteristics.

For both designs there is no doubt that the quality of data collected by the face-to-face interviews is highly dependent on the "interviewer" quality. As known for several panel surveys as well as life history surveys, they put much effort in training the interviewers. Here, panel surveys have a continuous need for training resources because training has to be repeated every time new interviewers are recruited.

In both surveys the EGLHS and the SOEP-EG, although the interviews were (are) carried out by extern survey institutes (infas and infratest, repectively), the training of interviewers were supervized by researchers of the respective survey's responsible institute (Max Planck Institute for Human Development and Education and German Institute for Economic Research, respectively).

4.2 Editing and Coding

Data collected by panel and restrospective life history surveys require editing and coding procedures. In panel surveys, editing and coding time and personnel are restricted by the time interval between two successive waves. In this time interval, editing the most recently collected data *and* preparing the questionaire(s) of the new wave have to be done simultaneously. Therefore, what panel surveys mostly do (or able to do) for editing is a quick check of each questionaire for missing information and computer-aided editing procedures for several issues. The coding of the few open information collected by the (East and West) German Panel Survey is done by an external research service institute (ZUMA).

In contrast, *retrospective surveys* have less time and personnel restrictions since they (mostly) take place only once. Editing and coding time is not under pressure of the "next" wave. They can take special precautions to ensure the quality of data. Taking the example of the EGLHS to exemplify this, one can imagine the differences to panel survey resources easily. Each of the 2323 interviews was reviewed for internal consistency. The editing rules were defined by the scientific researchers of the project, (East German) students were trained for editing the data, and the editing process itself was carried out under the supervision of the researchers. In correcting contradictory information and soliciting initially missing data, many of the respondents were contacted again by phone or letter.[10] The example of EGLHS also shows the opportunities of retrospective surveys for coding open information. To enable a comparison with other surveys, the job titles were coded by the same institute as the Panel data (ZUMA). In addition, in order to be sensitive to GDR-specific circumstances and the specific research aim to reconstruct GDR-life courses, a new GDR-coding scheme of occupations was devel-

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[10] For information, this editing procedure took about two years.

oped by the Max Planck Institute (Solga 1993). This new scheme is more successful in using available information to allocate people into occupational codes the the ISCO (see Figure 8). Whereas in December 1989 11 percent of the job title information could not be allocated to ISCO-codes, only 1 percent of the *same* information could not be allocated to the MPI-scheme of occupations. (The same holds true for the examples of job titles in April 1990 and in April 1991).[11]

Also all of the other open information were coded by the Institute based on self-developed coding schemes. Coding within the institute under the guidance of the researchers enhances sensibility -- coding schemes can be developed for particular research issues of interest.

4.3 Recall errors

Retrospective data do certainly not suffer from the serious problems of panel data, such as mortality and changing measurement conditions, but they are potentially subject to errors of recall. However, as we have seen so far, evaluations of panel versus life history data like the following are misleading: Panel data are more accurate because information is collected at a point in time close to the event, whereas retrospective life history data which are more subject to bias since there is a greater reliance on memory (cf. discussion in Dex 1991; Peters 1988).

First, multi-time measurement does not automatically lead to "true" information. There are (at least) four contraints: (1) The tricky issue of income questions indicates that respondents might not to be willing to answer certain kind of questions.[12] (2) There is the risk of "response consistency effects" (see section 3.2). (3) In any survey, there is the risk that answers given correspond to the socially accepted norms. And (4) as the example of job history has exemplified, multi-time measurement of mobility processes introduces a risk of artificial mobility.

Second, several analyses have shown that the amount of recall errors is not "fate" (or in other words, uninfluenced) but dependent on the various technical factors (cf. Blossfeld 1987; Dex 1991; Featherman 1979; Mayer & Brückner 1989; Mayer & Huinink 1990; Robinson 1986). First of all, one must be sensitive to the type of questions which can be asked retrospectively. Comparing several longitudinal studies, Dex has shown that certain sorts of data can be retrospectively collected with a reasonable degree of accuracy. These are marital and fertility histories, indivudual's family characteristics and education, employment history (Dex 1991,

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[11] For information, the higher number of job title information not possible to allocate in June 1993 is due to the "mailed" (self-completed) interview method which provides a lower quality of the responses given (cf. section 4.1).

