German Institute
for Economic Research

DIW BERLIN

www.diw.de

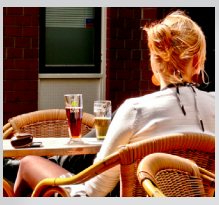
SOEP The German Socio-Economic Panel Study

SOEP Wave Report

1-2008

Bruce Headey
Elke Holst

A Quarter Century of Change: Results from the German Socio-Economic Panel (SOEP)



Berlin, November 2008

A Quarter Century of Change:

Results from the German Socio-Economic Panel (SOEP)

Bruce Headey and Elke Holst

Editors

DIW Berlin, November 2008

Impressum

German Socio-Economic Panel Study | SOEP
DIW Berlin
Mohrenstr. 58
10117 Berlin
Germany

Phone +49-30-897 89-283
Fax +49-30-897 89-109

Director:
Gert G. Wagner

Editors:
Bruce Headey and Elke Holst

Technical Office: Michaela Engelmann

Content

Part I

Introduction 5

The basic idea of SOEP 5
The SOEP samples: original sample members, split-offs and new samples 6
Developments in SOEP 1984-2008: new topics covered in the questionnaires 7
SOEP's international connections 8
Overview of the contents of this report 8

Children who attend formal day care do better in school – even many years later in secondary school 11

Charlotte Buechner and C. Katharina Spiess

Who goes to formal day care and for how long? East-West differences 12
Children from higher SES backgrounds more likely to attend day care longer 13
Time in formal day care and secondary school attainment 13
Discussion and policy implications 14

Does family poverty affect the health of newborn children? 17

Marcus Tamm

Data: the mother-and-child module in SOEP 2003 17
Family poverty affects the risk of low birth weight but is unrelated to other infant health outcomes 19
Access to medical services 19
Discussion 20

Increasing childlessness in Germany 23

Christian Schmitt

Childlessness in Germany in cross-national comparison 23
Childlessness in successive German cohorts 25
Gender differences in childlessness 25

Mothers predicted to do more paid work as a result of reforms to parental leave benefits 29

C. Katharina Spiess and Katharina Wrohlich

SOEP and the STSM micro-simulation model 29
Financial winners and losers 30
Will mothers work more – and what about fathers? 31
Discussion 32

Germany's middle class has shrunk: incomes increasingly polarised from 2000 to 2005 35

Markus M. Grabka and Joachim R. Frick

Defining middle class incomes 35
SOEP evidence on incomes 35
A shrinking middle class 36
Not just shrinking but sinking? The middle class in 2002-2006 36
What kinds of families no longer have middle class incomes? 37
Many people are seriously worried about their economic situation 37
Concluding points 38

Persistent poverty is increasing in Germany 41

Olaf Groh-Samberg

Measuring poverty: income and deprivation 41
How persistent is poverty? The key advantage of SOEP panel data 42
A combined poverty indicator 42
Almost one tenth of the population is in persistent poverty 43
Clear increase in persistent poverty 44
Workers are most affected by persistent poverty 45
Conclusion 46

Increased unemployment has led to growing poverty 49

Earnings inequality has increased but most low earners are not 'working poor'

Jan Goebel, Peter Krause and Juergen Schupp

SOEP – tracking individual earnings and household incomes since 1984 49
Drivers of change – increased variance/inequality of earnings and increased non-employment in the East 50
Increased inequality in household market incomes 51
Changes in the labour force and non-labour force – full-time employment has fallen sharply and many no longer seek work 51
Links between low earnings, unemployment, jobless households and poverty 52
Policy implications 53

More direct losers than winners from the 2005 unemployment reforms 57

Jan Goebel and Maria Richter

Income support before and after the 2005 reforms 57
Winners and losers 58
Who was worst affected?Increases in poverty rates 59
Discussion 60

Returns to education: not until 2005 did East German men do as well as Westerners, but Eastern women did better 63

Katie Lupo and Silke Anger

Advantages of the SOEP data – returns to human capital for the same respondents for almost 20 years 63
Returns to education before reunification and in the early transition years 64
Returns to education from 1992 onwards 66
Returns to work experienceand tenure with an employerfrom 1992 onwards 67
Migrants who moved from East to West 67
Discussion 67

Jobless households: children growing up with no role model in the world of work 69

Bruce Headey

Overview: increasing numbers of jobless households 1992-2006 69
How persistent is household joblessness? 70
Households at greatest and least risk of joblessness 71
Children in jobless households 72
Discussion and policy implications 72

Do 'bad' jobs lead to 'better' jobs? Evidence for 1996–2006 75

Bruce Headey

Prime age men—it can be assumed that almost all want full-time jobs 75
The first five years 76
The second five years 76
The ten year picture 1996-2006 77
Can the results be trusted? Taking account of human capital 77
Results similar for prime age women 79
Discussion 79

The gender pay gap in Germany 81
How large is it? Is it decreasing? How much is due to workplace discrimination?
Elke Holst and Anne Busch
The gender pay gap: SOEP evidence for 2002 and 2006 82
How large is the gender pay gap? Has it decreased?. 82
How much of the gender pay gap is due to labour market discrimination? 82
Discussion and concluding points 85

The set-point theory of subjective well-being has serious limitations:
SOEP results challenge the dominant theory 87
Bruce Headey
Long term SOEP data on life satisfaction. 87
Substantial minorities record large changes in life satisfaction 88
Personality traits partly account for changes in life satisfaction: some people 'roll the dice'
with a positive bias (upside risk); others roll with a negative bias (downside risk) 88
Discussion 90

Underweight? Overweight? How is weight linked to physical and mental health? 93
Hanfried H. Andersen, Markus M. Grabka and Johannes Schwarze
Evidence about health and weight 93
Underweight and overweight 2002-2006 94
Health risks associated with being underweight and overweight 94
Use of medical services 95
Discussion 95

German attitudes to immigration linked to economic self-interest 99
Ingrid Tucci
Economic beneficiaries from immigration 100
Economic losers from immigration. 100
SOEP data on attitudes to immigration. 100
Economic beneficiaries are supportive of immigration 101
Economic losers are more opposed to immigration. 101
Discussion 102

Voluntary activities in an ageing society: East and West Germany 105
Harald Kuenemund and Juergen Schupp
20 years of SOEP evidence on the prevalence of voluntary activity in East and West Germany 106
Discussion 108

Part II

Technical Appendix. 111
1 Introduction to the technical appendix 113
2 The SOEP user support and information system 114
3 Weighting procedures in SOEP from 1984 to 2007 120
4 Compensating for missing data in the SOEP. 129
5 The 2007 SOEP data release 132
6 The German SOEP: An integral part of the international statistical infrastructure 137
7 Outlook 144

GLOSSARY I
Absolute poverty I
Body-Mass Index (BMI) & obesity I
Equivalised income I
Equivalence scale. I
Fertility intentions I
Gender pay gap II
Human capital and returns to human capital II

Household disposable (net) income II
Household expenditures and consumption II
Household gross income. II
Household pre-government income II
Household labour income II
Income mobility. III
Jobless households III
Personality traits III
Relative income poverty. III
Social capital III
Well-being III

Introduction

This is the first of what, it is hoped, will become an annual series of Wave Reports on the German Socio-Economic Panel Survey Study (SOEP). SOEP has now been running for a quarter of century (1984-2008). Twenty-five waves of data have been collected. So some respondents, about 2,500 middle aged and older people, have kindly agreed to be interviewed twenty-five times. The central theme of SOEP is 'subjective and economic well-being over the life course'. In practice, this means interviewing about four main topics: family life; wealth, incomes and standard of living; employment and unemployment/joblessness; health and life satisfaction. This report contains short articles with statistical tables covering each of these topics. Our target readers are policy makers and the informed public.

The ambitious aim of SOEP, and of the Wave Reports, is to provide on an annual basis a new type of social statistics for Germany; *longitudinal panel statistics* describing the ways in which people's lives are changing. In addition—and equally important—the Wave Reports will give a technical summary of the development of the survey and its fieldwork.

The basic idea of SOEP

The social statistics we are all familiar with are *cross-sectional*. That is, they provide snapshots—still photographs—of the percentages of Germans who, at one moment in time, are married, single or divorced, income rich or income poor, employed or unemployed, healthy or sick. *Repeated cross-sections* of the kind provided by the yearbooks and surveys of the German Statistical Office (Statistisches Bundesamt) inform us about aggregate social trends, about whether and by how much the percentages who are married, poor, unemployed … are changing.

Panel data are quite different and add a new dimension to social statistics. A panel survey is longitudinal rather than cross-sectional. It follows people's lives over time; the same individuals and family members are interviewed every year. So we can see how individual lives are changing. We can see whether the same people remain married, income poor or unemployed every year. As readers of this volume will see, the panel method opens up new understandings. Cross-sectional statistics only change slowly and usually record only small changes from year to year. So it seems 'natural' or obvious to infer that the same people remain married, poor or unemployed year after year. Panel data in Germany and many other Western countries show that, while the first inference happens to be correct, the second and third are more wrong than right. That is, it is true that more or less the same people stay married year after year (only about 2% of marriages end each year, even though eventually over 30% will end in separation), but it is false to believe that the same people stay income poor and/or unemployed year after year. On the contrary, most poor people cease to be poor within a year or two, and most unemployed people get jobs within six months, although long-term unemployment has increased in recent decades. On the other hand, panel data also show that people who have been poor or unemployed in the past are at greater risk of returning to poverty and unemployment than others.

So panel data offer something like video evidence rather than the photographic evidence of cross-sectional surveys. In social science jargon, panel data tell us about *dynamics*—family, income, labour, well-being and health dynamics—rather than *statics*. They tell us about *duration/persistence*, about how long people remain poor or unemployed, and about the correlates of entry into

and exit from poverty and unemployment. For these reasons panel data are crucial for Government and public policy analysis. The aims of policy include trying to reduce poverty and unemployment, so it is vital for policy makers to distinguish between short, medium and long termers—quite different policy interventions may be needed to assist these different groups—and to gain an understanding of reasons for entry and exit from these states.

In summary, national panel surveys are vital to policy makers and the social science community. They should be viewed as *social science infrastructure*. The Director of SOEP, Professor Gert G. Wagner, who spent six years as a member of the German Science Council (*Wissenschaftsrat*), likes to compare national panel surveys to 'hard science' infrastructure: particle accelerators, the Genome Project and in particular the worldwide chain of weather stations (Wagner, Frick and Schupp, 2007).

The SOEP samples: original sample members, split-offs and new samples

SOEP is planned and designed by the SOEP research team at DIW Berlin. Funding comes from the Federal Government (BMBF) and the German State Governments via the Leibniz Association (WGL). Annual interviews have been conducted from the outset by TNS Infratest Sozialforschung, the widely respected social research company based in Munich. So two professional teams are running SOEP: a Berlin team and a Munich team.

The underlying idea of a national panel sample is to follow representative respondents through all stages of life—through birth, marriage and death, then on to the next generations as well. Original sample members are interviewed every year. In SOEP all household members aged 17 and over are asked to give an interview. The existence of family members under 17 is recorded and information is obtained about more and more key facts about their lives; their age, child care, education and so forth. When family members leave home, perhaps to get married or go to university, they are still interviewed every year and all members of their new household who are 17 and over join the sample as well. Interviewing 'split-offs' and members of their new households is a key method by which panels maintain national representativeness. The whole process can be thought of as replicating birth, marriage, death and intergenerational change. The one obvious flaw is that this sampling method does not pick up immigrants, except in so far as they marry or start living with sample members. So special immigrant samples need to be added as a panel matures. This was in fact done in SOEP in 1994-1995 as well as in the representative refreshment samples started in 2000 and 2006.

SOEP started in West Germany in 1984 with two sub-samples. Sample A covered the national population living in private households and Sample B was an over-sample of the five main immigrant groups in West Germany at that time: Greeks, Italians, Spanish, Turks and Yugoslavs. In the two samples combined there were just over 12,000 respondents in just under 6,000 households.

Interviewing continued in 1984-89 and then the Wall came down. In that unique situation SOEP had a special opportunity and challenge. The opportunity was to measure conditions in the GDR before it ceased to exist, and then in subsequent years trace social and economic changes and the integration of the two societies. A new sample of East Germans was added in mid-1990 before reunification, when the GDR's occupational and wage structure were still in place. The sample comprised approximately 4,400 individuals in over 2,000 households. These respondents are followed in exactly the same way as the original sample members, and this of course includes following people who move from the Eastern to the Western states, and vice-versa.

By 1994-1995 about 5% of Germany's population consisted of immigrants who had not been in the country when SOEP started. So it was essential to have a new immigrant sample. This was done but it was expensive. About 20,000 households had to be screened to identify about 600 which included new immigrants.

Even though the SOEP sample was already large, a problem faced in some analyses was insufficient numbers in key 'policy groups'; for example, single parents and recipients of specific welfare payments. Rather than attempt to sample these groups specially, it was preferable to substantially increase the total sample. In 2000 additional funds were raised and the sample was almost doubled to over 10,000 households.

A special group who were still inadequately sampled were 'the rich'—very high income-households who in some cases also have a high level of wealth. Social scientists write a great deal about the rich, and about so-called 'capitalists',

but almost never collect evidence about a representative sample of them. In 2002 SOEP drew a special sample of households in the top 2.5% of the income distribution. In that year, not coincidentally, we did our first individual level survey of wealth holdings (assets and debts).[1]

The latest boost to the sample came in 2006 at which time there were 22,639 respondents aged 17 and over in 12,499 households. 5,143 children under 17 also lived in these households and information about them was recorded. An aim for the future is to add refresher samples when necessary in order to stabilise the sample size at about this level.

As remarked earlier, there are 2,500 respondents who have given interviews every year since SOEP started. Many children of the original sample members have turned 17 and joined the sample as respondents themselves, and then in 2005 the first grandchildren were turning 17. About 50 grandchildren were interviewed that year.

When SOEP began, all interviews were face-to-face and responses were recorded by the traditional PAPI (paper and pencil interviewing) method. In 1994-1995 CAPI (computer assisted personal interviewing) was introduced. CAPI interviews are somewhat more accurate, partly because the computers which the interviewers carry are programmed to preclude accidental skips of questions and logically impossible answers ('wild codes'). A few well established respondents also choose to self-administer questionnaires and send them back by mail. We have made comparisons between results using the three modes of data collection—PAPI, CAPI and self-administration—and find that no biases are introduced by using different modes.

Despite a large net increase in numbers over the years, *sample attrition*—that is, people dropping out due to refusal, death, or our inability to locate them—is a major issue in all panel surveys. Because of attrition, panels may slowly become less representative of the populations from which they are drawn, although due to the 'split-off' method and the drawing of refresher/booster samples this does not necessarily occur. The SOEP Survey data managers analyse attrition each year and supply *weights* to 'correct' for differences between the panel sample and the population. To give a straightforward example, if it were found that men had dropped out of the panel at a greater rate than women, and that consequently men were under-represented by 2% and women similarly over-represented, then the weights would have the effect of multiplying all men's results by 102/100 and all women's results by 98/100.

In this report, cross-sectional weights are always used when cross-sectional results are reported and longitudinal (multi-year) weights are used when longitudinal results are reported.

Developments in SOEP 1984-2008: new topics covered in the questionnaires

This section describes how SOEP has been extended over the years to take in new topics and questions, and accommodate the interests of a wider range of scientists. The core remains 'well-being over the life course'. In terms of questioning this meant that, right from the outset, SOEP was quite eclectic. It always included both 'objective' questions, which asked people to report about questions of fact (e.g. their income or their highest level of education), and also 'subjective' questions asking about feelings and opinions (e.g. life satisfaction, social networks).

When SOEP began it was run by and was primarily of interest to economists and sociologists. But other branches of science also have much to contribute to analysis of the life course, and their interests are now more fully reflected in the questionnaire. Developmental psychologists and family sociologists are interested in issues relating to child-rearing and nature-nurture debates. For them SOEP has long offered large samples of siblings, step-children, adopted children and now grandchildren. Then in 2001 an age-triggered questionnaire was introduced. 2001 was the year in which the first children who, so to speak, were born into SOEP joined as full 17 year old respondents. A "Youth Questionnaire", focusing on issues of interest to teenagers was included. In 2003, a "Mother and Child" questionnaire came in for the first time, to be completed by mothers who had given birth in the last year. Two years later these mothers completed an "Infant Questionnaire", reporting on their baby's early development.

Psychologists, experimental economists and the growing army of social scientists interested in life satisfaction and 'subjective well-being' were keen for SOEP to include measures of personal traits which affect, or may affect, economic decision-making and subjective well-being. So in 2004 measures of trust and risk aversion were included,

1 Wealth had previously been measured at the household level in 1988.

and then in 2005 SOEP included a short version of the so-called Big Five Personality Domains (Costa and McCrae, 1991). The personality traits or domains measured are neuroticism, extroversion, openness to experience, agreeableness and conscientiousness (Gerlitz and Schupp, 2005). In 2006 measures of cognitive ability, given only to small groups of respondents, were included for the first time. New teenage respondents completed a 30 minute test of verbal, numerical and figural ability, and a sub-sample of adult respondents did a very short cognitive test (Lang et al., 2007).

An increasing number of health and medical researchers have begun to take an interest in SOEP. The Survey has always collected measures of self-reported health and use of medical services. In 2002 and subsequent years we added measures of height and weight (hence body-mass index; BMI), and of smoking and alcohol consumption. In 2006, dynamometers were used to measure grip strength (a sub-sample only) because changes in grip strength are known to be a better predictor of later health than standard self-report measures (Schupp, 2007).

SOEP's international connections

So the scope of SOEP keeps being extended as it takes in new topics of interest to a range of scientists. The Survey has also established international connections, including links with other panel studies (Burkhauser and Lillard, 2005). The Cross-National Equivalent File (CNEF) is a six-country data set, updated each year, comprising national panel surveys from the U.S., Britain, Canada, Australia and Switzerland as well as SOEP (Frick et al., 2007). SOEP is also one of the surveys included in the Consortium of Household Panels for European Socio-Economic Research (CHER) and was also the German contribution to the European Community Household Panel (ECHP), which ran from 1994-2001. SOEP data are included in two well known and widely used cross-sectional data bases, the Luxembourg Income Study (LIS) and the Luxembourg Wealth Study (LWS).

Overview of the contents of this report

This report is in two parts. Part I consists of selected articles, reporting evidence about stability and change in family life, incomes, jobs, health and well-being during the last twenty-five years. Part 2 provides technical information about the survey and the fieldwork conducted in 2006-07.

The articles in Part 1 have been selected with several criteria in mind. They all focus on a significant public policy issue, or topic of public concern. Some articles marshall long term evidence, showing the value of panel data collected over a quarter of a century. Other articles display the interest and value of research on new topics and lines of questioning recently introduced into SOEP.

So Section 1 on Family Life begins with an article by Charlotte Buechner and Katharina Spiess on the much debated issue of whether attending kindergarten and child care helps or hinders children's subsequent educational performance. Also reviewed is evidence about the impact of child care on emotional development. Then comes an article by Marcus Tamm on whether in Germany family poverty has a detrimental effect on the health of newborn children. In other Western countries it does. In Germany, with comprehensive pre- and post-natal care available, it appears not to.

The remaining two articles in the Family Life section deal with newer topics in SOEP. Christian Schmitt makes use of new data on fertility attitudes and behaviour to explain low birth rates in Germany. Katharina Spiess and Katharina Wrohlich present estimates of the likely future effect on women's and men's labour force participation of reforms to parental leave benefit which were recently introduced.

Section 2 on Incomes starts with an article by Joachim Frick and Markus Grabka on the shrinking middle class. The article reviews long term evidence showing that middle (or middle class) incomes are decreasingly common, with more and more incomes being either very high or very low. Subsequent articles deal with long term changes in poverty and deprivation, measured in a range of interesting ways, and on the impact of unemployment and the increase in jobless households on poverty. This part concludes with a policy evaluation; an assessment of the initial effects of the Hartz IV reforms to unemployment benefits and social assistance.

Section 3 on Jobs begins with a central topic in labour economics, namely the amount of extra earnings received for extra education and skill ('returns to human capital'). Katie Lupo and Silke Anger estimate returns in Eastern and Western Germany since just before reunification through to the present time. Then comes an article on the growing phenomenon of jobless households; working age households in which no-one has a paid job. A third article asks 'do bad jobs

lead to better jobs?' The German Government is increasingly pressing unemployed people to take any job they are offered. The argument in favour of exerting pressure is that if people can get some sort of start (or re-start) in the labour market, then a 'bad' job may lead to a 'better' job. The concluding article in this section by Elke Holst and Anne Busch is on the gender pay gap. Are women closer to gaining equal pay, or is the gap to men's pay as wide as ever?