[12] One of such tricky question special to East Germany was expected to be the party membership in the communist Party (SED). To avoid panel mortality because of this question, the East German Panel did not ask this question. But as the EGLHS -- which has asked this question -- has shown this was *not* a question were respondents denied to answer or "gave consciously wrong answers" (Solga 1994).

p.24). The design of survey and the interview method both play a role in improving (or may be hindering) recall. A respondent is asked to recall the history of events in a series of life domains. In order to build up the presence of an elaborated temporal reference system to improve recall (Robinson 1986; Dex 1991), the ordering of the life domains collected is consequential. Recall studies have shown that starting with residence (where respondent's birth is the starting point) and parents and siblings, and then continuing with schooling and training, respondent's work history, partnership and parenting is a useful procedure. This ordering corresponds to the "true" life course of the respondents and gives the opportunity to cross-reference the histories of domains. In addition, recall is improved in face-to face interviews (Dex 1991, p. 21). Here, the respondent is led by an interviewer through years, the events are recorded by month and year.

There is no question that one has to be cautious for recall errors in life history surveys -- as well as for errors caused by multi-time measurements in panel surveys.

5 Costs and Research Efforts

Besides the issues discussed so far, costs and research efforts are not insignificant for choosing one of the two research designs. Both methods are costly in time and money and impose severe contraints on the sample size. But panel surveys are more expensive than retrospective ones. In this respect, retrospective surveys are ironically a cost-efficient alternative to panel studies. This has several reasons. Due to the necessity of repeated waves, panel surveys require money and research staff over a long period of time. In contrast, retrospective surveys have the advantage in that financial and personnel resources are required for a single measurement time and editing period only. But -- as we have seen (see section 4) -- even here, the field work and reviewing effort of the interviews are time- and personnel-consuming.

In general, besides the sample size, differences in costs and research staff requirements are mainly due to different time frames of field work of panel and life history surveys. Therefore, if one is in the situation to conduct a longitudinal survey, it is very important to clarify in advance which kind of research issues are to be investigated in order to decide if the "cheaper" alternative of retrospective cohort studies is appropriate or if one really needs the more expensive panel design. Irrespective of money available, a comparison of the two designs is helpful for choosing the most resource efficient alternative, and more importantly, the design most appropriate to the research issues at hand.

6 Conclusions

The purpose of the paper was to show to which extent prospective and retrospective longitudinal studies are able to expose social change, the underlying causal mechanisms of such changes, and the social dynamics of these processes. The comparison has exemplied the

strengths and the weaknesses of each of the two designs. In general, both of them offer unique opportunities to study social change and cannot be easily exchanged. But the differences between them should be kept in mind when choosing the data set for particular research questions.

With respect to the *types and range of parameter estimates* it is to state that the *advantages of the panel design* are the ability (1) to estimate population parameters -- even though there are severe contraints to estimate them across time (e.g., panel mortality, sample selectivity at the individual level) --, (2) to monitor social change up to the first panel wave -- although social change prior to the panel time cannot be studied --, (3) to link the household situation and individual life courses, and (4) to reduce recall errors by collecting data for the situation at the time of interview or closed to the time events occured. *Major limits of panel surveys* are (1) the problem of panel attrition in longitudinal analyses, (2) the reconstruction of continuous histories based on discontinuous measures, and (3) the incomplete information prior to the start of the panel.

To make the story short, one can say that the limits of the panel design are the advantages of the retrospective life history design and the advantages of the panel design are problems in the life history design. The two *major advantages of the retrospective design* are clearly that (1) the investigation of social change can include issues of duration dependence and time varying co-variates and (2) that -- in contrast to panel design -- it provides by nature of its design "continuous event histories" which allow the researchers at any time point to define the status of the respondents in the life domain considered as well as the qualitative characteristics connected to this status.