Well-Being, the heading for the final section, is something of a catch-all. Articles are included on long term changes in life satisfaction in Germany (1984-2007), and also on long term changes in the number of people who are overweight or obese. Then comes an article on which sections of the German host community are most and least accepting of immigrants. The final article reports twenty years of evidence about volunteering work and caring activities in the context of an ageing society.

In Part 2 of this Wave Report readers will find technical reports on SOEP. Information is provided about questionnaire development in 2006-07, the completed samples, sample attrition, weighting, methodological issues and data quality.

This report has mainly been prepared by the SOEP Survey team at the German Institute for Economic Research (DIW Berlin). It is of course not intended to be comprehensive. It focuses mainly on panel (longitudinal) results, rather than cross-sectional results of the kind well covered by Statistical Office surveys, and it seeks just to give a flavour of what SOEP has discovered. Much more detailed analysis of every topic covered in this volume is being and should be undertaken. It is hoped that some readers will make their own analyses, and in this context it should be mentioned that the SOEP data are available at no cost to researchers who sign a confidentiality agreement.[2]

Berlin, November 2008

Bruce Headey and Elke Holst

2 Readers who would like to enquire about the data should view **www.diw.de/gsoep**

References

Burkhauser, Richard V. and Lillard, Dean R. (2005)
The contribution and potential of data harmonisation for cross-national comparative research, *Journal of Comparative Policy Analysis*, 7, 313-330.

Costa, Paul T. and McCrae, Robert R. (1991)
NEO PI-R. Odessa, Fla., PAR.

Gerlitz, Jean-Yves and Schupp, Jürgen (2005)
Zur Erhebung der Big-Five-basierten Persönlichkeitsmerkmale im SOEP. *DIW Berlin Research Notes* 2005-4.

Lang, Frieder R., Weiss, David, Stocker, Andreas and Rosenbladt, Bernhard v. (2007)
Assessing cognitive capacities in computer-assisted survey research, *Schmollers Jahrbuch,* 127, 183-191

Schupp, Jürgen (2007)
Greifkraftmessung im Sozio-oekonomischen Panel (SOEP), *DIW Berlin Data Documentation* 23.

Wagner, Gert G., Frick, Joachim R. and Schupp, Jürgen (2007)
The German Socio-Economic Panel Study (SOEP) – scope, evolution and enhancements, *Schmollers Jahrbuch,* 127, 139-169.

Children who attend formal day care do better in school – even many years later in secondary school

Charlotte Buechner and C. Katharina Spiess

Questions about the advantages and disadvantages of sending young children to formal day care ("*Kindertageseinrichtungen*") have always greatly concerned parents and led to intense, if not always well informed, policy debate. Two issues have been foremost. One is whether young children removed from their parents' care for part of the day suffer long term emotional consequences, or whether on the contrary, interaction with other children and with carers improves their social skills and confidence. Results are generally positive for children over three years old, but mixed for children under three, with some studies indicating negative socio-emotional consequences (Rossbach, 2005), and others reporting no negative emotional results and clear gains in social competence (Tietze, 1998; Andersson, 1989, 1992; NICHD, 2000, 2001). The second issue, dealt with in this article, relates to children's cognitive development. Do children who have been to formal day care which exposes them to some pre-school learning achieve better, the same, or worse educational results in their later school years? If they do better, how long does the advantage last? Does it persist through to secondary school?

This article is based on fifteen years of evidence in SOEP, covering children born between 1984 and 1998. These children of course came from the full range of socio-economic and ethnic backgrounds found in contemporary Germany. Some went to formal day care for as long as six years, almost from birth, others went just for a year or two, and a few never went at all. Their parents continue to be interviewed in SOEP and every year they record information about their children's current education. So researchers are in a position to assess the relationship between early child care and later school achievement – even secondary school achievement.

Most previous research on the consequences of formal day care for cognitive development has relied exclusively on retrospective evidence; that is, respondents are asked to recall whether they (or their children) went to formal day care and what activities they engaged in there. Retrospective evidence is clearly subject to error, and the generally positive relationships found in previous research between formal day care attendance and subsequent educational performance might be partly due to a tendency for parents whose children have done well in school to attribute results partly to their own wise choice of formal day care. Furthermore, previous retrospective studies have generally not investigated the connection between length of time in formal day care (as distinct from attendance versus non-attendance) on educational performance. An exception is Bos et al (2004) who found a positive association between duration of attendance and performance in reading, writing, mathematics and natural science.

We now provide some basic information about how many children go to formal day care and how long they stay there, highlighting major differences between East and West Germany. We then document the link between attending formal day care and higher socio-economic status and family incomes. Then come the main results assessing whether or not, net of all other relevant factors, length of time in formal day care results in better performance in secondary school. Finally, we consider some important policy implications of our findings.

Table 1

Places available in formal day care (places per 100 children by age group) 1982-2002

	1982	1986	1990	1994	1998	2002
Places for children under 3						
West*	1.4	1.6	1.8	2.2	2.8	**4.2**
East*	64.7	79.8	54.2	41.3	36.3	**37.0**
Total	14.4	16.8	11.2	6.3	7.0	**8.6**
Places for children aged 3 to 6.5						
West*	65.6	69.3	69.0	96.2	111.8	**105.1**
East*	91.6	93.4	97.4	73.0	86.8	**89,5**
Total	73.1	76.1	75.9	77.2	89.5	**91.3**

Notes:* West 1982-1998: West Germany with West Berlin, 2002: West Germany with Berlin as a whole; * East 1982-1998: East Germany with East Berlin, 2002: East Germany without Berlin as a whole.

Sources: State Central Administration for Statistics: 1989 Statistical Yearbook of the German Democratic Republic, Berlin 1989, Federal Statistical Office: Statistics of the Child and Youth Aid Service – organizations and active persons, various years, Wiesbaden, compiled and calculated by the Dortmund Office of the Child and Youth Aid Statistical Agency, July 2006.

Who goes to formal day care and for how long? East-West differences

Table 1 documents the availability of day care places for children under three, and then for children aged three to six-and-a-half. The data come from official sources and are provided separately for East and West Germany from 1982 onwards.

Far more places are available for children under three in the Eastern states. As is well known, this is a hangover from the GDR where nearly all women worked full-time and went back to work soon after their children were born. There is a serious shortage of places for younger children in the West. The problem is slowly being addressed; viewing matters positively, there was an increase in places of 50% from 1998-2002. But it was only from 2.8 to 4.2 places per hundred children. As we shall see, this continuing shortage might have significant policy implications in that it negatively impacts on the educational opportunities of children from low SES backgrounds.

Next we summarise evidence provided by parents in SOEP about the time their children spent in formal day care. The evidence relates to 569 children born in 1984-98.

Just a few children (2.7%) never attended formal day care, while a few more, mainly in East Germany, attended for six years and so were there virtually from the time they were born until they started primary school. So the data show that, collectively, these children had the full range of possible formal day care experience; ideal for research purposes.

Table 2

Duration of care and educational experience in formal day care, children born 1984-1998

Duration (years)	% share	N
0	2.74	29
1	4.04	34
2	20.06	134
3	49.38	246
4	14.66	71
5	4.79	30
6	4.33	25
Total	100.00	569

Source: SOEP 1984-2005.

Children from higher SES backgrounds more likely to attend day care longer

Although the costs for formal day care are relatively low in Germany compared to other industrialised countries (for instance, low income households very often pay no fees at all) the results show that children from higher SES backgrounds are both more likely to attend in the first place, and more likely to remain there for a longer period. Table 3 reports results of an ordinary least squares (OLS) regression in the which the outcome variable is number of years spent in formal day care and the explanatory variables are various measures of social background and year of birth.

Much depends on mothers! The evidence in Table 3 makes it clear that German mothers who are well educated themselves and who worked either full-time or part-time are more likely than other mothers to send their children to formal day care. Length of time in formal day care is also associated with having a relatively high household income. Mothers from an immigrant background, and those from poorer less educated backgrounds, were less likely to have their children in day care for a lengthy period. So were mothers with several children rather than a single child. Also, as we already know, East German children attend for longer on average than their Western peers.

Time in formal day care and secondary school attainment

Our key evidence relates to whether length of time in formal day care improves secondary school attainment. To assess this, we need to

Table 3

Relationship between attending formal day care and socio-economic variables (OLS regression)

Explanatory variables[1]	coefficient	t-value
Boy	**–0.05**	(-0.53)
Number of siblings	**–0.10**	(–1.74)+
Lone mother	**0.44**	(1.50)
Mother German	**0.30**	(2.22)*
East Germany	**0.43**	(1.68)+
Village	**–0.18**	(–1.07)
Large city	**–0.15**	(–1.19)
Mother's age	**–0.00**	(–0.21)
Mother apprenticed	**0.16**	(1.36)
Mother attended Uni.	**0.39**	(1.75)+
Father apprenticed	**–0.04**	(–0.29)
Father attended Uni.	**0.18**	(0.96)
Mother: years of f/t work	**0.14**	(4.60)**
Mother: years of p/t work	**0.08**	(2.79)**
Income	**0.02**	(1.67)+
N	**556**	
Adjusted R-square	**0.27**	

1. Dummy variables for year of child's birth were also included.

Significance: ** = p < 0,01, * = p < 0,05, + = p < 0,10

Source: SOEP.

Table 4

Relationship between length of time in formal day care and attendance at a Gymnasium or Realschule rather than Hauptschule at age 14 (probit model)

Explanatory variables[1]	coefficient	t-value
Time in formal day care	**0.30**	(2.50)*
Boy	**–0.49**	(–1.85)*
Number of siblings	**0.01**	(–0.06)
Lone mother	**0.13**	(0.15)
Mother German	**–0.28**	(–0.75)
Village	**0.24**	(0.50)
Large city	**0.61**	(1.79)+
Mother's age	**0.03**	(1.03)
Mother apprenticed	**0.62**	(1,70)+
Mother attended Uni.	**0.61**	(0.86)
Father apprenticed	**0.30**	(0.75)
Father attended Uni.	**1.36**	(2.02)*
Mother: years of f/t work	**0.04**	(0.11)
Mother: years of p/t work	**0.14**	(0.42)
Income	**0.02**	(0.82)
N	**168**	
Adjusted R-square	**0.33**	

1. Measured when the child was age 14. Dummy variables for year of child's birth were also included.
Significance: ** = p < 0,01, * = p < 0,05, + = p < 0,10
Source: SOEP 1984-2005.

control for the effects of other variables which are associated with school attainment, including parental SES, in order to gauge the *net impact of experience in formal day care.* The dependent (outcome) variable in Table 4 is whether or not these children gained entry to a *Gymnasium* or *Realschule* on the one hand, or were less scholastically successful and attended *Hauptschule*.[1]

The main finding here is that, net of other relevant factors, length of time in formal day care is significantly associated with improved school attainment. Every extra year of attendance increases the probability of going to *Gymnasium* or *Realschule* by about 8 percentage points. So a child who attends for three years, which is a typical experience (see Table 2), has about a 25% better chance of attaining a higher level of education than a child who never attends.

Discussion and policy implications

The results of this research, if confirmed, have clear policy implications. At present many children from lower SES and from immigrant backgrounds do not get the opportunity to go to formal day care. This is particularly true in the Western states where there remains a serious shortage of places, especially for children under three. Given that formal day care attendance, and even more the length of time spent there, is quite strongly associated with improved performance

1 Technically, this is a probit analysis, appropriate for a dichotomous (1-0) dependent variable.

many years later in secondary school, the current initiative by the German Government, the German states and local authorities to increase the availability of day care for children under the age of three makes a great deal of sense.

References

Andersson, Bengt-Erik (1989)
Effects of public day care: A longitudinal study. *Child Development*, 60, 857-866.

Andersson, Bengt-Erik (1992)
Effects of day care on cognitive and socioemotional competence of thirteen-year-old Swedish school-children, *Child Development,* 63, 20-36.

Bos, Wilfried, Lankes, Eva-Maria, Prenzel, Manfred, Schwippert, Knut, Walther, Gerd, Valtin, Renate (eds.) (2004)
IGLU. Einige Länder der Bundesrepublik Deutschland im nationalen und internationalen Vergleich. Münster, New York, München und Berlin.

NICHD Study of Early Child Care (2000)
The interaction of child care and family risk in relation to child development at 24 and 36 months, *Applied Developmental Science,* 6, 144-156.

NICHD Study of Early Child Care (2001)
Child care and children's peer interaction at 24 and 36 months: The NICHD Study of Early Child Care, *Child Development,* 72, 1478-1500.

Rossbach, Hans-Günther (2005)
Effekte qualitativ guter Betreuung, Bildung und Erziehung im frühen Kindesalter auf Kinder und ihre Familien. In: *Sachverständigenkommission Zwölfter Kinder- und Jugendbericht* (Hrsg.) (2005) Bildung, Betreuung und Erziehung von Kindern unter sechs Jahren, 55-174.

Tietze, Wolfgang (ed.) (1998)
Wie gut sind unsere Kindergärten? Neuwied et al.

Does family poverty affect the health of newborn children?

Marcus Tamm

Using evidence from the new mother-and-child dataset collected for the first time in SOEP in 2003, this report investigates the crucial public health issue of whether family poverty affects the health outcomes of newborn children. The issue is crucial because it is known that poor health in infancy is strongly related to poor health in childhood and later life, and also to poor educational outcomes.

Most previous research on the issue has been conducted in the United States (Case, 2002; Mayer, 2002). There it has been found that family poverty is related to important aspects of infant health, including low weight-for-age and parents' negative assessments of their child's general health. However, as is well known, many low income Americans do not have good access to health care. In Germany health coverage is universal and services for pregnant women and newborn children are comprehensive. So it is reasonable to expect that the negative effects of poverty on infant health might be less than in the U.S, or conceivably non-existent. In Canada and Britain, which also provide high quality services during pregnancy, the evidence is mixed (Currie and Stabile, 2003; Currie et al., 2004). Links have been found been parental income and children's health as subjectively assessed by their parents, but generally not to other more objective health indicators.

It might be thought that the health problems of infants in Germany would be minimal because child poverty is at low levels; certainly lower than in the U.S. In fact, although for many years child poverty rates were quite low, fluctuating around 6-8%, they have risen quite sharply in recent times, and there are some specific groups which are seriously affected by poverty. Children in lone parent households, for example, have poverty rates close to 40% (Corak et al., 2008).

Data: the mother-and-child module in SOEP 2003

Public health research based on SOEP has expanded rapidly in recent years. An increasing number of health variables and health topics have been added to the survey. A major innovation in 2003 was inclusion of a mother-and-child module to be completed by mothers who had a child in the last year. These mothers and children will be followed up regularly, and information again collected directly from the mothers, when the children are 2-3 years, 4-5 years, 6-7 years and so on.

In the 2003-04 waves there were 565 newborn children about whom information was sought. Data were collected about the children's birth weight, height at birth, head circumference at birth, any confirmed disorders, the number of times medical assistance had been sought in the first three months, and duration of hospital stays

in this period. For the purposes of this paper, the health data are related to information about the biological mothers; the mother's age, education, labour market and health status, and family income.

To assess the relationship between family poverty and infant health, it is necessary to define a poverty line. The most common definitions of relative income poverty used in European poverty research stipulate that an individual is poor if s/he lives in a household with a needs-adjusted net income ('equivalent' income; see the Glossary) of less than 50% or 60% of the national median net income. Here the 50% line is used.

The infant health conditions which we hypothesise may be related to family poverty are: *low birth weight* (less than 2500 grams), *small* (under 48cm in height at birth), *small head* (circumference less than 33cm), *pre-term birth* (born before the 37th week of pregnancy), and *disorders* (having one or more regulatory or neurological disorders, disordered motor functions, or chronic illnesses). The most prevalent of these indicators was *pre-term birth* (15% of the sample), while the least prevalent was *disorders* (4%).

The study also considered whether low income mothers had less good access to health care, or at least used health services less. The two outcome measures were *number of doctor visits* with the child which were due to health problems in the three-month period after birth, and *days in hospital* in the same period.

Table 1

Is family poverty in the year before birth linked to health problems?

	Low birth weight		Pre-term birth		Small	
	Marg. effect	Std. error	Marg. effect	Std. error	Marg. effect	Std. error
Poor year before birth	0.1003	0.0952	**0.2402**	0.0962	0.0021	0.0597
Girl	0.0235	0.0320	0.0197	0.0339	0.0350	0.0291
Foreign household	dropped		0.0416	0.0490	-0.0316	0.0352
Mother's age	-0.0029	0.0033	0.0025	0.0033	0.0007	0.0029
Mother's education	0.0066	0.0067	0.0021	0.0071	-0.0004	0.0061
Observations	356		426		434	
LR-statistic	4.86		*10.61*		2.32	

	Small head size		Disorder	
	Marg. effect	Std.error	Marg. effect	Std. error
Poor year before birth	-0.0016	0.0512	-0.0032	0.0308
Girl	-0.0038	0.0237	0.0082	0.0154
Foreign household	**-0.0883**	0.0221	-0.0194	0.0159
Mother's age	-0.0015	0.0025	**0.0040**	0.0013
Mother's education	0.0012	0.0050	-0.0043	0.0032
Observations	401		435	
LR-statistic	8.52		8.95	

Note: Results printed in italics indicate marginal significance (10%-level), and results printed in boldface indicate statistical significance at 5%-level.

Source: SOEP.

Family poverty affects the risk of low birth weight but is unrelated to other infant health outcomes

Table 1 gives separate results relating to each infant health condition. Each condition is treated as binary (1=health condition present, 0 = condition absent). The explanatory variable of main interest is whether the family was poor in the year before the birth. Other variables included in statistical models are the gender of the baby, whether the household is of foreign (immigrant) background, mother's age and mother's education. Technically, the models shown here are complementary log-log models, which are appropriate when the outcomes being measured are of comparatively low prevalence, as these health outcomes are.

The central result is that in Germany, unlike the U.S., family poverty is not related to most infant health outcomes. It is, however, related to *preterm birth.* Mothers in poor families were 24.0% more likely to have a premature baby than mothers from non-poor families. (N.B. the key figures in Table 1 are in the marginal effects columns; the marginal effects can be interpreted as percentages, when, as is true of poverty, the explanatory variable is binary). The effects of poverty on all the other health outcomes was not statistically significant even at the 10% level.

Further inspection indicates that in the German situation most of the socio-economic variables included in the model made no difference to infant health. Immigrant mothers were statistically somewhat less likely to have infants with small head size. Older mothers were more likely to have children with a regulatory or neurological disorder; a finding well known from previous research. With these exceptions socio-economic variables were not statistically significant.

Additional variables were included in later models to see if they might account for infant health, but by and large results remained unchanged and the variables had no impact on child health. Mother's height, weight and BMI (body-mass index) and father's BMI and general health status made no difference. It did not make any difference whether mothers worked full-time, part-time, or not at all. Nor did the family's type of health insurance matter; that is, whether they had compulsory health insurance or private insurance.

Two variables which do make a difference are the mother's physical health and whether she smokes or not. They do not alter the poverty-health association but they do influence child health. Healthy women tend to have healthy children, and women who smoke and engage in health-damaging behaviours are at higher risk of having a child with low birth weight. These results are no surprise; they confirm previous research.

Access to medical services

So poverty appears not to affect most health outcomes. But does it perhaps affect access to health services, so that poor parents are maybe forced to take more risks because they cannot afford or are otherwise unwilling to seek assistance? In Table 2 the outcome variable is 'visits to the doctor'. Again the explanatory variable of main interest is poverty, and other socio-economic variables are again included primarily as 'controls'. The table actually included two separate sets of models; models accounting for whether mothers go to the doctor at all (i.e. whether they even make a first visit) and models accounting for how many times they go, if they attend at least once. The reason for separating these models was that it was thought that the correlates of initial attendance might be distinct from the correlates of repeat attendance. Technically, the models shown here are hurdle models using a probit to analyse the first part (visiting at least once) and a truncated negative binomial model for the second part (number of visits). Negative binomial models are a type of Poisson model and Poisson models are appropriate when the outcome variables (doctor visits, days in hospital) are 'count' variables (0, 1, 2 etc.) rather than being standard variables with a normal distribution.[1]

Again, as was the case for infant health outcomes, the results here indicate that poverty has no effect on access to the doctor services. The series of models shown in Table 2 just involve introducing more and more potential explanatory variables, mainly with a view to assessing whether, taking account of these variables as well, poverty makes a difference. It does not.

Similar results were found in relation to 'days in hospital'. Again, poverty made no difference. However, foreign (immigrant) mothers were somewhat less likely to take their babies to hospital than German mothers, and also less likely to visit a doctor. Also, families with private insurance used medical services more frequently, but this may have been because medical practitioners

1 Negative binomial models are used when the standard deviation of the outcome variable is substantially larger than the mean ('over-dispersion').

encouraged them to do so. Overwhelmingly, the main factor affecting whether medical services were used was simply the whether or not the baby enjoyed good general health.

Discussion

The central result is that in Germany family poverty does not appear to be associated with worse infant health outcomes. An exception is that mothers in poor families are over 20% more

Table 2

Is there a link between family poverty and newborn children's access to health services?

First stage: initial doctor visit (probit model)	Model 1		Model 2		Model 3	
	Marg. effect	Std. error	Marg. effect	Std. error	Marg. effect	Std. error
Poor Year before birth	0.0839	0.1089	0.0754	0.1098	0.0756	0.1103
Girl	0.0646	0.0531	0.0594	0.0535	0.0528	0.0540
Foreign household	**-0.1858**	0.0682	**-0.1835**	0.0690	**-0.1768**	0.0699
Mother's age	-0.0039	0.0053	-0.0053	0.0059	-0.0069	0.0059
Mother's education	0.0013	0.0110	0.0022	0.0114	0.0039	0.0115
Mother's good physical status			-0.0080	0.0631	0.0097	0.0640
Mother's good mental status			-0.1211	0.0784	-0.0957	0.0810
Firstborn child			-0.0237	0.0605	-0.0301	0.0611
Child has disorder					**0.3427**	0.1057

Second stage: number of visits (truncated negative binomial model)	Incidence		Incidence		Incidence	
	Rate Ratio	Std.error	Rate ratio	Std. error	Rate ratio	Std. error
Poor Year before birth	0.8189	0.3808	0.8847	0.4347	0.7282	0.3263
Girl	**0.5598**	0.1356	**0.5302**	0.1305	**0.5393**	0.1189
Foreign household	0.6124	0.2359	0.6047	0.2346	0.5895	0.2109
Mother's age	1.0096	0.0261	0.9895	0.0264	0.9735	0.0233
Mother's education	0.9548	0.0468	0.9517	0.0488	0.9645	0.0438
Mother's good physical status			0.8595	0.2494	0.9602	0.2585
Mother's good mental status			0.8895	0.3101	1.0156	0.3306
Firstborn child			**0.5643**	0.1460	**0.5611**	0.1349
Child has disorder					**3.6160**	1.3816
Alpha	2.7055		2.3347		1.5606	
LR-statistic (alpha=0)	**235.84**		**223.13**		**178.42**	
Observations	358		356		356	
Zero observations	171		170		170	

Note: Results printed in italics indicate marginal significance (10%-level), and results printed in boldface indicate statistical significance at 5%-level. Calculations only based on children older than 3 months.

Source: SOEP.

likely to have premature babies. The contrast between Germany and the U.S., where infants in poor families have a range of negative health outcomes, is of considerable interest. One reason may be that universal health care and comprehensive pregnancy and post-natal services help to overcome some aspects of early life disadvantage.

References

Case, Anne, Lubotsky, Darren and Paxson, Christina (2002)
Economic status and health in childhood: the origins of the gradient, *American Economic Review* 92(5), 1308-1334.

Corak, Miles, Fertig, Michael and Tamm, Marcus (2008)
A portrait of child poverty in Germany, Review of Income and Wealth (forthcoming).

Currie, Janet and Stabile, Mark (2003)
Socioeconomic status and child health: why is the relationship stronger for older children?, *American Economic Review* 93(5), 1813-1823.

Currie, Janet, Shields, Michael and Price, Stephen Wheatley (2004)
Is the child health / family income gradient universal? Evidence from England, *IZA Discussion Paper* No. 1328. Bonn.

Mayer, Susan (2002)
The influence of parental income on children's outcomes, Knowledge Management Group, Ministry of *Social Development,* New Zealand, Wellington.

Increasing childlessness in Germany

Christian Schmitt[1]

The proportion of people in Western Germany who remain permanently childless has risen far beyond a level that could be explained by involuntary sterility[2]. Some individuals and couples—we do not know exactly how many—consider parenthood incompatible with their life plans. But others just delay parenthood because they do not consider that conditions are right to embark on family formation in their 20s. They may not have found a suitable partner, they may still be students, or they may consider that their financial position is not secure enough to embark on parenthood (Dorbritz and Schwarz 1996: 252f.; Schmitt and Winkelmann 2005). Just by delaying, they almost inadvertently start to accept a state of childlessness. Then, eventually, competing life choices may overcome any remaining desire for children. In this context, emerging norms regarding the social acceptability of childlessness can reinforce their behaviour (see Kohler, Billari and Ortega 2002: 657f.)

Childlessness in Germany in cross-national comparison

The phenomenon of childlessness can be better understood by making international comparisons. Table 1 shows the percentage of childless women in different age cohorts in selected Western countries, beginning with cohort 1945 and continuing to cohort 1965. (We stop at 1965 because later co-

1 I thank Bruce Headey for valuable comments, ideas, and additions to the text. Any remaining errors are my own.

2 The proportion of women, remaining involuntarily childless most likely rests between five to ten percent. This is a rough estimate, based on the proportion of women with inability to conceive at different age groups (see <Bongaarts, 1982>). These figures comply with assumptions by Schneider (1996), based on marital fertility in the GDR. There, the proportion of married couples, which remained ultimately childless was as low as six percent and hence lay close to the natural level of involuntary sterility (which could be either male if female sterility).

Table 1

Prevalence of childlessness among women in selected cohorts by country

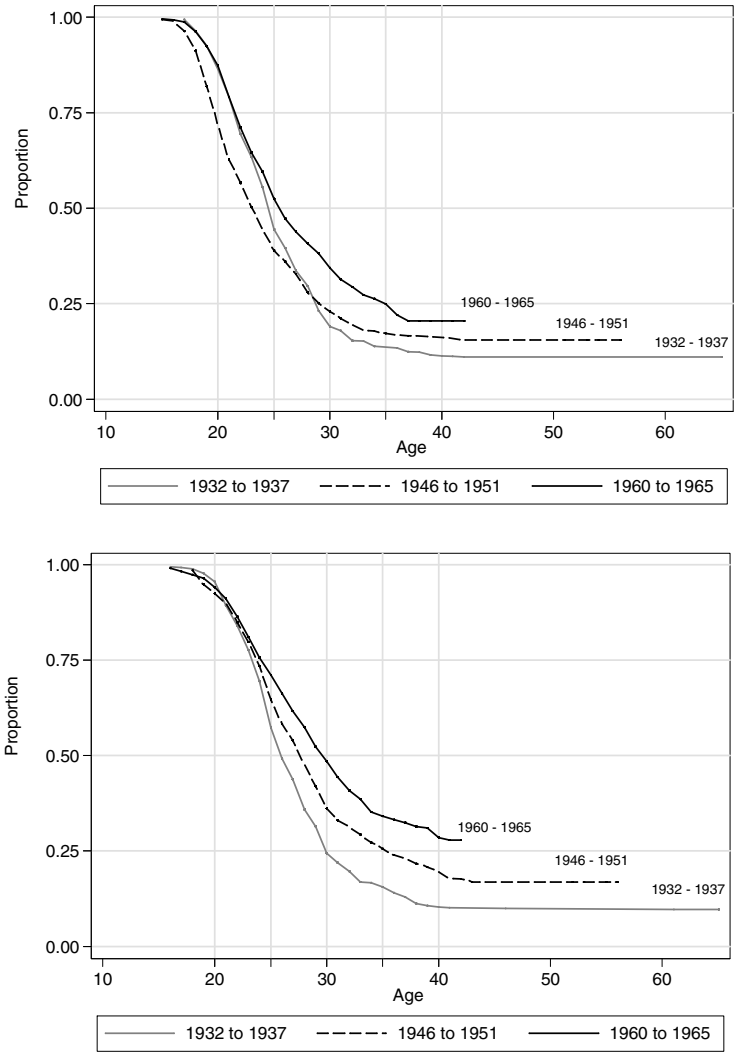
Cohort	1945	1950	1955	1960	1965
West Germany	12.7	14.8	19.3	22.0	27.5
U. K.	9.8	13.9	15.8	18.9	20.5
Finland[1)]	16.5	17.4	19.1	19.1[2]	20.1
Italy	11.7	13.0	12.7	15.3	20.0[3]
U.S.	12.9	15.6	16.0	15.3	15.0
Sweden	12.9	13.9	12.8	13.1	13.3
East Germany	8.2	7.1	7.6	7.8	12.8[3]
France	8.1	8.3	8.3	10.2	11.7[3]

Sources: Sardon & Robertson 2004; Dorbritz 2005; database for both: European Demographic Observatory.

1 Gustafasson, 2001: 229 (for cohorts 1945, 1950 & 1955). 2 value refers to the 1961 cohort. 3 values refers to the 1964 cohort.
Note: All values in percent.

Figure 2

Kaplan-Meier estimates: age at first birth and ultimate childlessness: women and men in selected cohorts



Source: SOEP 2002, sample F; own estimates; n = 1.270 (top figure), n = 1.307 (bottom figure).
Note: Estimates include East- and West German sample members.

horts cannot be assumed to have finished having children). Countries are ranked from high to low in terms of childlessness, with figures for West and East Germany shown separately.

It can be seen that there is now a very high level of childlessness in West Germany. In East Germany, by contrast, childlessness is at a low level, although it rose sharply in the youngest cohort shown in Table 1. Basically, most Western countries fall into one of two major patterns. One group of countries, including Sweden (and the also the other Nordic countries with the exception of Finland), the United States, and France show comparatively low levels of permanent childlessness and the pattern is fairly stable across cohorts. These countries have now managed to recover to levels of fertility which achieve population replacement levels. In fact, when one takes account of the average number of children born to each woman, it transpires that cohort fertility has even shown a small increase in recent years.

In contrast, in the second group of countries, which include West Germany and Italy, low to moderate levels of permanent childlessness in older cohorts, are followed by a steep increase in recent years. The steep increase in the proportion of childless women in the 1965 cohort is remarkable, but should be interpreted with some cau-

tion because childbirth in this cohort may not be quite completed yet. Caveats aside, the increase in permanent childlessness over consecutive cohorts is a confirmed and accelerating trend. The situation is the same in most of the Southern European countries, especially Spain and Greece, as well as in two other German-speaking countries, Austria and Switzerland (Dorbritz, Lengerer and Ruckdeschel 2005: 372ff).

The U.K. and Finland are exceptions to the two patterns that have been highlighted. These countries have now also moved to high levels of childlessness. However, the increase occurred less rapidly than in Germany, and fertility rates are still near replacement level because the relatively high incidence of childlessness is compensated for by a higher average birth rate among those women who choose to have children.

Childlessness in successive German cohorts

So it is clear that, by international standards, childlessness in Germany, and West Germany inparticular, has become especially pronounced. Consequently, it makes sense to investigate the particular factors which account for this outcome. Figures 1a and 1b show the ages of women (left figure) and men (right figure) at the time they had their first child. Estimates are given for three cohorts: those born in 1932-37, 1946-51 and 1960-65.

The estimates reveal two important and closely related trends. In each successive cohort the birth of first child is postponed to a later age. Partly as a consequence, the proportion of women and men who remain permanently childless increases in each cohort. This latter trend is displayed by the graph levelling off at a higher level for each successive cohort. First-time parenthood rarely occurs past the age of forty, and the later parenthood is postponed the lower is fertility. In other words, women who become mothers at a later age are likely to have fewer children than women who start earlier.

The graphs indicate that childlessness among men is higher than among women. This is true for all cohorts except the eldest; in that cohort many women were forced to remain unpartnered due to male deaths in World War II. In the youngest cohort (1960-65), the difference is very large; seven percent more men than women remain childless.

Gender differences in childlessness

This difference between the sexes in childlessness has been documented for most industrialized countries (see for example Toulemon 2001 for France, Juby and Le Bourdais 1998 for Canada or Bachu 1996 for the U.S.). Several reasons for the excess of childless men can be given and they are enlightening for an analysis of the causes of childlessness in general. First, within marriages and similarly in consensual unions, men are on average two to three years older than women. Accordingly, the mean age at first birth for men is higher than for women. (This, however, does not directly explain why older men do not have more children towards the end of their partners' fertile life, when the women are in their early 40s). A second reason relates to biologically determined sex ratios. About 105 boys are born for 100 girls, which means that young men have worse chances on the marriage/partner market than young women. This disparity has been highlighted by Eckhard (2006) for Germany and by Köppen, Mazuy and Toulemon (2007: 102) for France.

A further point is that many poor men can't get partners and so are forced to remain childless. It is well known that in primitive societies almost all women have children, but that the children are fathered by a relatively small proportion of men, some of whom are strangers (tall, handsome strangers?) to the village. Something of the same happens in developed countries, including Germany. Many men who are unemployed or have very low incomes in Germany cannot find partners or have diffculties of supporting family. This is of particular relevance in a strong breadwinner country like Germany. Hence, this group of men shows very high rates of childlessness – much higher rates than low status women (Schmitt, 2005).

Finally, a small part of the apparent gender gap in childlessness may be just due to errors in data collection. In the case of men, unlike women, the transition to fatherhood is not directly observable. A small proportion of men may be unaware of their own fatherhood, while another proportion may not report it, perhaps to avoid an embarrassing confession in the context of a new relationship (Garfinkel and Hanson 1998; Rendall, Clarke, Peters, Ranjit and Verropoulou 1999).

In summary, the central finding with respect to increasing childlessness in Germany is that it is due to later and later postponement of childbirth in younger generations. The fact that many Germans remain students until an older age than in

most other European countries may be a factor, although this is somewhat speculative. Relatively poor prospects in the marriage market are also a factor for young men, but this is not distinctive to Germany.

References

Bachu, Amara (1996)
Fertility of American men. U.S. Bureau of the Census. *Population Division Working Paper Series* 14.

Bongaarts, John (1982)
Infertility After Age 30: A False Alarm. *Family Planning Perspectives,* 14, 75-78.

Dorbritz, Jürgen (2005)
Kinderlosigkeit in Deutschland und Europa – Daten, Trends und Einstellungen. *Zeitschrift für Bevölkerungswissenschaft,* 30, 359-408.

Dorbritz, Jürgen, Lengerer, Andrea and Ruckdeschel, Kerstin (2005)
Einstellungen zu demographischen Trends und zu bevölkerungsrelevanten Politiken. Wiesbaden.

Dorbritz, Jürgen and Schwarz, Karl (1996)
Kinderlosigkeit in Deutschland – ein Massenphänomen? *Zeitschrift für Bevölkerungswissenschaft.* 23, 231-261.

Eckhard, Jan (2006)
Kinderlosigkeit durch Partnerschaftslosigkeit. Der Wandel der Partnerschaftsbiographien und Zusammenhänge mit der Geburtenentwicklung. *Zeitschrift für Bevölkerungswissenschaft,* 31, 105-126.

Garfinkel, Irwin, McLanahan, Sara S. and Hanson, Thomas L. (1998)
A Patchwork Portrait of Nonresident Fathers. *Center for Research on Child Wellbeing Working Paper Series 25*.

Gustafsson, Siv S. (2001)
Optimal Age at Motherhood. Theoretical and Empirical Considerations on Postponement of Maternity in Europe. *Journal of Population Economics* 14, 225-247.

Juby, Heather and Celine Le Bourdais (1998)
The Changing Context of Fatherhood in Canada: A Life Course Analysis. *Population Studies* 52,163-175.

Kohler, Hans-Peter, Billari, Francesco C. and Ortega, Jose Antonio (2002)
The Emergence of Lowest-Low Fertility in Europe during the 1990s. *Population and Development Review,* 28, 641-680.

Köppen, Katja, Mazuy, Magali and Toulemon, Laurent (2007)
Kinderlosigkeit in Frankreich. Ein Leben ohne Kinder. Kinderlosigkeit in Deutschland, edited by D. Konietzka & M. Kreyenfeld. Wiesbaden, 83-104.

Rendall, Michael S., Clarke, Lynda H., Peters, Elizabeth, Ranjit, Nalini and Verropoulou, Georgia (1999)
Incomplete Reporting of Men's Fertility in the United States and Britain: A Research Note, *Demography,* 36,135-144.

Sardon, Jean-Paul and Robertson, Glenn D. (2004)
Recent Demographic Trends in the Developed Countries. *Population* (English Edition, 2002-) 59, 263-314.

Schmitt, Christian and Winkelmann, Ulrike (2005)
Wer bleibt kinderlos? Was sozialstrukturelle Daten über Kinderlosigkeit bei Frauen und Männern verraten, *Feministische Studien,* 23, 9-23.

Schmitt, Christian (2005)
Kinderlosigkeit bei Männern. In A. Toelke and K. Hank (eds.) *Männer* – Das „vernachlässigte" Geschlecht in der Familienforschung. Wiesbaden, 18-43.

Schneider, Norbert F. (1996)
Bewußt kinderlose Ehen, *Zeitschrift für Frauenforschung,* 14, 128-137.

Toulemon, Laurent (2001)
Men's Fertility and Family Size as Compared to Women's, *IUSSP General Population Conference.* Salvador de Bahia, Brasil.

Mothers predicted to do more paid work as a result of reforms to parental leave benefits

C. Katharina Spiess and Katharina Wrohlich

Germany has one of the lowest fertility rates in Western Europe and also relatively low employment rates for mothers with young children. In order to reverse the second of these trends, and potentially influence the first, the Federal Government recently passed a reform of the parental leave benefit system in line with the Scandinavian model. The core of the reform is replacement of the previous means-tested parental leave benefit by a wage-related benefit for a period of just over a year. This is likely to particularly benefit high income earners who experience a large loss of income if they take time off work for childbirth.

Will the reform succeed? Will the labour supply of young mothers increase? This article reports results from a micro-simulation model, itself based on the SOEP data, which is designed to predict changes in labour supply and which also estimates the net cost to Government of the reform. This article illustrates how the SOEP panel data can be used as a basis for building sophisticated statistical models required for forecasting and for evaluation of specific policy programs.

Concerns about low fertility and low rates of participation by mothers in the labour market emerged as a major topic in the last election campaign. Politicians and experts explicitly took 'the Scandinavian model' of wage-related parental leave as an paradigm for Germany. In 2006, after a lengthy debate, the Budestag voted that the new benefit system would come into force on January 1 2007.

The basis of reform is to replace the previous means-tested child-rearing benefit (Erziehungsgeld) with a parental leave benefit (Elterngeld) that replaces 67% of net earnings for a stay-at-home parent in the first year after birth. Since the benefit is designed to replace foregone earnings, it decreases according to working hours. The full amount is paid to parents who do not work at all, while parents who reduce work by 50% receive half the benefit. The law continues to provide job security/protection to both parents for up to three years while on parental leave. The father and mother may go on leave consecutively or simultaneously. However, the child-rearing benefit is not granted for the whole period of job protection. In contrast to the previous means tested benefit the new benefit cuts out after fourteen months.

Previous research in Scandinavia has shown that the system there does have a strong impact on mothers' career interruptions. A study in Norway and Sweden in particular showed that the right to paid maternity leave, coupled with job security, greatly speeds up returns to employment (Pylkkaenen and Smith, 2004). By contrast, research investigating the effects of the previous system in Germany showed that mothers are less likely to return to work, the longer the time remaining in their period of job protected leave (Ondrich, Spiess and Yang, 1996). It has also been shown that the length of time typically taken off work reduces their future wage prospects (Ondrich, Spiess and Yang, 2003).

SOEP and the STSM micro-simulation model

One valuable type of spin-off from the SOEP Survey is that the longitudinal data can be used to provide the empirical basis for more detailed micro-simulation models. Micro-simulation

models are quite often used by economists to predict the probable results of a policy reform. Such models help policy makers to weigh up the costs and benefits of reform and to choose among alternative options.

The model used to predict the costs and benefits of the parental leave reform was the STSM (Tax-Transfer Simulation Model) described in Steiner, Haan and Wrohlich (2005). The empirical data entered into the model came from three waves of SOEP, namely 2001-03. Households which in this period had at least one child under 24 months old were included in the simulation. This gave a sample of 995 households. Of the mothers in these households, 57% who were in two-parent families were working prior to the birth of their child, as were 49% in single-parent families.

Behavioural micro-simulation models consist of three parts. First, a representative micro-level (individual) data set is needed to provide a realistic empirical basis. Ideally, the data should be longitudinal, so that the simulation contains accurate estimates of transitions; for example, from work to parental leave and back to work. Clearly, SOEP provides an ideal empirical base for this model. Secondly, the model incorporates a tax-transfer simulator; a set of programs which mimic the rules of the German tax and transfer systems. Thirdly, the simulation contains a behavioural model; in this case a model of the incentives affecting parental labour supply. In STSM the behavioural model rests on fairly standard assumptions in welfare economics about the trade-offs between work and leisure which determine the number of hours a person chooses to work. The parameters (coefficients) which were plugged into the model to estimate parental labour supply were obtained from analyses of SOEP data.