Further the *analyses opportunities* provided by the two longitudinal designs are unique. Whereas the multi-time measurement panel design is more appropriate for analyzing (individual and household) income changes, attitudes, values and personality characteristics than the retrospective single measurement design, the last one has considerable advantages in including open questions and analyzing mobility processes. Due to its single measurement design and its collection of continuous histories, retrospective surveys do not suffer from the risk of changing frames of reference and meanings and, thus, artificial mobility. Last but not least, both designs are useful tools for causal analyses of outcomes. However, the causal analyses of transitions (including impact of the timing of events and time varying co-variates) is the distinctive advantage of retrospective surveys. Finally, there are different opportunities to capture age, period and cohort effects as means to study social change. Both survey designs allow the estimation of age and period effects. Whereas in life history design -- and especially in its multi-cohort version -- the period effects are indicators of long-term social change (prior to the time of interview), in the panel design they capture social change up to the first wave. Cohort effects are only meaningfully calculable with cohort retrospective sur-

veys; otherwise there are the problems of incomplete histories for the older cohorts and too broadly defined cohort boundaries.

Finally, the comparison of technical issues of the two designs contributes to the generally important topic of survey implementation. The quality of data is highly dependent on the interview method, the quality of the interviewers, as well as the resources for editing and coding the data collected. That is, (1) face-to-face interviews provide better data than self-completed interviews, (2) the closer the coding schemes are related to the research issues of interest, the lower the risk of missing values, and (3) recall errors do not automatically favor panel surveys, as they can be remarkably influenced and reduced by the interviewing method chosen, the training of the interviewer, the ordering of the questioned topics in the questionaire, and the editing effort.

The *final conclusion* is obvious. Both designs have their advantages and disadvantages which result in *a design-specific appropriateness for certain research issues.* Some issues of social change are better studied with panel surveys than with retrospective life history surveys and visa versa. In general, it would be a useful strategy to try to employ increasingly a mixed design in longitudinal research, in other words, we should optimize simultaneously both the retrospective and event history part in panel surveys and the multi-measurement opportunities in retrospective surveys. "In short, the more closely panel data resemble event-history data, the fewer the problems in analysis" (Tuma & Hannan 1984, p. 27), and the more closely retrospective life history data resemble household and "post"-interview data, the fewer the restrictions of this design.

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Figure 1: East German Life History Study

at the Max-Planck-Insitute for Human Development and Education, Berlin

- First interview on "GDR-Life-histories until interview" (face-to-face): 1991/92
- Follow-up on "Situation in June 1993" (done by mail): June 1993
- Interview on "Life-histories since December 1989" (done by phone or person): started in March 1996

Original sample: N = 2330 respondents

Cohort	Total	Male	Female
1929-31	592	290	302
1939-41	586	294	292
1951-53	577	291	286
1959-61	575	269	306
All cohorts	2330	1144	1186

⇓

Net-sample [without migrants to West Germany before Dec. 1989]:
N = 2323 repondents

⇓

Mailed follow-up: N = 1265

[65% of the persons willing to participate in a successive panel interview]
[54% of the original net-sample]