The main aims of the model, then, were (1) to estimate financial gains and losses to various types of household as a result of the reforms ('winners' and 'losers') (2) to estimate net costs to Government (revenue foregone due to the costs of the scheme minus revenue gained if taxes increased due to increased labour supply), and (3) to estimate and compare the labour supply of mothers and fathers before and after the introduction of the new scheme.

Financial winners and losers

The first step is to use the tax-benefit calculator in STSM to show income changes for various types of household. Table 1 gives results. The first column shows household incomes before the reform, the second column shows the average amount of parental leave benefit each type of household would be paid, the third column shows the net gain in euros per month, and the final column shows the percentage of 'winners'; those who come out ahead financially because of the reforms.

Table 1

Changes in net household income due to the reform: 'winners' and 'losers'

	Mean net income before the reform (status quo)	Mean amount of the parental leave benefit after the reform	Mean income change due to the reform	Percentage of households whose income increases due to the reform: ‚winners'
	in euros per month			in %
All two-parent families	3.182	464	246	73
All single-parent families	1.767	413	162	42
Households in the 1st quartile*	1.732	390	117	42
Households in the 2nd quartile	2.479	402	124	64
Households in the 3rd quartile	3.173	472	256	87
Households in the 4th quartile	4.799	571	455	88

* Deciles are defined for all households with at least one child less than 12 months of age. Income is defined as net household income in the year when the child is born.

Source: Own calculations based on GSOEP, waves 2001-2003, and STSM.

On average, couples gain 84 euros more than single-parent households. As can also be seen from Table 1, the gains increase with net household income. The income gains for the fourth quartile of the income distribution are more than three times higher than those in the first income quartile. This is not surprising given that the new parental leave benefit is positively related to earnings before the child's birth, while the existing scheme is a means-tested benefit of a maximum of 300 euros per month. However, income gains not only increase with household income in absolute terms, but also in relative terms. In the top quartile income gains amount to 9% of net household income, while in the first quartile, the gains amounts to 6%. The percentage of winners from this reform (see last column of Table 1) is much higher among couples than among single parent households, which is due to the higher income of the former. 42% of the households in the first quartile of the income distribution benefit from the reform, while in the top quartile 88% of all households benefit. 10% of households experience no income change at all. Further, a calculation of the loss of income resulting from the reform for the first quartile of the income distribution shows that the losses are moderate, on average around seven euros per month.

The fiscal cost to Government of the reforms can be worked out by aggregating income changes for each type of household. The cost amounts to about 3.5 billion euros per year. As a comparison, the costs for the current parental leave scheme amount to about 3 billion euros a year. So the concern frequently expressed in the Bundestag and in wider public discussions that the reform would lead to a marked increase in public expenditure seems unjustified. Furthermore, an increase in the labour supply of mothers (see below) will bring in tax and social security revenues which will partly offset costs. Our estimate is that these revenues are likely to increase by about 200 million euros a year.

There are some additional potential effects of reform which we have not yet been able to model. It is possible that some future mothers will adjust their birth plans in response to the new scheme and that more women will postpone childbirth until after they have been employed for several years. If they did this, then costs to Government could rise. Also, if the number of first births increased due to the reform, this too would increase fiscal costs.

Will mothers work more – and what about fathers?

Finally, and crucially, we calculate predicted changes in the labour supply of mothers and fathers. These changes of course primarily depend on changed financial incentives due to the reform. Table 2 shows projected changes in working hours (expressed as a percentage of cur-

Table 2

Changes in the labour supply of mothers and fathers due to the reform

	Mothers (m)	Fathers (f)
	Change in working hours (in %)	
Families with youngest child < 12 months	-2.7	1.1
(Baselines: m 2.7 hours/week; f 36.5 hours/week)	(-7.9 - 2.5)*	(0.4 - 1.8)*
Families with youngest child 12-24 months	11.7	2.0
(Baselines: m 6.8 hours/week; f 38.7 hours/week	(5.7 – 17.7)*	(1.1 - 2.9)*
	Change in participation rates (in %-points)	
Families with youngest child < 12 months	-0.3	0.4
(Baselines: m 12%; f 89%)	(-0.9 - 0.4)*	(0 - 0.7)*
Families with youngest child 12-24 months	3.3	1.0
(Baselines: m 36%; f 93%)	(1.8 - 4.7)*	(0.5 - 1.5)*

* The 95% confidence interval (bootstrap method) is given in parentheses.

Source: authors' calculations based on SOEP, waves 2001-2003 and STSM.

rent hours) and also changes in the percentage of parents who seek work at all (the labour force participation rate).

For mothers whose youngest child is between 12 and 24 months old, we find a large significant increase in working hours and labour force participation. In this group, mothers are predicted to increase working hours by almost 12% on average and their labour force participation rates increase by more than three percentage points. These results suggests that the reform will indeed contribute to reducing the relatively long employment interruptions of German mothers. For fathers, we also find a small increase in working hours and labour force participation in the second year.

Discussion

The simulation results directly address the main issues raised in the debate surrounding the introduction of the new parental benefit scheme. First, it is clear that the effect of the scheme really will be to increase the labour supply of mothers. What is more it has a bigger positive effect on labour supply than a number of other policy options which are under discussion, including family tax splitting and reducing child care fees (Steiner and Wrohlich, 2006). Secondly, costs to Government are moderate. Third, the schedule of payments, with a minimum of 300 euros going to low income families, makes it possible to substantially reduce the number of 'losers' from the reform; this too was a major issue in the public policy debate.

The overall success of the reform will depend on other issues as well. The projected increase in the labour supply of mothers depends on the maintenance of existing labour demand, but also on provision of child care. If no formal or informal child care facilities are available, parents may be unable to work. There is no lack of child care in East Germany, but in the West there are only about 10 places for every 100 children under the age of three (BMFSFJ, 2006). Steps to increase the number of child care places are a logical corollary of the effective parental leave reform which is now being implemented.

References

BMFSFJ – Bundesministerium für Familie, Senioren, Frauen und Jugend (2006)
Kindertagesbetreuung für Kinder unter drei Jahren, Bericht der Bundesregierung über den Stand des Ausbaus für ein bedarfsgerechtes Angebot an Kindertagesbetreuung für Kinder unter drei Jahren, Berlin.

Ondrich, Jan, Spiess, C. Katharina and Yang, Qing (1996)
Barefoot and in a German Kitchen: Federal Parental Leave and Benefit Policy and the Return to Work after Childbirth in Germany', *Journal of Population Economics,* 9, 247-266.

Ondrich, Jan, Spiess, C. Katharina and Yang, Qing (2003)
Changes in Women's Wages after Parental Leave', *Schmollers Jahrbuch* (Journal of Applied Social Science Studies), 123, 125-138.

Pylkkänen, Elina and Smith, Nina (2003)
Career Interruptions due to Parental Leave: A Comparative Study of Denmark and Sweden, *OECD Social, Employment and Migration Working Papers,* DELSA/ELSA/WD/SEM (2003) 1, Paris.

Steiner, Viktor, Haan, Peter and Wrohlich, Katharina (2005)
Das Steuer-Transfer Simulationsmodell STSM 1999-2002, *DIW Berlin Data Documentation 9*.

Steiner, Viktor and Wrohlich, Katharina (2006)
Introducing Family Tax Splitting in Germany: How would it affect the income distribution and work incentives?' *DIW Berlin Discussion Papers 612.*

Germany's middle class has shrunk: incomes increasingly polarised from 2000 to 2005*

Markus M. Grabka and Joachim R. Frick

It is commonplace to hear statements like, "We are all middle class now", or "Most families these days have a middle class lifestyle – middle class housing, car, clothes, holidays abroad and so on". In this article, we show that there is a good deal of recent evidence to support the opposite conclusion. The foundation of a middle class lifestyle is a middle class income. In Germany, during the last twenty years, the percentage of people with middle-level incomes has shrunk from about 64% to about 54%. So the middle class may still be a majority, but only just.

Income inequality has increased and incomes have, in fact, become increasingly polarised, with more people having either very high or very low incomes. One underlying cause of polarisation has been increasing inequality of earned incomes (see articles by Anger and Lupo and also by Goebel, Krause and Schupp in this volume). During the last fifteen years, these changes in the income distribution have happened in the context of sluggish national economic growth. As we shall see, the combined effect of the changes has been to make increasing numbers of people seriously worried about their economic situation.

Defining middle class incomes

By middle class or middle-level incomes, we mean incomes ranging between 70% and 150% of national median income. (The median income is the income right in the middle of a distribution). This definition is quite widely used by economists who study income distributions. In most countries it takes in about two-thirds of the population (Burkhauser et al, 1996).[1] The evidence in this article relates to annual household disposable incomes; the combined incomes of all household members after receipt of Government benefits and payment of taxes. Clearly, a family's material standard of living mainly depends on its combined income, and its income after (rather than before) benefits and taxes. Also, to provide more accurate comparisons between living standards, incomes have been adjusted by household size to allow for differences in household needs. Plainly, a large household needs a higher income than a small household to achieve the same standard of living.[2]

SOEP evidence on incomes

SOEP respondents are interviewed individually about all types of income they received in the last calendar year. They provide detailed information about their labour incomes (i.e. incomes from paid work), asset incomes (e.g. incomes from rents and shares), benefit incomes (e.g. welfare benefits) and private transfers (e.g. child support payments). The SOEP data managers then calculate the taxes they owe in order to estimate disposable incomes.

* This article is based on a report by Grabka and Frick (2008) published as Wochenbericht des DIW Berlin, no. 10/2008.

1 About one standard deviation either side of the median.

2 Technically, these adjusted incomes are termed 'equivalent' incomes. The current OECD equivalence scale is used. This weights the first adult in a household at 1.0, other adults at 0.5, and children under 15 at 0.3. Income is assumed to be equally shared, so all individuals within a household are given the same income. Also included in income are the 'imputed rents' which home owners may be viewed as receiving due to the equity they own in their own home.

A shrinking middle class

Before showing exactly how and by how much the middle class has shrunk, it is worthwhile giving background information about the sluggish growth of incomes.

The real (inflation adjusted) disposable income of the typical or median household in Western Germany grew on average by about 1.1% per year between 1984 and 2006.[1] But most of this growth had already occurred by 1992. Between 1992 and 2006 median incomes grew by only 0,2% in Western Germany, by 0.7% in Eastern Germany and by 0.4% in the country as a whole. The main reason for slow growth in household incomes in the last fifteen years has of course been a slow rate of national economic growth; barely 1.5% a year.

The slow increase in disposable incomes has been accompanied by a sharp rise in income inequality. The most widely used measure of inequality is the Gini coefficient, which would be 1.0 if one individual (or household) received all income and would be 0.0 if all incomes were exactly equal. Between 1992 and 2006 the Gini coefficient rose by about 23% from just under 0.26 to just under 0.32. It should be mentioned that inequality of disposable incomes remains considerably lower (about 17% lower) in Eastern than Western Germany.

Against this background, Figure 1 summarises what happened to the middle class; that is, to middle income groups in 1984-2006. The data for 1984-91 relate only to Western Germany. From 1992 onwards both parts of the country are covered. Recall that by the middle class we mainly mean those living in households with incomes between 70% and 150% of the median. However, for completeness, eight different income groups are shown, ranging between those with less than half of median disposable income up to those with 200% of the median or more.

The figure shows the decline of middle income groups and the corresponding expansion of numbers living in either low or high income households. At the beginning of the period 64% lived in households defined as middle income; a clear majority of all adults and all children. By 1996 the figure was 61%; a fairly small decline. Then change accelerated rapidly, so that by 2006 only 54% (about 44 million individuals) were in the middle grouping.

The middle shrunk, so by arithmetic necessity, numbers at the extremes of the distribution must have increased.[2] The percentage of individuals living in households with less than 70% of median income rose from 21% in the early 1980s to over a quarter in 2006. What is more, those living on very low incomes – below 50% of the national median – increased from 7% to 11% of the population. At the other end of the distribution, those receiving over twice median income rose from 16.5% of the population in 1984 to 20.5% in 2006.

Not just shrinking but sinking? The middle class in 2002-2006

Now we find out what happened to people who moved out of the middle income band. Most people, of course, would not mind moving if their incomes increased and they moved to an upper income group. That is, in fact, what has happened in recent years to a large number of previously middle income Americans (Burkhauser and Rovba, 2005). Table 1 gives an overview of income mobility in Germany in two recent five-year periods: 1996-2000 and 2002-06. Here we are just dealing with three groups: the middle income group, a low income group ('at risk of poverty') with incomes under 70% of the national median, and a well off group with incomes 150% of the median and higher.

In 1996-2000 those with middle incomes were a relatively stable group; 79.4% had a middle income at the end as well as the beginning of the period. Furthermore, among those who changed, almost as many moved into the high income group as into the low income group (9.6% compared with 11.0%). In the most recent period, 2002-06, the middle class fared considerably worse. Less than 75% retained middle incomes, but rather more individuals moved down in the income distribution than moved up (14.4% compared to 11.1%). It should also be remembered that, in these years particularly, economic growth was feeble. So the incomes of many of these people actually fell in real terms, and did not just fall relatively to others in the community.[3]

1 The focus will be on median incomes, not average (mean) incomes. The median gives a clearer picture of the typical case. By contrast, the mean is, in a sense, distorted upwards by inclusion of millionaires. The upward distortion becomes greater in a period like the present, when inequality is increasing.

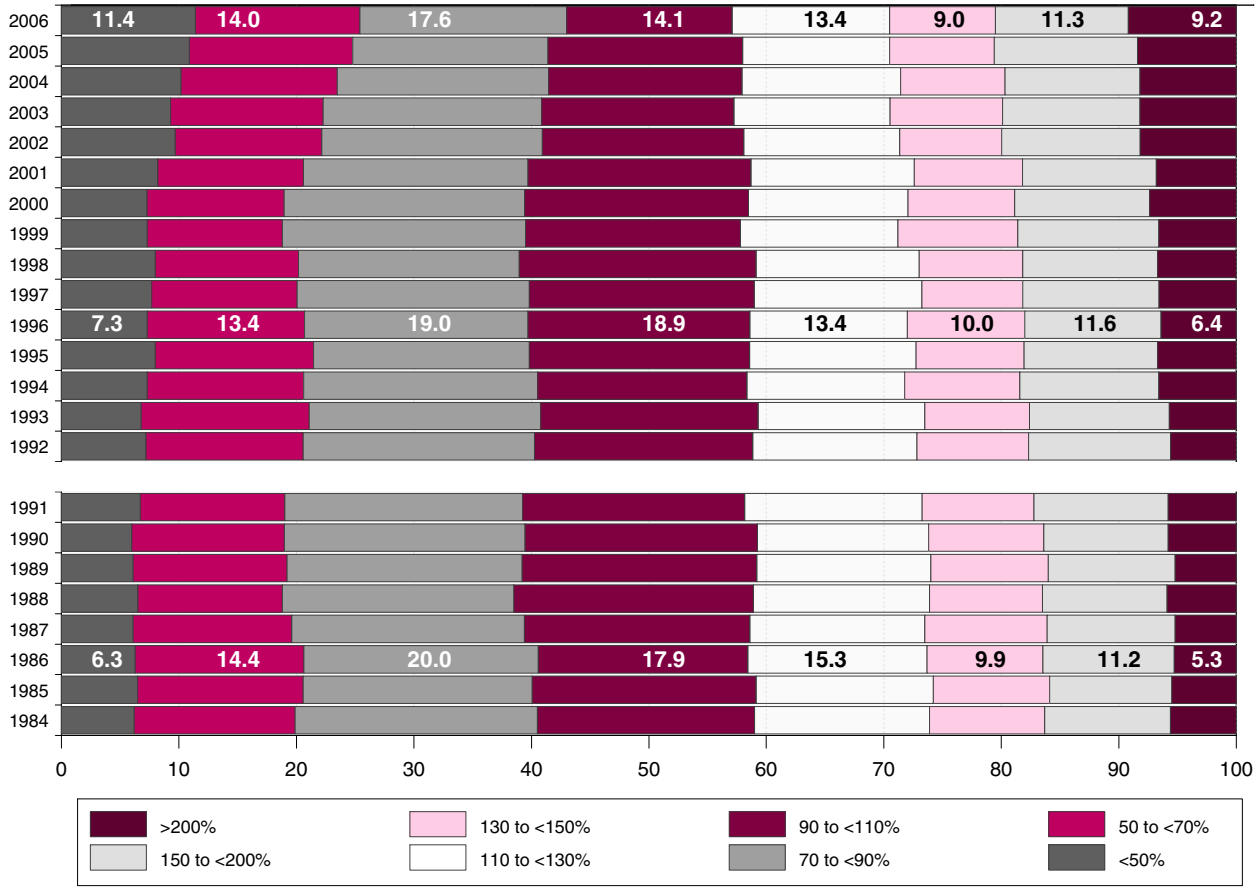
2 Of course, the increases could have been much more at one extreme of the distribution than the other. In fact, this did not happen in Germany, although absolute numbers with relatively low incomes increased more than those with very high incomes.

3 The average income of those in the poorest decile in 2006

Figure 1

Income levels in Germany 1984-2006

Income position relative to the median=100 in that specific year.



Equivalent post-government income in the previous year. The whole of Germany from 1992 onwards.
Source: SOEP.

What kinds of families no longer have middle class incomes?

When people think about middle class families, they probably envisage a 'standard' family consisting of a married couple with one or two children. The husband works full-time and the wife may work part-time. They have a secure middle class standard of living. In reality this image is increasingly at odds with reality. Less than 40% of all individuals live in households composed of couples with children, and among these families, a middle class income has become much less common. By 2006 the number of individuals living in such middle income 'standard families' was three million less than in 1996. While a considerable number moved up into higher income groups, many more moved into the group at risk of poverty. In fact, as the article by Goebel, Krause and Schupp in this volume shows, child poverty increased sharply in this decade.

The families that did best financially in this period were those labeled 'dinkies' in English-speaking countries; double-income families without children. Many of them moved into the high income group, receiving 150% or more of median income. The families that did worst, and moved into the group at risk of poverty, included, in addition to many 'standard families', an increasing number of single parent families. One person households, lone men or women, also fared poorly.

Many people are seriously worried about their economic situation

As well as measuring changes in real incomes, the SOEP Survey always asks respondents to report how they feel about their own economic situa-

was about 10% less than the corresponding group received in 1996, while the richest decile in 2006 lived on incomes about 26% above the level the same group had ten years earlier.

Table 1

Income mobility in Germany* 1996-2000 and 2002-2006

		2000			
		At risk of poverty	Middle class	High income	
		(<70%)	(70% to <150%)	(150% and over)	Total
1996	At risk of poverty (<70%)	53.6	44.2	2.2	100.0
	Middle class (70% to <150%)	11.0	79.4	9.6	100.0
	High income (150% and over)	3.9	32.6	63.5	100.0
	Total (1996-2000)	17.8	64.0	18.2	100.0

		2006			
		At risk of poverty	Middle class	High income	
		(<70%)	(70% to <150%)	(150% and over)	Total
2002	At risk of poverty (<70%)	66.2	31.6	2.2	100.0
	Middle class (70% to <150%)	14.4	74.6	11.1	100.0
	High income (150% and over)	3.9	27.6	68.5	100.0
	Total (1996-2006)	23.4	56.2	20.4	100.0

* Share of persons whose income position improved, declined or remained stable.
Equivalent post-government income in the previous year.
Income position relative to the median =100 in that specific year.
Source: SOEP.

tion. They are asked whether they are seriously worried ('grosse Sorgen'), somewhat worried, or not worried at all. From 2001 onwards increasing numbers of people have reported that they are seriously worried. Not surprisingly, low income people report the highest levels of anxiety, but by 2006 even among middle income people about a quarter report that they are seriously worried. In fact, in the last five years a bigger share of the population has reported serious worries than in any period since SOEP started.

Concluding points

The main message of this article is that the German middle income class is shrinking. At first the change was slow, but since 2000 the share of the population living in families with middle class incomes has fallen from over 60% to about 54%. The driving force has been changed in the labour market. High skill people are earning increasingly high incomes, and the demand for low skill labour is declining. The labour market is becoming more flexible, with fewer full-time jobs, more part-time jobs, and more jobs filled by agencies supplying temporary and contract labour. So what economists usually call 'variance' in labour incomes, and sociologists call income inequality, has been increasing. The analysis presented here is not intended as an evaluation of the effectiveness of the numerous changes to labour market policy introduced in recent years. We have, however, reported on concurrent changes in the overall income distribution. While new jobs created in response to these policies may be regarded as beneficial to the economy as a whole, it is equally clear that some people have been disadvantaged by the changes. Some new policies, notably the Hartz IV welfare reforms associated with the introduction of new unemployment benefits (ALG II), have almost certainly contributed to increased income inequality, while at the same time increasing incentives for unemployed people to find work (see Goebel and Richter in this volume).