Figure 2: Historical time observed by the two surveys

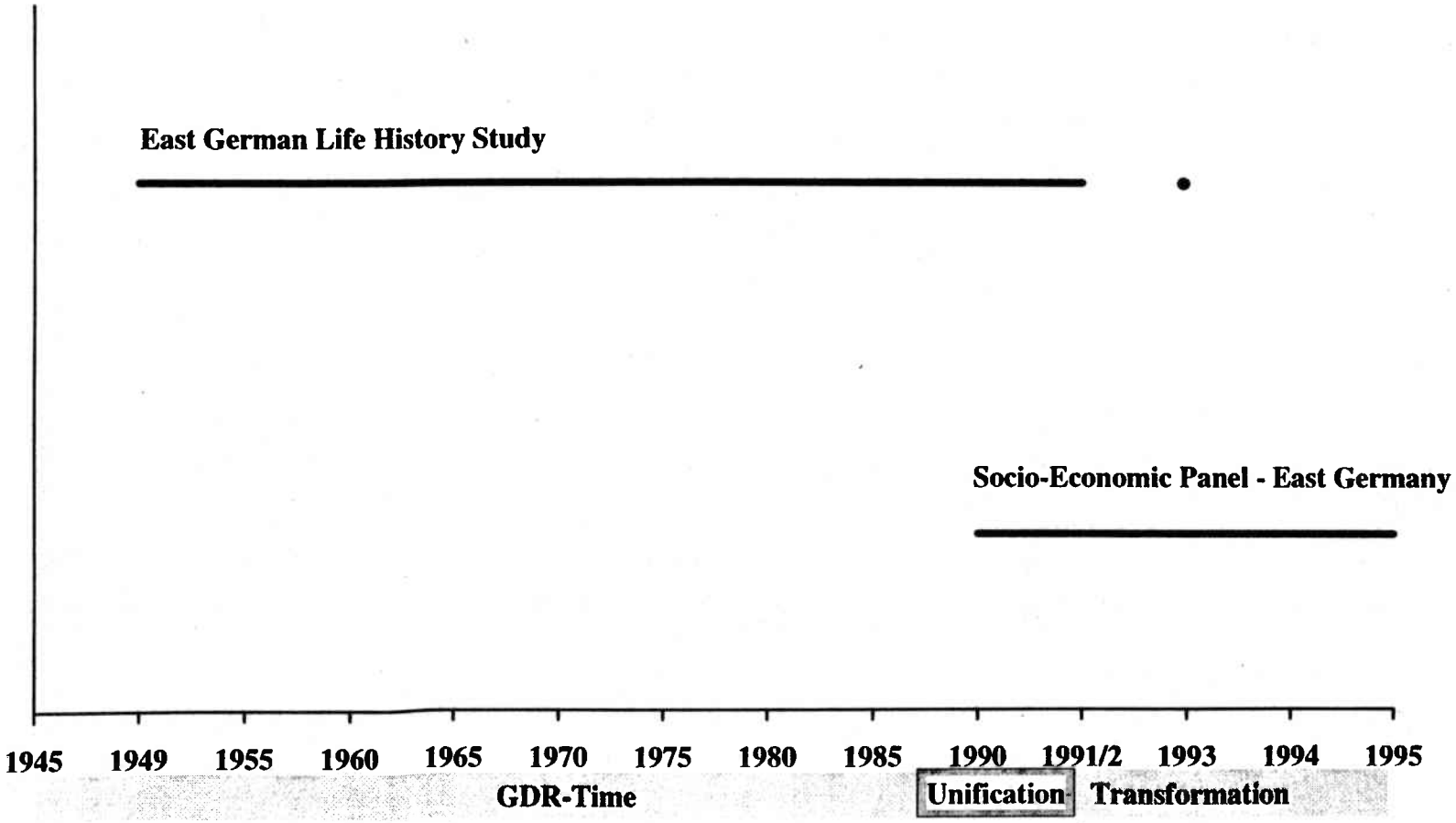

Figure 3: Comparison between the East German Panel Study and the East German Life History Study - Part 1 -

	Panel Study (SOEP-EG)	Cohort Study (EGLHS)
Parameter Estimates		
Estimation of *Population* Parameters	+ (but: clustered sample/panel mortality/ "new households" are only formed by members of the original sample - contradicts random sample assumption)	- (cohort centrism/prior mortality)
Estimation of Population Parameters *across Time*	+ (panel mortality, migration)	
Estimation of (Cohort) Parameters *across Time*		+ (prior mortality)
Reflection of Changes	(+) (but: "aging" of the panel is necessary - fallacy of period centrism)	+ (but: cohort centrism)
Aggregation of *Duration* of States, Data on Continuous Trajectories	(-) (mostly discrete information/mostly restricted to wave dates)	+
Full Backward Life Course	- (left censored)	+
Household Trajectories	+	(-) (sometimes elaborated reference to family and household context)

Figure 4: Comparison between the East German Panel Study and the East German Life History Study - Part 2 -