In this situation, as we have seen, many people have become seriously worried about their economic situation. Recent strikes and demands for wage increases should be understood against this background. As ever, the decisions which Governments, employers and unions face require difficult trade-offs. Large wage increases would

probably cause increased unemployment. But people feel they have legitimate concerns, and there is pressure to arrive at a combination of labour market, tax policy and social policy decisions which will improve the take-home pay of both middle class and low income families.

References

Burkhauser, Richard V., Crews, Angela D., Daly, Mary C. and Jenkins, Stephen P. (1996)
Where in the world is the middle class? A cross-national comparison of the shrinking middle class using kernel density estimates. *Cross-National Studies In Aging Program Project Paper* No. 26. Syracuse, New York.

Burkhauser, Richard V. and Rovba, Ludmila (2005)
Income inequality in the 1990s: Comparing the U.S., Great Britain and Germany, *Japanese Journal of Social Security,* 1, 1-16.

Grabka, Markus M. and Frick, Joachim R. (2008)
Schrumpfende Mittelschicht – Anzeichen einer dauerhaften Polarisierung der verfügbaren Einkommen?, *Wochenbericht des DIW Berlin*, 75, 101-108.

Persistent poverty is increasing in Germany

Olaf Groh-Samberg

Income poverty in Germany has reached its highest level for twenty years. Furthermore, if we take account of the duration of periods of poverty, and the different dimensions of life in which deprivation can occur, then it appears that persistent poverty is also on the increase. This evidence is sometimes seen as proof of the existence and growth of a 'decoupled underclass'. Some commentators claim that large sections of society appear to be facing collapse into poverty. However, an increase in vulnerability, that is, swinging between 'middle class' and 'poor', is not evident. Those mainly affected by persistent poverty are still workers, particularly working class families with an immigrant background or with several children. To interpret poverty in Germany as the problem of a destitute underclass or to dramatise it as the whole of society facing collapse is unrealistic.

Poverty in Germany, as far as it can be traced in statistics, has been increasing gradually for thirty years. The number of persons receiving social assistance rose from less than 1% in 1970 to 3.5% of the population in 2004. The increase would be even greater if asylum seekers and persons needing nursing care had not been left out, if no ceiling had been put on adjustments to the standard rates of assistance, and if restrictions on drawing social assistance had not been strengthened. During the same period the percentage of persons in income poverty rose from 8.7% (1973) to 13.5% (2003).[1] This rate is calculated, using data from the Income and Consumption Surveys (EVS), which are conducted by the German Statistical Office every five years. Foreigners are under-represented in the EVS Surveys, which means that poverty is somewhat understated (cf. BMAS 2001: 102, 108f.).

The development of income poverty can be traced more comprehensively in the Socio-Economic Panel (SOEP) longitudinal study carried out by DIW Berlin in cooperation with Infratest Sozialforschung. The poverty rate in SOEP is always higher than is shown in EVS Surveys, largely because a representative sample of foreigners is included.

1 Share of persons on less than 60% of the average (median) income.

Income poverty rates have risen in each of the last six years, from 12.0% in 1999 to 17.4% in 2005; that is, by almost half. The last big increase before that date came at the start of the 90s, when the rate rose for five years in succession, from 11.4% in 1990 to 13.8% in 1995. Given these figures, there can be no doubt that poverty is on the rise in Germany. The specific factors behind this development need to be investigated.

Measuring poverty: income and deprivation

According to a definition proposed by the European Commission, which the Federal Government has accepted in its Wealth and Poverty reports (BMAS 2001, 2005), individuals and families are regarded as poor, or in a state of deprivation, if they have so few material, social and cultural resources that they are excluded from the lifestyle or standard of living that is the minimum acceptable in the member state in which they live. This definition of poverty is borrowed from the British sociologist, Peter Townsend, who was the first researcher to provide a clear definition based on concepts of deprivation and social exclusion (Towsend, 1979). Empirically, Townsend sought to identify a threshold within the income distribution such that deprivation—measured in terms of lacking goods or failing to participate in widely shared activities—would dispropor-

tionately increase once incomes fell below the threshold. However, although Townsend's concept of poverty is widely endorsed, his empirical approach of attempting to identify an income threshold was widely regarded as unconvincing (Mack and Lansley, 1986; Ringen, 1988).

In practice, despite lip service to Townsend's approach, the concept of poverty most widely used in European research is that of relative income poverty. A distinction is made between absolute poverty and relative poverty. To be in absolute poverty means to lack the basics: food, clothing and shelter. Few people in Germany or in other Western countries are in that condition. So, in practice in European research, all definitions of poverty are relative; an individual or household is viewed as relatively poor and deprived compared to others in the same society.

According to the current European Union definition of relative poverty, adopted at Laeken in 2001, a person living in a household with an equivalent income of less than 60% of national median income is regarded as poor – assuming that on such an income s/he is at risk of deprivation and social exclusion. Household income is measured after social transfers and taxes (i.e. disposable or net income) and is equivalised to adjust for household needs (see box). Clearly, a poverty line set at 60% of median income is arbitrary; prior to the Laeken agreement poverty lines of 50% of mean income were commonly used.

As already implied, considering disposable income alone gives only a very limited picture of the degree to which a person is at risk of deprivation. It is quite possible for households to maintain a standard of living that is regarded as socially acceptable, although they are on a low income, either because income poverty is only temporary or because they have access to other resources, for example savings or gifts. In the European literature it has therefore long been argued that measurement of poverty by disposable income should be supplemented with direct measurements of standard of living, in order to determine to what extend those affected by income shortages fall below the minimum standard (Ringen, 1988).

How persistent is poverty? The key advantage of SOEP panel data

The great advantage of panel survey like SOEP, compared to previous surveys, is that we can measure poverty longitudinally and not merely cross-sectionally. That is, we can measure the persistence of poverty; we can see for how many years people remain poor. Clearly, from a public policy and humanitarian point of view, medium and long term poverty matter a great deal more than short term. Indeed, very short term poverty may be of no significance at all; for example, if it just lasts for a few weeks. But medium and long term poverty can be assumed to seriously affect the current lives and future prospects of adults and of children who grow up in poor households.

Until panel surveys became available, it was generally assumed that most poverty was persistent, that the same people stayed poor year after year. This appeared to be a natural and obvious inference from the fact that standard cross-sectional surveys of the kind carried out by Government agencies showed that about the same number of people were poor every year. But then panel surveys, starting in the United States in the late 1960s, began to show that despite unchanging percentages, it was not true that the same people were persistently poor. Instead the population in poverty consisted of some people who were short term poor (some of whom rotated in and out of poverty) and a minority who were long term poor. In every Western country, including Germany, where panel surveys have been conducted, a similar pattern has been found (Leisering and Leibfried, 1999).

A combined poverty indicator

In the following sections poverty will be analysed multidimensionally and longitudinally. To give a fuller picture of standards of living than would be obtained from considering income alone, four additional life domains are chosen. These relate to housing, consumption, financial reserves and unemployment. Minimum standards are defined for income and for the other four domains. Individuals and households are regarded as being at risk of poverty and deprivation if they fall below these standards.

Three income situations are defined. Individuals living in households with a disposable (equivalised) income of less than 50% of the mean are defined as 'income poor'. Those with incomes between 50% and 75% of the mean are viewed as 'low income', and those above 75% of the mean are viewed as having an 'adequate' income.

Deprivation indicators relating to the four additional domains are now described:

Table 1

Stages of poverty, precariousness and prosperity (cross-sectional)

Income	Deprivation		
	multiple deprivation (two or more out of four)	single deprivation (one out of four)	no deprivation
income poverty (<50% of mean)	extreme poverty	moderate poverty	one-sided poverty
low income (50-75% of mean)	moderate poverty	vulnerability	fragile prosperity
adequate income (>75 of mean)	one-sided poverty	fragile prosperity	secure prosperity

Source: SOEP

- In housing insufficient room (less than one room per person aged three and above) and lack of basic equipment (e.g. hot water, balcony or terrace or garden) is regarded as deprivation.

- In consumption the situation is assessed by a proportional deprivation index (PDI) that includes a large number of items (such as owning a washing machine or being unable to replace worn or damaged furniture).[2] A deprivation threshold of one standard deviation below the index mean is applied.

- In the formation of financial reserves households are regarded as deprived if they have no assets and no significant savings at all.

Finally, unemployment is included as a state of deprivation, because it can be regarded as the most important non-monetary dimension of social exclusion.[3]

As shown in the table, multiple combinations of income poverty and deprivation are possible, and our understanding is improved by considering these combinations. In the worst case scenario, an individual or household can be both in income poverty and suffering from multiple deprivation(s). This can be termed 'extreme poverty'. At the other end of the distribution is an adequate income and zero indicators of deprivation ('secure prosperity'). But, as we shall see, intermediate combinations of income poverty or low income, in conjunction with single or multiple deprivation are quite common. Income poverty combined with a single dimension of deprivation could perhaps be termed 'moderate poverty', as could a low income combined with multiple deprivation. Income poverty without deprivation, or a reasonable income (more than 75% of the average) combined with multiple deprivation is 'one-sided poverty'. The combination of low income and a single deprivation is 'vulnerability'.

Almost one tenth of the population is in persistent poverty

If individual situations are considered over time —in Table 2 the period is five years—different ways of being affected with poverty can be identified. The decisive factor is how long a person remains in the several 'combinations' outlined above.[4] Table 2 gives the main results.

2 In the PDI items are weighted by the share of the population owning them. This means that, if a vast majority own a particular item, the lack of it is considered a more serious deprivation than lack of something owned by only a small majority.

3 Many analyses on the basis of SOEP and similar data bases in other countries show that unemployment substantially lowers life satisfaction (Clark et al, 2004).

4 The algorithm for allocating individuals to different categories of poverty, vulnerability and prosperity according to their histories over the five years aims to account for both "permanent" or average living conditions as well as the dynamics of poverty over time. Thus, in a first step those individuals experiencing fluctuations between extreme poverty and prosperity ("temporary poverty") or those being in a stable position of one-sided poverty ("intermittent poverty") are filtered out. In a second step, the contrasting cases of "persistent poverty" and "stable living standard" are identified. In a last step, the remaining cases, which are characterised by a "noisy" fluctuation, are allocated either to the categories of "vulnerability" or "unstable living standard" according to their average incomes and deprivation levels.

Table 2

Stability of living standards and poverty 2000-2004

	%	Averages (means)		Number of years in these situations						Total numer of years
		% of mean income 2000-2004	Average number of depri-vations per year	Secure prosperity	Fragile prosperity	One-sided poverty	Vulnerability	Moderate poverty	Extreme poverty	
		Annual average		Year out of 5 (0-5)						
Stable living standard	45.9	131.8	0.1	4.4	0.5	–	–	–	–	5.0
Unstable living standard	26.1	89.0	0.5	1.2	2.8	0.3	0.5	0.1	–	5.0
Intermittent poverty	3.8	68.2	0.9	0.1	1.1	3.2	0.0	0.6	0.0	5.0
Temporary poverty	5.7	68.6	1.1	0.9	1.1	0.5	0.7	1.0	0.7	5.0
Precarious living standard	10.1	60.9	1.2	–	0.8	0.5	2.0	1.4	0.2	5.0
Persistent poverty	**8.4**	**43.1**	**2.3**	**–**	**–**	**0.2**	**0.2**	**1.9**	**2.6**	**5.0**
Total	100.0	100.0	2.9	2.4	1.2	0.3	0.4	0.4	0.3	5.0

Source: SOEP waves 2000-04. N=22,291.

The next to last row of the table (shown in bold type) shows that about 8% of the population has been living in persistent poverty. The disposable income of this group averaged over the five years 2000-04 was only 43% of the national mean, which is clearly below the poverty threshold. Further, this group averaged 2.3 (out of a maximum of 4) states of deprivation during these years. So a considerable number of people in Germany are living in persistent poverty. It is questionable whether this can be regarded as compatible with the view of Germany as a 'social' or 'welfare' state.

In fact, a figure of 8% in persistent poverty probably underestimates the actual situation, because certain groups of people, like the homeless, illegal migrants and many persons in institutions are not covered by surveys like SOEP, or at least are clearly under-represented.

Above the persistent poverty level a zone of vulnerability can be identified in which people repeatedly experience income poverty or multiple deprivations, although the two seldom occur together. Typical of this zone is shifting between combinations of vulnerability and moderate poverty (more than three of the five years were spent in one of these states). The income of these individuals averages around 60% of the national mean, and most are deprived in one of the four domains of life. In other words, poverty has not yet become persistent, but that danger is always present. Households in this vulnerability zone just manage to avoid the worst scenario, but they scarcely experience periods of prosperity any more. Vulnerability has become a more or less permanent state.

The categories of temporary and one-sided poverty, on the other hand, describe fluctuations between poverty and an adequate standard of living. It is often believed that these fluctuating situations are typical of the 'new poverty' that can no longer be seen as structural, but should rather be seen as a consequence of the risks inherent in individualised lifestyles. But it is evident that extreme shifts between poverty and prosperity, and medium to long term inconsistencies between incomes and deprivation, occur less often than the argument for the 'temporalisation of poverty' suggests (Leisering and Leibfried, 1999).

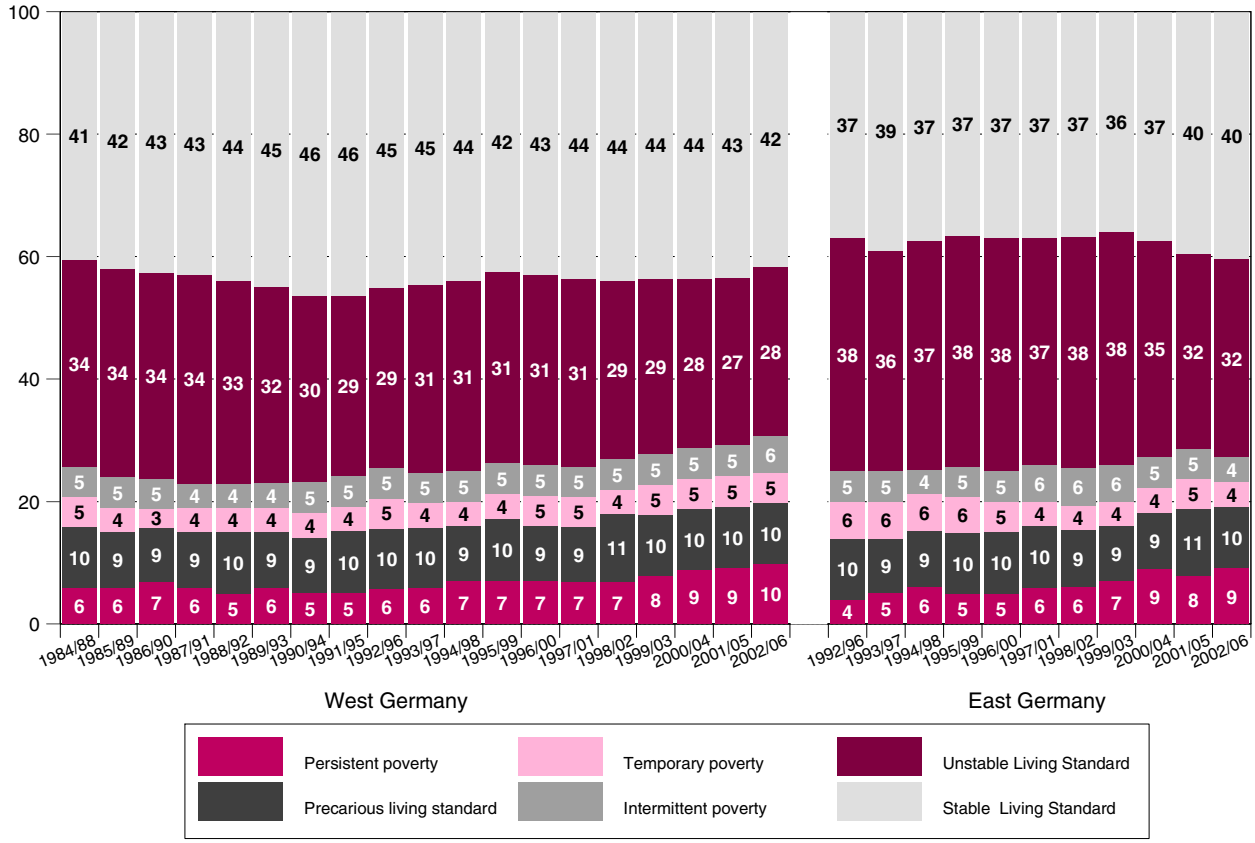
Clear increase in persistent poverty

Figure 1 shows the trends over time for a slightly different form of the combined poverty indicator.[5] A breakdown is also given for West and East Germany. In both parts of the country two trends predominate: the numbers having an unstable

5 The lifestyle indicator used in the analyses above (for the period 2000-2004) is not available prior to 1996 , so it has been omitted from the trend analysis. The same applies to the information on savings that was used in the indicator on financial assets. Successive five-years-panels were constructed, starting with the period 1984-1988 and going through to the most recent period, namely 2002-06.

Figure 1

Poverty and living standards in East and West Germany 1984-2006



Source: SOEP.

but generally adequate living standard declines steadily over the entire period, and the zone of extreme poverty has been clearly increasing since the start of the 90s. Temporary and one-sided poverty, and the numbers with a precarious living standard, on the other hand, prove largely stable.

Poverty is not affecting the broad middle of society as much as the argument that the boundaries of poverty are becoming blurred or that the middle of society is becoming more vulnerable suggests. The opposite rather appears to be the case. As in-depth analysis has shown (Groh-Samberg, 2008), poverty becomes more persistent over time, in the straightforward sense that it lasts for more years on average, and its cumulative effect continues through various stages of life, so that its concentration within certain population groups is increasing. Material disadvantages are accumulating in specific groups rather than spreading rapidly to the whole population.

That applies particularly to East Germany, where not only have the numbers in persistent poverty continuously increased since the start of reunification, but so too have those enjoying a secure and adequate standard of living. This tendency to polarisation has also occurred to a lesser extent in West Germany.

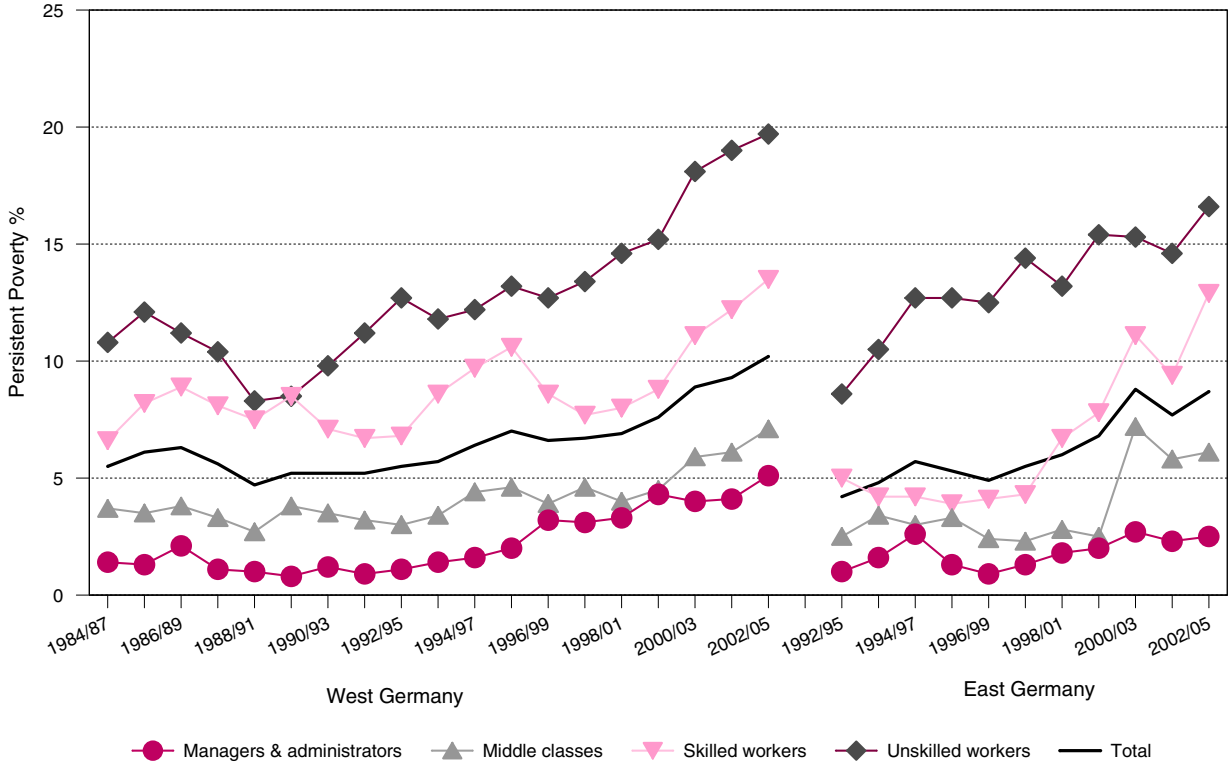
Workers are most affected by persistent poverty

Besides the development of poverty over time, the question of which groups are most affected is of particular interest. Figure 2 shows the ratios of persistent poverty for different 'social classes'. The relation between poverty and 'social class' is seen to be very stable.

The group chiefly affected by poverty are workers, especially the low skilled. In West Germany the poverty rates of unskilled and skilled workers moved slightly closer together during the brief post-reunification boom, owing to the decline in poverty among unskilled workers. However, in the ensuing recession, rates of extreme poverty among unskilled workers began to rise continuously. Skilled workers and the middle classes (not further differentiated here) appear, by contrast, to remain sensitive to the business cycle. Their poverty rates increased up to the mid-90s and

Figure 2

Poverty and living standards of occupational/class groups



Source: SOEP.

then declined slightly before again trending upwards.

For East Germany the picture is largely similar, although there are some notable special features. In the East there is a particularly sharp contrast between skilled workers and the middle class, who are strongly affected by the business cycle, and the continuous rise in poverty among unskilled workers. Skilled workers actually recorded under-average poverty rates in the post-reunification period, only moving closer to unskilled workers from the mid-90s onwards. The sudden rise in poverty rates among the middle classes in the last few years is also remarkable. More detailed analysis shows that this is primarily due to the problems of routine services providers, whose poverty ratios have recently moved far above average figures for East Germany.

Although poverty is on the increase in all occupational groups, there is no evidence that social class is becoming less significant. On the contrary, the rapid rise in poverty, especially persistent poverty among unskilled workers, suggests that social differences are becoming more marked. In the entire period covered by Figure 2 (1984-2006) around three quarters of all individuals in the zone of persistent poverty belong to the working classes (skilled and unskilled). Of course the risk of poverty is influenced by many other factors as well. It is particularly high for persons with an immigrant background, for single parents and families with more than two children…and it cumulates if more than one of these risk factors is present.

Conclusion

Examining poverty in a longitudinal perspective, using the SOEP data, and taking into account multiple dimensions of deprivation, provides a deeper understanding of recent trends. In Germany the longitudinal evidence shows an increase in persistent poverty, which is evident in both the Eastern and Western parts of the country. The increase has again been severe in the last five years. Periods of poverty last longer and are increasingly characterised by multiple deprivation in various domains of life (housing problems, consumption shortfalls, lack of financial reserves, unemployment). At the same time poverty is concentrated in certain groups in the

population, particularly workers, while a spread of poverty to the broad middle section of society has not occurred.

Although poverty is becoming increasingly persistent the idea of a new underclass has met with rejection in Germany, partly owing to its inflammatory overtones. But it is tantamount to denying reality if, in rejecting this term, the existence of social class distinctions is denied. Social class distinctions are particularly marked in Germany. The picture drawn by international comparisons is clear: in scarcely any other Western country do educational attainment and the chances of social mobility depend as strongly on social background as they do in Germany. Students from a working class background have increased their participation in higher education, due to an expansion of the whole sector, but the relative gap between them and the middle and upper classes has remained largely unchanged (Shavit and Blossfeld, 1993). More recent studies of school performance, like PISA, confirm that workers' children lag behind the children of higher social classes in performance and competences. In part, this is presumably because they start from a disadvantaged family educational background. More alarming is the conclusion that, even with the same cognitive basic abilities/competences, they clearly perform worse than children from more privileged family backgrounds (Solga et al, 2005). So the expansion of education has not fully achieved its aim of mobilising the 'educational reserves' of the lower social classes.

In the long term, efforts to encourage children from socially disadvantaged families to get a good education, and to do so from an early age, can still make a major contribution, not only to achieving more justice in education but also to combating poverty. However, there should also be labour market and distribution policy measures to put a lower limit on material inequality. The increase in persistent poverty in the last twenty years is largely due to the massive loss of traditional jobs for unskilled and semiskilled workers; jobs that once offered good pay and security. Germany is suffering a particularly acute rise in poverty rates and poverty persistence due to the interaction of rigid class and status differences in the educational and employment systems, coupled with increasing material risks.

References

Bundesministerium für Arbeit und Sozialordnung (BMAS) (2001)
Lebenslagen in Deutschland. Der 2. Armuts- und Reichtumsbericht der Bundesregierung, Bonn

Clark, Andrew E., Georgellis, Yannis, Lucas, Richard E., and Diener, Ed (2004)
Unemployment Alters the Set-Point of Life Satisfaction, *Psychological Science* 15, 8-13.

Groh-Samberg, Olaf (forthcoming)
Armut, soziale Ausgrenzung und Klassenstrukturen. Zur Integration multidimensionaler und längsschnittlicher Perspektiven, Wiesbaden.

Leisering, Lutz and Leibfried, Stephan (1999)
Time and Poverty in the Welfare State, Cambridge.

Mack, J. and Lansley, S (1986)
Poor Britain. London, Allen & Unwin.

Ringen, Stein (1988)
Direct and Indirect Measures of Poverty, *Journal of Social Policy* 17, 351-365.

Townsend, Peter (1979)
Poverty in the U.K. Harmondsworth.

Shavit, Y. and Blossfeld, Hans-Peter eds. (1993)
Persistent Inequality. Changing Educational Attainment in Thirteen Countries, Boulder, Colorado.

Solga, Heike, Stern, E., von Rosenbladt, Bernhard, Schupp, Jürgen and Wagner, Gert G. (2005)
The Measurement and Importance of General Reasoning Potentials in Schools and Labor Markets: Pre-Test Report, *DIW Berlin Research Notes 10.*

Increased unemployment has led to growing poverty

Earnings inequality has increased but most low earners are not 'working poor'

Jan Goebel, Peter Krause and Juergen Schupp

This paper tells a complicated story with unavoidably controversial policy implications. It is based on twenty years of SOEP data collection in which detailed evidence has accumulated about links between changes in individual earnings, registered and hidden unemployment, household incomes and poverty.

It may be best to summarise the main points before focusing on the drivers of change in the German labour market, the consequences for family incomes and poverty, and the difficult issues which arise for labour market policy and anti-poverty policy.

- *The variance or inequality of individual earnings has increased steadily since the early 1990s.* An underlying cause is probably increased demand for high skill (high levels of human capital) throughout the Western world, and decreased demand for low skill employees.
- *Unemployment has also increased and so has the percentage of households in which neither partner works.*
- *Household market incomes have become much more unequal* due primarily to increased unemployment.
- *Relative income poverty, measured by accepted EU standards, has increased.* Increased poverty has been due more to unemployment and to withdrawal from the labour force than to increased variance in individual earnings, especially in East Germany.
- *Most low earners are not 'working poor'.* There has been concern that increased variance in earnings is leading to the creation of a group of 'working poor' in Germany. The SOEP data show that most low earners are not poor, because they live in households where someone else also works. So their household income is not below the poverty line.

SOEP – tracking individual earnings and household incomes since 1984

All household members aged 16 and over are interviewed in SOEP. At each annual interview respondents record their labour earnings every month for the last year. All other sources of income, including asset incomes, private transfers and public transfers (State pensions and benefits) are also recorded. Individual incomes are combined to calculate household incomes, and household incomes form the basis of poverty measures. The definition of poverty used here is the one generally accepted in the E.U., having been agreed on at the Laeken Conference in 2001. Individuals are considered poor if they live in a household which receives less than 60% of national median net equivalent income. Technically, this is known as a *relative income* measure of poverty, rather than a measure of absolute poverty. That is, individuals and households are defined as poor, not because they lack basic necessities, but because they are financially unable to have a standard of living which is regarded as more or less normal or mainstream in their own country.

Table 1

Share of low-wage work in Germany, by type of employment (%)

	Germany				Western Germany				Eastern Germany			
	1993	1998	2003	2006	1993	1998	2003	2006	1993	1998	2003	2006
	Employees with monthly earnings of less than two-thirds of median											
Total Labor Force	21.5	22.2	25.3	28.3	19.4	21.0	24.7	27.1	30.3	27.3	28.4	34.1
	Employees with gross hourly wage of less than two-thirds of median											
Total Labor Force	17.4	15.6	19.1	21.6	12.5	12.5	16.8	19.2	38.5	28.8	30.6	33.6

Population of working age; 16 to 74.
Source: SOEP.

Drivers of change – increased variance/inequality of earnings and increased non-employment in the East

The two fundamental drivers of all the other changes reviewed in this article have been increased earnings inequality in both East and West Germany, and increased non-employment in the Eastern states.

The European Statistical Office, Eurostat, now publishes labour force statistics covering the population aged 16-74, rather than 16-64. By including people at the top end of the age range, it takes account of older people who may still work, many of them in part-time jobs.

It is clear from SOEP data that the number of employees who earn comparatively low wages has been increasing in Germany. A fairly standard low wage cut-off is two-thirds of median earnings, either annual earnings or hourly rate of pay. Table 1 gives information about percentages below both these cut-offs in 1993, 1998, 2003 and 2006.

Throughout the period many more East than West Germans reported low earnings. However, trends in the two regions of the country differed. In the West an ever increasing percentage reported low earnings. In the East the percentage on low earnings declined from 1993-2003, but then had risen sharply by 2006.

Considerable concern has been expressed that more people may be becoming 'working poor' in Germany (Hanesch, 2003). This is sometimes deplored as a move away from the social market economy (Soziale Marktwirtschaft) and towards the type of labour force found in Anglo-American countries, where being in work and also in poverty is not uncommon.

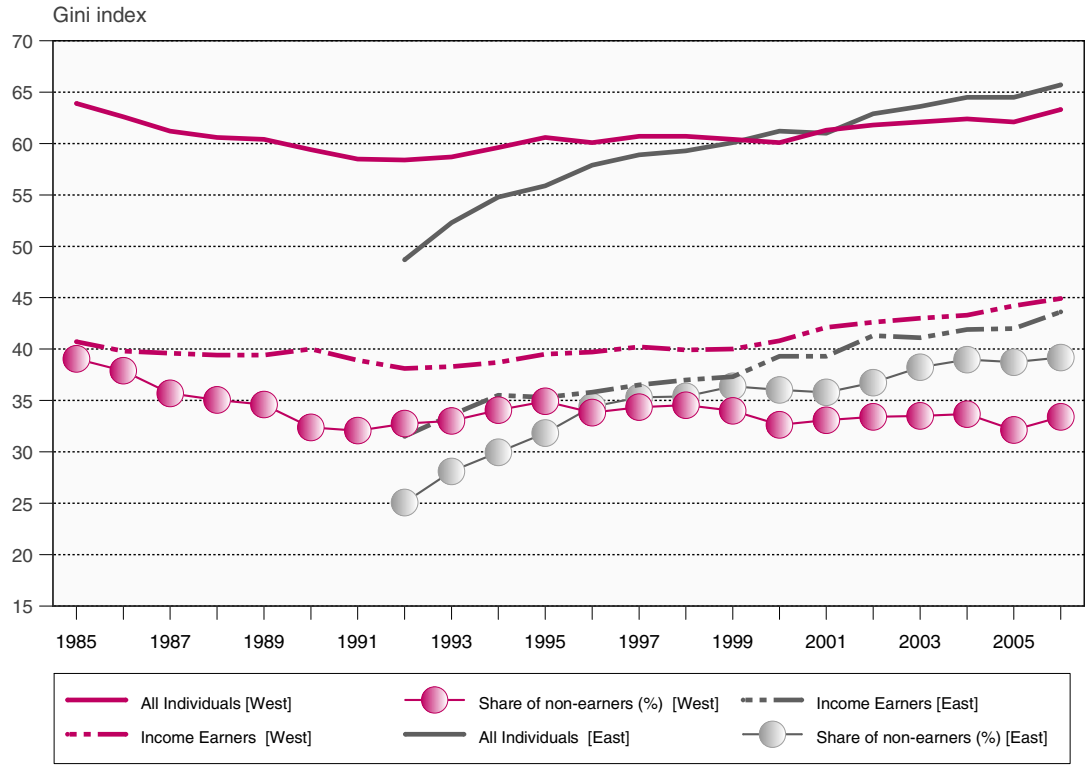
We shall return to the issue of working poverty in the final part of this article. Now it is useful to attempt a deeper understanding of labour force trends by looking at the full distribution of earnings rather than just the bottom end. Figure 1 is based on SOEP data for 1985-2006. It reports changes in the Gini coefficient. Gini ranges between 0 and 100;[1] if one individual in the country earned all income it would be 100, while if incomes were exactly equal it would be zero. As well as reporting trends in inequality in both East and West Germany, Figure 1 also shows changes in the share of the population who worked at all.

Trends have been quite different in East and West Germany. In the East the percentage of the 17-74 year old population in full-time paid work has fallen and the earnings of those in work have become more unequal; the Gini coefficient rising by about a third, from 31 in 1992 to 44 in 2006. If the entire working age population is included, so that those with zero earnings are also taken into account, the Gini is now over 65. In the West trends have fluctuated, but in 2006 62% were working, although more than in the past were now in part-time jobs. A figure of 62% employed is higher than in most previous years, and in this context it needs to be understood that *a high employment rate can perfectly well co-exist with a high unemployment rate.* The latter figure does not tell us how many are not working, but refers to the percentage actively seeking work, but unable to find it. Finally, it should be recorded that earnings inequality among those in work in the Western states has also risen, in fact by about 5% in the last decade. Earnings inequality East and West is now about the same.

1 Normally, Gini is reported as ranging between 0 and 1. Here for convenience it is multiplied by 100.

Figure 1

Personal income inequality in Eastern and Western Germany, 1985 to 2006



1 Gini coefficient multiplied by 100. Previous year's personal earned income at 2005 prices.
Population: working-age population (aged 16 to 74).

Source: SOEP.

Increased inequality in household market incomes

The next link in the chain is to see how increased variance in earnings has played out in increased inequality of household market incomes. By household market incomes is meant income from paid work, income from assets (e.g. shares, rental income etc), and also from contributory pensions. Excluded is income from private transfers (inheritances, gifts) and from Government transfers. Figure 2 gives results for the Eastern and Western states.

Inequality of household incomes is lower than inequality of individual incomes, mainly because (nearly) all households attempt an internal division of labour between paid work, housework and education – and, one might add, entitlement to Government transfers – which will give them an adequate combined income. So we can see from Figure 2 that Gini coefficients for household income inequality are lower than for personal earnings. By 2006 they were just over 50, rather than over 65. But as is almost bound to happen, a rise in the variance of personal earnings did produce a clear rise in inequality of household market incomes in both East and West Germany.

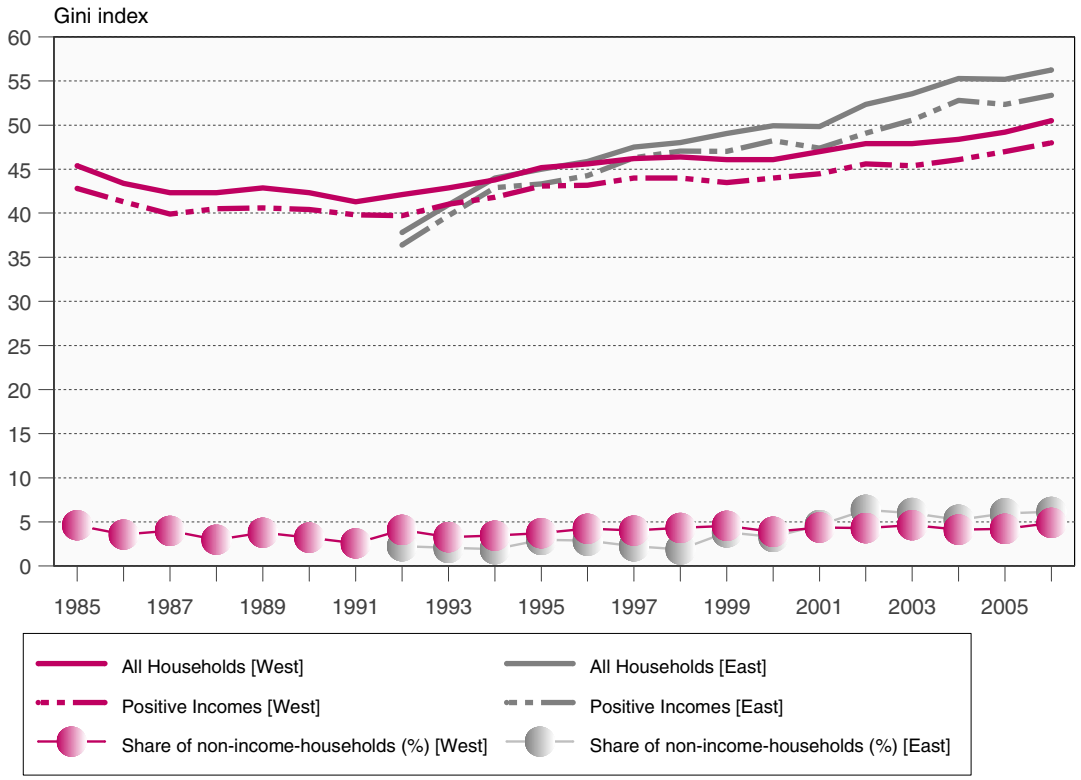
Changes in the labour force and non-labour force – full-time employment has fallen sharply and many no longer seek work

We now review employment and non-employment trends in the total working age population. This involves looking at changes in the percentages who are in full-time work, part-time work and self-employed. Just as importantly, Table 2 also shows changes in the non-labour force – in unemployment and in numbers no longer looking for work.

The main points to take from Table 2 are that the percentage of people aged 16-74 who were in full-time work fell sharply in both West and East Germany. In the West the decline was from 41.7% in 1993 to 33.6% in 2006. This is a very large decline. But in the Eastern states the decline was even greater—from 43.6% to 29.5%. By 2006 in the East 44% of the adult popula-

Figure 2

Household market income inequality in Eastern and Western Germany, 1985 to 2006



1 Gini coefficient multiplied by 100. Previous year's household market income (labor and investment income), weighted by household composition using the new OECD scale, at 2005 prices.

Population: members of private households.

Source: SOEP.

tion was not working. The main rise was not in registered unemployment, or even hidden unemployment, but in numbers who had simply dropped out of the labour force and no longer sought work.

Links between low earnings, unemployment, jobless households and poverty

The purpose of this section is to consider the consequences of all the changes we have been looking at for poverty. To what extent are low earnings and unemployment risk factors for income poverty? What about living in a jobless household? The first row of Table 3 gives the national poverty rates of working age population for 1993, 1998, 2003 and 2006. Then rates are shown for those who are low earners, unemployed and living in jobless households. Recall that the EU definition of income poverty is used in which individuals are defined as poor if they live in a household with less than 60% of national median equivalent income.

Being a low earner does increase the risk of poverty and the risks have increased in recent times. In 2006 low earners had a risk of poverty about one-third higher than the national average. So the numbers of 'working poor' are increasing. However, most low earners live in a household where someone else also works. Indeed, many low earners are the family's second earner, with earnings that essentially supplement those of the main breadwinner. So most are not themselves poor.

Being unemployed puts a person at considerably greater risk of poverty. By 2006 unemployed people had a poverty rate more than two-and-a-half times the national average. Even so, despite these high risks, it was still the case that about half of the unemployed lived in a household where someone else had paid work.