	Panel Study (SOEP-EG)	Cohort Study (EGLHS)
Analysis Opportunities		
Income Data	+	(-) (subject to recall error)
Attitudes, Values, Personality	+ (but: re-interviewing effects possible)	- (only at time of interview)
Open Questions	- (restricted by interview time and especially by coding effort in each wave)	(+) (restricted by interview time)
(Occupational) Mobility Processes	(+) (multi-time measurement occassion: changing frames of reference)	+ (single measurement occassion: contant frames of reference)
Causal Analysis of Outcomes	+	+
Causal Analysis of Transitions (Timing, Time varying co-variates)	(-) (very restricted to certain domains)	+
Historical Specificity	+ for period and age effects (but: "aging" of panel is necessary!)	+ for period, age and *cohort* effects

Figure 5: Comparison between the East German Panel Study and the East German Life History Study - Part 3 -

	Panel Study (SOEP-EG)	Cohort Study (EGLHS)
Quality of Data		
Interviewing method	(+) combination of interviewer-guided and self-completion interview	+ only interviewer-guided interviews
Editing and coding	(-) *East German Panel Study:* very time-restricted/ mainly machine-aided editing procedure/ coding done extern	+ *German Life-History Study:* all interviews reviewed under supervision of the research staff (if necessary, respondents were contacted again)/ coding partially done outside, partially done or guided by research staff
Recall errors	-	(+)
Costs and Research Efforts		
Costs	**high** (*repeated* waves over decades: long-term interview and personnel costs)	**middle** (interview time, editing and coding effort)
Research time frame	**very high** ("aging" of the panel must be realized)	**middle** (field work and editing procedure is time-consuming)

Figure 6: Socio-Economic Panel - East Germany

at the German Institute of Economic Research, Berlin

First wave:	**1990**
Panel waves:	**1991, 1992, 1993**
Last wave (considered):	**1994**

Original sample: N = 4453 respondents
(2179 households)

⇓

Sample participating in each of the five waves: N = 3148 respondents [71%]
(1613 household [74%])

⇓

"Independent" sample : N = 2721 respondents [61%]
[(original "head of the houshold" plus partner (when existing)]

* In the "independent sample", there is finally *almost no person* younger than 25 years old who is in training/education! ⇒ *very selective sample for the age bracket 16 - 25 years old.*

Figure 7: Logit Regression Models for

Unemployment, downward mobility, stability of occupational position, and upward mobility

in East Germany between 1989 and 1993

(Odds ratios; N = 765 East Germans employed in Dec. 1989, birth cohorts: 1939-41, 1951-53, 1959-61)

	Labor market position in 1993 compared to 1989			
Co-variables	***Unemployment***	***Downward mobility***	***Stability of occupational position***	***Upward mobility***
Individual assets in 1989				
Party membership in 1989				
(0 = no; 1 = yes)	1.03	**2.52**	**0.64**	0.68
Highest occupational degree in 1989:				
(Ref.: vocational training)				
No training	2.05	0.27	0.78	0.90
Master	1.22	0.26	1.08	2.46
Technical college	0.68	1.08	0.86	**2.57**
University	0.78	1.18	0.71	1.98
Gender: Female	**2.34**	**1.72**	**0.56**	0.68
Cohort:				
(Ref.: 1939-41)				
1951-53	**0.54**	**0.47**	**2.38**	0.51
1959-61	**0.29**	0.64	**2.15**	1.22
GDR-Life-Course: Employment history in the 1980's				
Shifts between occupations				
(Ref.: no)				
1 shift	**2.52**	0.70	**0.64**	0.63
2 or more	**2.80**	1.02	**0.61**	0.32
Shifts between firms				
(Ref.: no)				
1 shift	0.70	0.90	1.20	0.84
2 or more	0.93	1.18	0.82	1.13
Career mobility				
Upward mobility	**0.52**	**2.56**	0.91	1.16
Downward mobility	1.67	**0.23**	**0.60**	1.30
Job shifts due to ...				
private reasons	**1.98**	**0.53**	1.08	0.92
(Ref.: other reasons)				
Structural factors				
Residential area 1989				
(Ref.: Village/rural area)				
Urban area	**0.50**	1.16	1.33	1.03
Economic sector 1989				
(Ref.: primary/sekundary industries)				
Industrial services	0.65	1.11	1.07	1.38
Public sector	**0.22**	0.91	**2.76**	**0.48**
Improvement of fit [chi-square] (df = 18)	98.0	56.3	74.7	48.4