Table 2

Changes in employment, unemployment and non-participation in the labor force: working age population (16-74)

	Germany				Western Germany				Eastern Germany			
	1993	1998	2003	2006	1993	1998	2003	2006	1993	1998	2003	2006
Population of working age (Mill.)	61.4	62.1	62.4	62.9	49.8	50.3	50.7	51.1	11.7	11.8	11.8	11.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Labor Force	**62.0**	**59.2**	**61.0**	**60.7**	**62.1**	**59.9**	**62.0**	**61.9**	**58.1**	**56.1**	**54.5**	**55.8**
Ft.dep.emp.	41.7	38.5	35.3	33.6	41.2	38.4	35.9	34.6	43.6	38.6	33.0	29.5
Pt.dep.emp.	10.9	11.0	12.1	12.2	11.4	11.5	12.5	12.5	8.6	8.8	10.3	10.9
Self.emp.	5.1	5.1	5.2	5.6	5.4	5.1	5.2	5.5	3.8	5.3	5.0	6.0
Other emp[1]	4.3	4.6	8.4	9.3	4.1	4.9	8.4	9.3	2.1	3.4	6.2	9.4
Non-Labor Force	**38.7**	**40.8**	**39.3**	**39.3**	**37.9**	**40.1**	**37.9**	**38.1**	**41.9**	**44.0**	**45.5**	**44.2**
Unemp.	5.9	7.5	7.4	6.9	4.0	6.0	5.9	5.8	14.0	14.0	13.8	11.7
Hid.unemp[2]	1.7	1.9	1.9	2.8	1.7	2.1	2.0	2.8	1.8	1.1	1.6	2.4
Non-active	31.1	31.4	30.0	29.6	32.2	32.0	30.0	29.5	26.1	28.9	30.1	30.1

Source: SOEP.

1 Includes those on parental leave, in traineeships and in transition to retirement.

2 Not registered as unemployed but wanting work in the near future.

Policy implications

The key drivers of all the other changes reviewed in this article are changes in the labour market. Increased earnings inequality and increased unemployment throughout Germany, and lower labour force participation in the Eastern states have produced increased household income inequality and increased poverty.

The policy implications of these findings are far from straightforward. Policy-making almost always involves trade-offs. Tackling one problem may make another one worse. This dilemma arises in relation to earnings inequality and unemployment. Arguably, the distribution of earnings should be left to the market. The international context is relevant here. In most Western countries variance in earnings has increased in

Table 3

Poverty rates (%): nation-wide, low earners and unemployed, living in a jobless household: working age population (16-74)

	Germany				Western Germany				Eastern Germany			
	1993	1998	2003	2006	1993	1998	2003	2006	1993	1998	2003	2006
Poverty Rates												
working age	11.6	11.9	13.9	17.0	10.6	12.0	13.5	15.6	15.8	11.8	15.9	23.1
low inc earn.	13.6	18.2	20.9	25.4	12.9	19.9	21.0	23.8	15.4	12.6	20.3	31.4
reg. unempl.	26.3	29.4	38.3	51.1	25.8	30.6	38.8	48.6	26.8	27.0	37.4	55.9

Sources: SOEP.

recent decades and has been explained as due to increased demand for high level analytic and also technical skills, which are associated with advanced levels of education. In Germany matters are more open to debate. By international standards, the German wage negotiation system tends to maintain existing pay differentials between occupations and to suppress variance within occupations (Luciforma, 2000). So no clear trend towards increased returns to human capital can be directly observed in this country (see the article by Lupo and Anger in this Report). It would be surprising, however, if Germany were immune from international trends, and if the increased variance in earnings documented by SOEP were not partly due to these trends.

The main policy needs are probably to tackle high unemployment and the growth of jobless households. The welfare (Hartz IV) reforms implemented in 2005 were a major effort to reduce the length of unemployment spells and to integrate more people into the labour market. Their impact is considered in a later article in this section of the Report.

References

Hanesch, Walter (2003)
Labour market related poverty in Germany. In P. Krause, G. Baecker and W. Hanesch eds. *Combating Poverty In Europe*. Ashgate.

Lucifora, Claudio (2000)
Wage inequalities and low pay: the role of labour market institutions. In M. George et al eds. *Labour Market Inequalities*. Oxford.

Increased unemployment has led to growing poverty

More direct losers than winners from the 2005 unemployment reforms

Jan Goebel and Maria Richter

On January 1 2005 the most significant and controversial unemployment reforms in decades came into effect. They were targeted at individuals who were deemed capable of work - whether they were registered as unemployed or not—and who were currently receiving Government income support payments. For these people the aim was to phase out Arbeitslosenhilfe and, to a large extent, Sozialhilfe and replace both payments with Arbeitslosengeld II (ALG II). The new payment is a flat-rate benefit, which unlike the previous Arbeitslosenhilfe payment, is not related to previous earnings. The long standing Arbeitslosengeld program, which provides payments up to 65% of previous earnings for the first twelve months of unemployment, was not affected by the changes, except that it was relabeled Arbeitslosengeld 1. The explicit aim of the reforms was to put pressure on recipients to find work more quickly, and take any job offered, rather than wait to find a job which more exactly suited their qualifications and earnings expectations.

The purpose of this article is to assess the impact of the reforms on household incomes. Who were the winners and losers? Which types of household were better off and which worse off? We will focus particularly on households which were reduced to poverty, using here a poverty line which is widely accepted in the EU.

Evidence comes from the 2005-2006 waves of the SOEP Survey. The key advantage of SOEP is that the same individuals are interviewed every year—in fact all family members aged 16 and over are interviewed separately—so we can directly observe changes in household income. Respondents are asked to record all sources of income, including Government payments, for the whole of the previous year. So SOEP is ideal; indeed it was designed to facilitate evaluation of the effects of Government tax and transfer reforms on household budgets.

Comparisons between SOEP data and official statistics from the Bundesagentur fuer Arbeit confirm that the SOEP sample continues to accurately represent the numbers of individuals and households whose income comes wholly or partly from Government income support payments.

Income support before and after the 2005 reforms

First, an overview of the numbers and types of households affected by the reforms. Table 1 compares income support receipt in 2004 and 2005, before and after the reforms were implemented. Results are given for the whole country, then separately for West and East Germany.

Close to 90% of households in Germany receive no income support from Government, and the percentage receiving some support scarcely changed between 2004 and 2005, rising just by one percentage point in the Eastern states. However, the types of benefits received changed quite markedly. Arbeitshilfe, previously received by individuals living in 5% of households, was abolished. It also became no longer possible for those capable of work to receive Sozialhilfe by itself , as 2% of households did in 2004. In 2005 7% of households depended wholly or partly on ALG II, 3% as compared with 4% in 2004 received Arbeitslosengeld, and 2% received Sozialhilfe. In West Germany single parent households were the main group getting Sozialhilfe: in the Eastern states 6% of couple households with dependent children got Sozialhilfe, as did 3% of single parent households. Households without dependent

Table 1

Government income support before and after the reforms: types of benefits received

	Household type	No support	2005				2006		
			Unemployment benefit (Alg)	Unemployment assistance (Alh)	Social assistance	No support	Unemployment benefit (Alg)	Alg II	Social assistance
	in percent								
Household types									
All Germany									
One person household	19	93	2	3	1[1]	92	1	6	1[1]
Couple household without children	28	93	4	3	0[1]	93	3	3	1[1]
Couple household with children	36	90	4	5	1	88	4	6	2
Single parent household	5	67	5	10	18	62	2	28	8
Parents with adult children	13	85	7	7	1[1]	86	6	8	1[1]
Total	100	89	4	5	2	88	3	7	2
West Germany									
One person household	18	95	2	2	1[1]	94	1[1]	4	1[1]
Couple household without children	28	94	4	2	0[1]	94	3	3	1[1]
Couple household with children	37	92	4	3	1	91	4	5	1
Single parent household	5	73	5	6	17	64	2[1]	24	9
Parents with adult children	12	87	6	6	1[1]	88	6	5	1[1]
Total	100	91	4	3	2	91	3	5	1
East Germany[2]									
One person household	21	86	3[1]	8	3[1]	86	1[1]	12	1[1]
Couple household without children	30	88	6	7	0[1]	89	5	5	1[1]
Couple household with children	30	80	5	13	3	74	6	14	6
Single parent household	6	48	7[1]	22	22	55	4[1]	37	3[1]
Parents with adult children	13	75	11	13	1[1]	79	5	15	1[1]
Total	100	81	6	11	3	80	4	13	3

1 Number under 30. 2 Including Berlin.

Source: SOEP 2005-2006.

children now nearly all depended on ALG II, as policy makers intended.

Winners and losers

We now directly address the issue of winners and losers from the reforms. Table 2 shows the percentage of winners and losers, measured in terms of household disposable income,[1] and also transfer income alone. Winners are defined as households whose incomes rose by more than 5% between 2004 and 2005, and losers are those whose incomes fell by more than 5%. Those whose incomes changed by 5% or less in either direction are regarded as having basically stable flows. The left part of the table relates to those who in 2004 were receiving either Arbeitslosenhilfe or Sozialhilfe, while the right part covers only the first group.

Clearly, there were many more losers than winners from these reforms. About half of all households wound up with lower disposable incomes, just over a third were better off in 2005, and about 15% registered little change. Couple households without children and one person households were worst hit. Single parent households did less badly

1 Equivalent incomes are used. See the Glossary for a definition.

Table 2

Winners and losers due to the reforms: income gains and losses

Household types	Unemployment assistance[1] and Social assistance recipients[2]			Unemployment assistance recipients only[1]		
	Losers	Stable[3]	Winners	Losers	Stable[3]	Winners
	in percent					
Household disposable income						
One person household	53	10	36	59	6	35
Couple household without children	58	9	33	57	9	34
Couple household with children	49	13	37	53	15	32
Single parent household	41	22	37	52	9	39
Parents with adult children	48	19	34	47	19	33
Transfer income						
One person household	61	11	28	65	13	22
Couple household without children	64	4	31	65	5	34
Couple household with children	57	5	38	64	6	30
Single parent household	39	7	54	49	1	50
Parents with adult children	66	10	23	65	11	24

1 Excluding former unemployment assistance recipients who in the following year became employed or retired.

2 All social assistance recipients who received social assistance in 2004 and who then received either social assitance or ALG II in 2005.

3 Income changed less than 5% from the previous year.

Source: SOEP 2005-06.

than other groups, but even so, more lost money than gained. More households which had previously received only Arbeitslosenhilfe lost income than households previously getting Sozialhilfe. The reason is mainly that Arbeitslosenhilfe payments were linked to previous earnings, whereas Sozialhilfe payments were not. The proportion of winners and losers was about the same in East and West Germany.

If we focus just on transfer income, it appears that more than 60% of households lost money, rather than about 50%. Cuts in benefits were of course the same as cuts in income for those families wholly dependent on income support. But many families only received support for part of the year and some of them earned enough additional income at other times to come out ahead in 2005.

Who was worst affected? Increases in poverty rates

We now raise the issue of who was worst affected by the reforms. One way to do this is to look at changes in poverty rates between 2004 and 2005. As explained in the Income Section of this report, the poverty lines used in European research relate to *relative income poverty*. Individuals are not defined as poor not on the basis of absolute deprivations—lack of food, clothing and shelter. Instead they are deemed poor relative to others in their own country because they lack sufficient means to enjoy a more or less normal or mainstream lifestyle. In the European Union the relative poverty line most widely used is one which defines individuals as poor if they live in a household which receives less than 60% of national median disposable income.

Table 3 gives mean and median incomes, as well as poverty rates (% poor), in both 2004 and 2005 for recipients of different income support payments. For each group in poverty, we have calculated the percentage by which its income (on average) falls below the poverty line. This provides a measure of the *depth of poverty*.

The best central measure of income is usually considered to be the median; the arithmetic mean is, in a sense, distorted by inclusion of the very rich. Focussing on the median, we see that all groups had at least slightly lower incomes in 2005 than 2004, except recipients of Arbeitslosengeld. Further, all the groups with declining incomes had higher poverty rates. For two groups the increase in poverty in both the Eastern and Western states was very severe. Those receiving ALG II or Sozialhilfe in 2005 recorded poverty rates in the 65-70% range—in fact, a little over 70% in East Germany. These poverty rates were up from around 50-55% in 2004.

Table 3

Which income support groups were worst affected financially by the reforms?

	2005						2006					
	Total	No support	Unemployment benefit (Alg)	Unemployment assistance (Alh)	Social assistance	Unemployment benefit and social assistance	Total	No support	Unemployment benefit (Alg)	ALG II	Social assistance	Unemployment benefit + (Alg)
	in percent											
	All Germany											
Poverty rate %[1]	17.2	14.2	27.6	51.0	54.5	52.0	18.8	14.5	16.0	66.3	68.4	66.7
Poverty gap in %	4.3	4.4	5.7	11.9	14.6	12.6	5.5	4.3	4.0	18.5	25.5	19.9
	West Germany											
Poverty rate %[1]	15.8	13.7	27.1	49.3	–	48.5	17.2	14.0	16.8	63.0	–	63.5
Poverty gap in %	4.8	4.4	5.2	11.8	–	11.6	5.2	4.2	4.5	17.7	–	19.2
	East Germany											
Poverty rate %[1]	22.4	16.2	29.1	53.0	–	56.7	24.9	16.7	13.9	71.4	–	71.9
Poverty gap in %	5.7	4.2	7.1	12.0	–	14.1	7.0	4.6	2.7	19.9	–	20.9

1 Below 60% of national median disposable income.

Source: SOEP 2005-2006.

It might be objected that these poverty rates only look terrible because they are based on an arbitrary relative income poverty line. If income support payments happen to be set at just below an arbitrary line, poverty rates can be made to look extremely high. A reasonable response is that, while it is true that the 60% of median poverty line is more or less arbitrary,[2] it is also the case that many of those deemed poor were a long way below the line. Those who were poor on ALG II were on average 18.5% below the poverty line, and those poor on Sozialhilfe were typically 25.5% below the poverty line.

Discussion

In this article no attempt has been made to evaluate the effects of the reforms in regard to the main aim of reducing the length of unemployment spells and integrating more people into the labour market. The aim has simply been to work out the impact on household incomes in order to assess whose is worse off, who is better off and by how much. We have found that there were many more losers than winners; roughly 50% of households lost income, while just over a third gained. While policy makers may have expected an outcome on these lines, it is fair to point out that some groups have been very hard hit. These include lone person households and couples with no children. Among single parent families and couples with children, there were still more losers than winners, but some protection was given, especially for single mothers,. In the end the reforms will be judged partly by their impact on the macro economy. But for families reliant on transfer payments, income losses have been substantial.

2 There is, however, a considerable degree of public consensus in many countries that households with incomes below 50-60% of the national median should be considered poor (Citro and Michael, 1995).

Reference

Citro, Constance F. and Michael, Robert T. (1995)
Measuring Poverty: A New Approach. Washington D.C.

Returns to education: not until 2005 did East German men do as well as Westerners, but Eastern women did better

Katie Lupo and Silke Anger

Economists often write about 'returns to human capital'. By this they mean the extra earnings gained due to additional years of education and work experience. Returns to human capital can be thought of as returns on the investment which people make in their own skills. As a rule of thumb, it is usually the case in Western countries that every extra year of schooling is worth about an extra 7%-8% in earnings.

In normal times it would be expected that a country's educational system would be well suited to producing employees with just the right skills for the national labour market. So, generally, one would not expect returns to education to change much from year to year. But what happens when the educational system of one country is grafted on to the labour market of another country? This is more or less what happened to the East German educational system when reunification occurred and East Germans had to compete in the Federal Republic's labour market. For an economist the developments which followed provide a fascinating 'natural experiment', testing the extent to which educational qualifications and work experience are transferable.

It is reasonable to expect that for some period after reunification East Germans would receive lower returns to human capital than Westerners because their education and work experience would be less well adapted to a Western labour market. Some of their education and work experience might, in a sense, be obsolete. But how long would it take to catch up, for returns to human capital become equal? And would there be differences between women and men? There were some reasons for thinking that East German women would be able to compete effectively in a Western labour market, having received high levels of education and become accustomed to working full-time during the Socialist years.

Advantages of the SOEP data – returns to human capital for the same respondents for almost 20 years

Most previous studies comparing returns to human capital in East and West Germany have used cross-sectional samples. Not surprisingly, given different samples and different years of coverage, these studies have produced somewhat divergent results. Most studies show a decline in returns to human capital in East Germany after unification (Schwarze, 1991ab; Bird, Schwarze and Wagner, 1994), but one study showed no decline at all (Krueger and Pischke, 1992). Results also differ about the length of time it took for returns East and West to become equal (for a review see Ammermueller and Weber, 2005).

The chief advantage of this study is that, because it uses SOEP data, it is based on following the same large sample of East and West Germans for eighteen years (1989-2006) and observing how returns to human capital for these same individuals changed before, during and after reunification. Here it should be noted that the East German respondents were first interviewed in mid-1990 before reunification, when the former GDR educational system and labour market were still in place… and they were asked to report their wages and jobs a year before in 1989. So we are able to estimate returns to education in the GDR, as well as returns to the same respondents since reunification.

Table 1

Returns to human capital In 1989-1991: the transition period

	Men						Women					
	East			West			East			West		
	1989	1990	1991	1989	1990	1991	1989	1990	1991	1989	1990	1991
Years of education	0.059	0.053	0.049	0.080	0.077	0.071	0.090	0.084	0.065	0.089	0.078	0.082
	(0.003)**	(0.003)**	(0.004)**	(0.003)**	(0.003)**	(0.003)**	(0.004)**	(0.004)**	(0.005)**	(0.005)**	(0.005)**	(0.005)**
Experience	0.013	0.010	0.015	0.039	0.035	0.037	0.027	0.027	0.016	0.046	0.041	0.049
	(0.003)**	(0.003)**	(0.004)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.003)**	(0.004)**	(0.004)**	(0.004)**	(0.004)**
Experience square	-0.019	-0.000	-0.000	-0.001	-0.001	-0.001	-0.045	0.000	0.000	-0.001	-0.001	-0.001
	(0.006)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.000)**	(0.008)**	(0.000)**	(0.000)	(0.000)**	(0.000)**	(0.000)**
Constant	6.330	5.777	6.093	6.372	6.493	6.589	5.422	4.890	5.755	6.211	6.579	6.365
	(0.045)**	(0.050)**	(0.080)**	(0.050)**	(0.052)**	(0.054)**	(0.072)**	(0.073)**	(0.078)**	(0.094)**	(0.084)**	(0.083)**
Observations	1103	1129	932	1688	1626	1617	1584	1639	1570	2511	2467	2483

* Significant at 5%. ** Significant at 1%.

Standard errors in parentheses. Only the results controlling for selection bias are shown.

Source: SOEP.

The dependent variable or outcome we are interested in is the *previous month's gross wage,* including all extras: bonus payments, vacation money, profit sharing, holiday bonuses, and thirteenth and fourteenth month pay.[1] The sample is confined to people aged 25-65, who had already completed their education, and to people working full-time (more than 25 hours per week). One important factual point to remember is that, throughout the period, East German wages were a lot lower than West German; about 50% lower on average in 1991-2006. So when we say that returns to education were becoming equal by the end of the period we do not mean that wages were equal. We just mean that each extra year of education or work experience brought an equal percentage gain in wages.

Returns to education before reunification and in the early transition years

In the results which follow, the aim is to measure the percentage gain in wages due to an extra year of education, or an extra year of full-time work experience. These gains are estimated separately for East and West German men and women in three time periods: before reunification, during the early transition years (1990-91), and then during the ensuing period up to 2006. Work experience acquired in the GDR and in the Federal Republic are analysed separately. The equations underlying the tables below are ordinary least squares (OLS) wage equations of the kind developed by a pioneer of human capital research, Jacob Mincer (1974). 'Controls' are included for variables which might also influence wages in addition to the human capital variables which we are mainly interested in. The control variables include firm size, public sector employment and hours worked. Technically, it is also necessary to be concerned about possible bias in estimates due to the risk that unobserved variables (i.e. variables not measured in SOEP) might be correlated with both human capital and the decision to enter the workforce or not. This potential 'selection bias', which mainly relates to women, is dealt with by employing a Heckman (1979) selection model in which marital status and number of children in the household are used as proxies for selection into the workforce.

A first glimpse at the returns to education and work experience prior to reunification and in the

1 The dependent variable is actually the natural log (ln) of gross wages. The log of wages, unlike wages measured in Euros, forms a normal bell-shaped curve, which is preferable to other distributions for most statistical analyses.