Source: Mayer, Diewald, Solga (1996)

Figure 8: Missing data on occupational situation

Wave	Employed persons (N)	*Missing data in ...* Occupational class ("Berufliche Stellung") %	Occupation (ISCO, 1968, 3-digits) %	Occupation (4-digit MPI-Code) %
Socio-Economic Panel - East Germany*				
1990	2181	5	**19**	not available
1991	1874	5	**21**	- " -
1992	1678	4	**20**	- " -
1993	1592	5	**18**	- " -
1994	1550	3	**19**	- " -
East German Life History Study				
12/1989	2038	[1]	11	**1**
4/1990	2015	[1]	10	**1**
4/1991	1623	1	10	**2**
6/1993	724	3**	not available	**6**

* Basis: "Independent sample" (N = 2721)
** Not in questionaire - "expert"-coding
[ ] less than 5 persons

Figure 9: Occupational class of persons with *undefined* ISCO

Wave	Persons with missing ISCO	Un-/Skilled white-collar employees	Upper white-collar employees	Skilled blue-collar workers
	(N)	%	%	%
Socio-Economic Panel - East Germany*				
1990	391	**42**	24	18
1991	350	**56**	22	21
1992	317	**46**	18	18
1993	263	**51**	13	17
1994	266	**52**	14	18
East German Life History Study				
12/1989	217	**48**	8	17
4/1990	207	**48**	8	17
4/1991	162	**51**	9	14

* Basis: "Independent sample" (N = 2721)

Figure 10: Problem of longitudinal observations

Wave comparison	Persons employed in the two waves	Persons available *without* missing ISCO (in both waves)	Persons *without* shift in occupation -- but *with* shift in occupational class
Socio-Economic Panel - East Germany*			
1990 - 1991	1811	1280 (71%)	355 (28%)**
1993 - 1994	1455	1180 (81%)	266 (23%)
East German Life History Study			
4/1990 - 4/1991	1583***	1396 (88%)	34 (2%)

* Basis: "Independent sample" (N = 2721)

** At least 25 % of those are *suspicious* shifts between the categories of "Angestellte" (white-collar employees). Whereby at least 13 % (46 persons) are "mobile" due to changing classification scheme.

*** Persons employed at both time points.

Figure 11: Occupational mobility in multi-time versus single measurement occassion

- Example -

1. "Real situation":

One job spell
with occupation X and occupational position Y

t_1 ---------- t_2

Interpretation of mobility process: Stability in occupation and class

---

2. Single measurement occassion:

One job spell
with occupation X^* and occupational position Y^*

t_1^* ---------- t_2^*

Interpretation of mobility process: Stability in occupation and class (correct)

---

3. Multi-time measurement occassion:

Wave t_n Wave t_{n-1}

t_1^{**} ----------I ----------(t_3)----------I ---------- t_2^{**}

Possible answers	Wave t_n	Wave t_{n-1}	Interpretation	Correctness
1	occ. X^{**}, occ. class Y^{**}	occ. X^{**}, occ. class Y^{**}	Stability in occupation and class	correct
Due to changing frames of reference (meaning) and/or additional risk of invalid answers (missings) in the successive wave:				
2	occ. X^{**}, ***occ. class Y^{**}***	occ. X^{**}, ***occ. class Y^{***}***	Stability in occupation, but **mobility** in occupational class	*incorrect*
3	***occ. X^{**}***, occ. class Y^{**}	***occ. X^{***}***, occ. class Y^{**}	**Mobility** in occupation, stability in occupational class	*incorrect*
4	***occ. X^{**}***, ***occ. class Y^{**}***	***occ. X^{***}***, ***occ. class Y^{***}***	**mobility** in occupation **and** occupational class	*incorrect*

Legend: "occ." = occupational title; "occ. class" = occupational position

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