Table 2

Returns to education for men and women in East and West Germany, 1992-2006

		Men				Women			
		West		East		West		East	
	1992	0.074	(0.004)	0.044	(0.006)	0.065	(0.007)	0.074	(0.007) ***
	1993	0.072	(0.004)	0.056	(0.006) **	0.067	(0.007)	0.070	(0.007) **
	1994	0.070	(0.004)	0.055	(0.006) **	0.065	(0.007)	0.061	(0.007)
	1995	0.069	(0.004)	0.057	(0.006) **	0.063	(0.007)	0.062	(0.007)
	1996	0.072	(0.004)	0.063	(0.006) ***	0.061	(0.007)	0.070	(0.008) **
	1997	0.071	(0.004)	0.064	(0.007) ***	0.063	(0.007)	0.069	(0.008) **
	1998	0.072	(0.004)	0.066	(0.006) ***	0.059	(0.007) *	0.071	(0.008) **
	1999	0.077	(0.004)	0.070	(0.007) ***	0.055	(0.007) **	0.073	(0.008) ***
	2000	0.085	(0.004) ***	0.077	(0.006) ***	0.062	(0.006)	0.067	(0.007) **
	2001	0.086	(0.004) ***	0.076	(0.006) ***	0.058	(0.006) **	0.068	(0.007) **
	2002	0.086	(0.004) ***	0.076	(0.006) ***	0.056	(0.006) **	0.077	(0.007) ***
	2003	0.081	(0.004) ***	0.076	(0.006) ***	0.055	(0.006) **	0.074	(0.007) ***
	2004	0.082	(0.004) ***	0.078	(0.006) ***	0.058	(0.006) **	0.077	(0.007) ***
	2005	0.081	(0.004) **	0.083	(0.006) ***	0.066	(0.006)	0.080	(0.007) ***
	2006	0.082	(0.004) **	0.083	(0.006) ***	0.065	(0.006)	0.079	(0.007) ***
Constant		6.045	(0.036) ***	5.819	(0.059) ***	5.774	(0.062) ***	5.324	(0.068) ***
Observations		22872		66555		69533		23929	

Notes: Standard errors in parentheses. Significantly different from the base year (1984, 1991) at a level of * 10%; ** 5%; *** 1%. Only the results controlling for selection bias are shown.

Source: SOEP.

early transition years is given in Table 1. It immediately uncovers differences between Eastern and Western men and women.

Returns to education and work experience fell immediately for all Easterners with exposure to the market economy. Returns for Eastern men began and remained well below those of Western men throughout the initial years of transition. In 1989 Eastern men received returns of 5.9% for each additional year of schooling; a figure below Western levels due to the compressed wage structure of the GDR. (Note that the coefficients in this and later tables can be interpreted as percentages). By 1991 returns for Easterners had fallen by a full percentage point. This can be explained as the initial shock brought on by the free-market economy. There was actually a simultaneous fall in returns to Western men, which may well have been due the one-off very large increase in the size of the German labor force.

Returns to work experience were also lower for Eastern than Western men and fell in the first year of re-unification (from 1.3% to 1.0%) before increasing to 1.5% in 1991. Western returns to experience began well above eastern levels (3.9% in 1989) and followed a trend similar to Easterners, falling to 3.5% in 1990 before rising to 3.7% in 1991.

Unlike the results for men, quite similar returns to education are found for Eastern and Western women during this period. Returns for both Eastern and Western women were around 8%. There may have been a temporary decline for Eastern women in 1991, but as we shall see, it did not continue into 1992 and beyond. The lack of an East-West difference could perhaps partly be explained in terms of Eastern and Western work ethics and customs. As noted earlier, highly skilled women in the Western states are more likely to leave the workforce in order to raise a family - negatively selecting out of the workforce —whereas almost all Eastern women were accustomed to full-time work.

Returns to work experience for Eastern women did fall after reunification. Every extra year of experience was worth an extra 2.7% in wages in

Table 3

Returns to experience in East and West Germany for men and women

	Men				Women			
	Western States		Eastern States		Western States		Eastern States	
Tenure	0.012	(0.001) ***	0.014	(0.001) ***	0.015	(0.001) ***	0.022	(0.001) ***
Tenure square	0.000	(0.000) ***	0.000	(0.000) ***	0.000	(0.000) ***	0.000	(0.000) ***
Years of Education	0.077	(0.001) ***	0.065	(0.001) ***	0.066	(0.001) ***	0.072	(0.001) ***
Experience								
1992	0.022	(0.004)	0.003	(0.006)	0.033	(0.006)	0.014	(0.006) *
1993	0.028	(0.004)	0.003	(0.006)	0.030	(0.006)	0.010	(0.006)
1994	0.022	(0.004)	0.000	(0.006)	0.031	(0.006)	0.017	(0.007) **
1995	0.030	(0.004)	0.004	(0.006)	0.036	(0.006)	0.018	(0.006) **
1996	0.028	(0.004	0.005	(0.006)	0.034	(0.006)	0.014	(0.006)
1997	0.035	(0.004) **	0.005	(0.006)	0.037	(0.006)	0.011	(0.006)
1998	0.032	(0.004) *	0.007	(0.006)	0.030	(0.005)	0.015	(0.007) *
1999	0.029	(0.004)	0.001	(0.006)	0.030	(0.005)	0.017	(0.006) **
2000	0.030	(0.003)	0.011	(0.006)	0.028	(0.005) *	0.021	(0.006) ***
2001	0.027	(0.003)	0.010	(0.006)	0.026	(0.005) **	0.018	(0.006) **
2002	0.030	(0.003)	0.015	(0.006)	0.027	(0.005) **	0.019	(0.006) **
2003	0.034	(0.004) **	0.014	(0.006)	0.029	(0.005)	0.019	(0.006) **
2004	0.036	(0.004) ***	0.013	(0.006)	0.031	(0.005)	0.021	(0.006) ***
2005	0.039	(0.004) ***	0.024	(0.006) **	0.028	(0.005)	0.023	(0.006) ***
2006	0.037	(0.004) ***	0.022	(0.006) **	0.029	(0.005)	0.024	(0.006) ***
Constant	5.946	(0.028) ***	5.461	(0.045) ***	5.831	(0.032) ***	4.899	(0.042) ***
Observations	48032		22872		50256		23929	

Standard errors in parentheses. * significant at 5%; ** significant at 1%. Only the results controlling for selection bias are shown.
Source: SOEP

1989 and fell to just 1.6% by 1991. In the West additional years of experience continued to be worth an extra 4%-5% for women. Clearly, work experience obtained in the GDR was partly obsolete.

Returns to education from 1992 onwards

Returns to education from 1992 until 2006 are presented separately for men and women in Table 2. As before, controls are in place for public sector employment, firm size, full-time work experience and length of tenure with a particular employer.[2] Again a Heckman selection model is used, although results without allowing for selection bias are much the same.

The coefficients in Table 2 can again be interpreted as the expected percentage increase in salary for each additional year of schooling. Returns to education for Western men were very stable at around 7%, remaining basically unchanged throughout the period (in fact they were unchanged from 1984) until 1999. They then rose to about 8% and remained at that level until 2006. As we saw in Table 1, returns to Eastern men were initially low in the early transition period. They rose steadily throughout the 1990s and then finally reached Western levels in 2005. This is a fascinating story; it shows that it took about fifteen years for East German men to obtain new knowledge and skills suited to a market economy, and then to find out how to apply and make use of their skills.

The results could hardly be more different for women. We saw that returns to education for Eastern women fell below Western levels in 1991.

2 Quadratic terms are also included for work experience and tenure.

But this difference appears to have lasted only for about one year. From 1992 onwards Eastern women record higher rates of return than Westerners, with the gap increasing to about 2% from 2002 onwards. These results are almost certainly due to the emphasis placed on female education and work in the former East Germany.

Returns to work experience and tenure with an employer from 1992 onwards

Returns to years of full-time work experience and also to length of tenure within the same firm are shown in Table 3.

It is clear that returns to each additional year of tenure within a firm remain higher for both men and women in the Eastern states. Eastern men earn approximately 1.4% more for each additional year with the same employer, while western males earn only an additional 1.2%. Similarly, Eastern women earn approximately 2.2% more for each additional year of work within a firm, while Western women get 1.5%. It seems likely that these differences reflect a hangover from the wage structure in the former GDR, where fixed salary increases were awarded for additional years of work in the same firm. Those who stayed in the same firm reaped the rewards, while those who changed jobs missed out.

Most of the evidence in Table 3 relates to returns to full-time work experience in these post-transition years. Returns remained steady at around 3% for both Western men and women throughout the period. This was much higher than the rate for East Germans. East German men received negligible rewards for experience until 2000 (unless they stayed with the same firm), but their rewards have increased since then, although they are still below Western levels. Eastern women recorded returns to experience of 1%-2% for most of the period, rising towards the end. Overall, the evidence indicates that experience and expertise acquired in the GDR was not valued highly in a Western-style labour market. But new skills acquired since unification are slowly paying off.

This last point is confirmed by more detailed analyses which directly compare returns to work experience acquired before unification with returns after unification. For both Eastern men and women returns to post-unification experience were very much higher. Indeed, returns to men for experience in the GDR labour market are actually estimated to be slightly negative.

Migrants who moved from East to West

Easterners who moved to the West from 1990 onwards are, of course, a special self-selected group. In all probability they are more enterprising and ambitious than most of their countrymen and women. So one might expect them to achieve higher returns to education and work experience than other Easterners, and perhaps eventually than Westerners. In the event, returns to education for those migrating West rose rapidly towards Western levels in the first two years following unification and then fluctuated between Eastern and Western levels until about 1998. After that returns for migrants were at or higher than normal Western levels. Returns to work experience were also higher than for other East Germans.

Discussion

German unification created a natural experiment through which it can be learned how human capital obtained in a socialist system is rewarded in a free-market economy, and also how long it takes for rewards to equalise. A central finding is that returns to education for Eastern men fell a lot during the transition and, on average, took about fifteen years to reach Western levels, although migrants got there faster. For Eastern women results are quite different. Soon after transition they began to gain the same or better returns than Western women, but this way probably because, through education and experience in the GDR, they had acquired high skills levels and a strong commitment to a working career. Unlike returns to education, average returns to work experience remain lower for Easterners than Westerners. It appears, though, that this is due to the lower value of experience acquired in the GDR. Returns to experience gained since 1990 appear not dissimilar to those in the West. In general, there has been convergence in returns to human capital between the Eastern and Western states, although it should not be forgotten that actual wage levels are still much higher in the West.

References

Ammermüller, Andreas and Weber, Andrea M. (2005)
Educational attainment and returns to education in Germany: An analysis by subject of degree, gender, and region. Z*EW Discussion Paper* No. 05-17.

Bird, Edward J., Schwarze, Johannes, and Wagner, Gert G. (1994)
Wage effects of the move toward free markets in East Germany. *Industrial and Labor Relations Review*, 47, 390-400.

Heckman, James J. (1979)
Sample selection bias as a specification error, *Econometrica* 47, 153-161.

Krueger, Alan B. and Pischke, Jorn S. (1992)
A comparative analysis of East and West German labor Markets: before and after unification. *Princeton University Department of Economics Working Papers* No. 307.

Mincer, Jacob (1974)
Schooling, Experience and Earnings, New York.

Schwarze, Johannes (1991a)
Ausbildung und Einkommen von Männern. Einkommensfunktionsschätzungen für die ehemalige DDR und die Bundesrepublik Deutschland. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung,* 24, 63-69.

Schwarze, Johannes (1991b)
Einkommensverläufe in der DDR von 1989 bis 1990 – Unbeobachtete Heterogenität und erste Auswirkungen der marktwirtschaftlichen Orientierung. In: U. Rendtel und G. Wagner (eds.) *Lebenslagen im Wandel – zur Einkommensdynamik in Deutschland seit 1984.* Frankfurt, 188-212.

Jobless households: children growing up with no role model in the world of work

Bruce Headey

It is important to understand policy issues surrounding jobless households, as well as the more familiar issues of individual unemployment. Individual unemployment often has serious economic and psychological consequences, but many unemployed individuals live in households where somebody else has a job. A jobless household—a household where no-one has any paid work—is likely to suffer even more damaging consequences affecting its combined income and wealth, and the physical and mental health of individual members. It also seems likely that children's long term career chances may be damaged by growing up in jobless households. Concern has been expressed that, if children grow up in households in which there is no role model in the world of work, they may be more likely to become jobless themselves (Gregory and Hunter, 1995).

The distribution of household work in Germany has become more unequal, and this is one driver of increased earnings inequality (see Goebel, Krause and Schupp in this Report). The evidence points to increasing numbers of households in which one or two members work long hours and, at the other end of the spectrum, increasing numbers of 'jobless households' in which no-one has paid work.

The SOEP Survey provides the first available evidence about medium term or 'persistently' jobless households in Germany. Evidence has been collected in Eastern as well as Western Germany since the early 1990s, so we are now in a position to assess whether household joblessness is usually a short term phenomenon, or whether it is a persistent problem for many. Nearly all previous evidence has been cross-sectional; evidence collected at one moment in time. Clearly, even short term household joblessness is a concern, but medium to long term joblessness is a more serious policy issue, because of the implications for a family's long term finances and well-being.

In this article a jobless household is defined as one in which no-one in the household had done 52 or more hours of work (just one hour per week on average) in the previous calendar year. In some households joblessness may be a relatively short term experience. So much of our attention will be focused on households who reported joblessness for several consecutive years. Clearly, even in these households, someone may have done some paid work during the period, but equally clearly joblessness was a persistent experience for them.

Clearly, other definitions of joblessness are possible. If we said that any paid work done by a household member during the year would lead the whole household to be defined as working, then the jobless rates would be lower than those given below. On the other hand, if we said that in order for the household to be classified as working, at least one person would need to spend the entire year in work, the joblessness estimates would be raised. However, it is clear from more detailed sensitivity analyses that alternative reasonable definitions give essentially the same results regarding the types of households at high and low risk of joblessness (Headey and Verick, 2005).

Overview: increasing numbers of jobless households 1992-2006

A preliminary scan of the evidence for 1992-2006 indicated that, although annual figures fluctuated, the underlying trend has been for household joblessness to increase throughout this period, except for an improvement in the last few years. To make the underlying trend clear, Table 1 reports three-year averages (1992-94, 1995-97 etc).

Table 1

Individuals in jobless households 1992-2006: all household and those headed by prime age men or women (25-59)

Annual average	All persons in jobless households	Persons in jobless households with prime age head
	in percent	
1992-1994	14.2	3.5
1995-1997	16.0	5.1
1998-2000	22.8	9.1
2001-2003	26.8	11.6
2004-2006	21.3	6.3

Source: SOEP.

To provide an overview, results are first given for Germany as a whole and for individuals in all households. Included are elderly households and student age households where paid work would not normally be expected. Then separate results are reported for individuals in households headed men or women of prime working age (25-59), where there would normally be an expectation of work.[1]

If the focus is the entire population, then the joblessness rate looks alarmingly high. By 1998-2000 over 20% of individuals were in jobless households, and the figure has remained over 20% since, although with an improvement in the last three years. However, most of these households are headed by a retired individual or couple, so the figures are mainly of interest if one wants to know how many people live in households which are 'dependent' in the sense that no-one works; they contribute nothing to the labour market.

For most purposes the focus should be on households where paid work might reasonably be expected. In households headed by prime age men or women, joblessness also rose. In 1992-94 household joblessness was at an annual average of only 3.5%. By 1998-2000 the figure had risen to 9.1%, and then reached a high or 11.6% in the 2001-03 period. There was then a sharp improvement in 2004-06, with an annual average of 6.3%.

How persistent is household joblessness?

As well as becoming more prevalent, household joblessness has become more persistent. Furthermore, trends in the Western and Eastern parts of the country have diverged, so results are given separately. The evidence here is longitudinal and relates only to people living in households headed by prime age individuals. In Table 2 respondents are classified according to whether, in each of these three year periods, they were never living in a jobless household, whether the household was jobless for just one of the three years, for two years (any two out of the three), or jobless for all three years. A household that is jobless for three years can be thought of as medium term jobless, or perhaps as 'persistently' jobless.

Persistent or three-year joblessness was at quite low levels in these prime age households in the early and mid-1990s. Furthermore, it was lower in the Eastern than the Western states. Then the situation seriously worsened, especially in the East. In 2001-03 5.4% were jobless for three years, 6.2% in the East and 4.9% in the West. In 2004-06 there was a clear improvement in both parts of the country, with 3.0% of households jobless in all three years and another 2.9% jobless in two out of three.

The evidence in Table 2 suggests that the improvement kicked in earlier than the fall in individual unemployment, which only began in 2006.

1 It should be understood that all results in this article relate to 'individuals in households' or 'individuals described by household characteristics'. The unit of analysis remains the individual not the household.

Table 2

How persistent is household joblessness?
Evidence for individuals in prime age households – consecutive 3-year periods in 1992-2006

Years jobless	Germany 1992-1994	West 1992-1994	East 1992-1994	Germany 1995-1997	West 1995-1997	East 1995-1997	Germany 1998-2000	West 1998-2000	East 1998-2000
	in percent			in percent			in percent		
Never	93.9	94.5	92.8	91.5	91.9	91.8	83.9	84.8	81.6
1 year	3.2	2.8	3.9	4.0	3.5	4.8	8.3	8.1	8.6
2 years	1.5	1.2	2.1	2.0	2.1	1.4	4.5	3.9	5.9
All 3 years	**1.4**	**1.5**	**1.1**	**2.5**	**2.5**	**1.9**	**3.4**	**3.2**	**3.9**
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Years jobless	Germany 2001-2003	West 2001-2003	East 2001-2003	Germany 2004-2006	West 2004-2006	East 2004-2006
	in percent			in percent		
Never	81.4	84.6	79.0	89.8	90.9	86.5
1 year	7.9	6.9	7.8	4.3	3.9	5.5
2 years	5.3	3.6	7.0	2.9	2.6	3.8
All 3 years	**5.4**	**4.9**	**6.2**	**3.0**	**2.6**	**4.2**
	100.0	100.0	100.0	100.0	100.0	100.0

Source: SOEP.

Households at greatest and least risk of joblessness

What are the characteristics of persistently jobless households? What puts some households at great risk of joblessness, while others are at low risk? A range of analyses were undertaken to try and answer these questions and it became clear that single parent households are at greatest risk and prime age couple households at lowest risk. Table 3 gives results, concentrating now just on the most recent period, 2004-06.

Table 3

High and low risks of joblessness:
individuals in single parent households and prime age couple households, 2004-06

Years jobless	In single parent households			In prime age couple households		
	Germany 2004-2006	West 2004-2006	East 2004-2006	Germany 2004-2006	West 2004-2006	East 2004-2006
	in percent			in percent		
Never	68.2	70.3	64.1	94.7	94.9	93.8
1 year	11.2	11.4	10.6	2.4	2.2	3.0
2 years	10.0	9.0	12.0	1.4	1.3	1.9
All 3 years	**10.7**	**9.3**	**13.2**	**1.5**	**1.6**	**1.4**
	100.0	100.0	100.0	100.0	100.0	100.0

Source: SOEP.

Table 3

Children under 17 in jobless households 2004-2006

Years jobless	All children			In single parent households			In couple households		
	Germany 2004-2006	West 2004-2006	East 2004-2006	Germany 2004-2006	West 2004-2006	East 2004-2006	Germany 2004-2006	West 2004-2006	East 2004-2006
	in percent			in percent			in percent		
Never	86.3	87.4	80.6	62.8	65.4	57.2	93.5	93.6	93.1
1 year	5.2	4.7	7.7	12.5	12.9	11.3	2.5	2.3	3.9
2 years	4.4	4.3	4.9	11.3	10.5	13.2	1.8	1.9	1.5
All 3 years	4.1	3.6	6.8	13.4	11.2	18.3	2.1	2.3	1.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: SOEP.

Most prime age households are headed by couples and it is very clear that few such households are now jobless in Germany. If anything the position is more favourable in the Eastern states than the West. But in single parent households, the large majority headed by mothers, the situation is very different. In the country as a whole 10.7% were jobless for all three years in 2004-06 and another 10.0% were jobless for two of these years. In the Eastern states the comparable figures were 13.2% and 12.0%.

Clearly, there is a strong societal expectation that at least one person in a couple household will undertake paid work. But community expectations about whether single parents, and especially single mothers should work, are not entirely clear. There is probably still an expectation that they will not normally work, at least while their children are still at school. In so far as they are fulfilling this expectation, it is not surprising that their households are jobless, since in most cases they are the only people at an age to undertake paid work.

Regardless of social expectations, however, there are still important issues about children growing up in jobless households. How many children are in this situation and what are some of the consequences?

Children in jobless households

Our final table (Table 4 above) is about the number of children growing up in jobless households. It first shows rates for all children under 17, and then for children in the two main types of household where they grow up, namely couple households and single parent households.[2]

Plainly, it ought to be of some concern that many children in Germany are living in quite persistently jobless households with no role model in the world of work, or at best just limited role modeling. Among children under 17, 4.1% were in jobless households for all three years in 2004-06 and another 4.4% in two of the three years. In single parent households the rate of three-year joblessness is 13.4% nation-wide and 18.3% in the Eastern states.

The SOEP data indicate that, at any given time, over 50% of the children who are in jobless households are in single parent households (55% in 2006). Of these children about three-quarters (73% in 2006) are also living in poverty.

Discussion and policy implications

If German policy makers are concerned about the effect on children of being raised in a jobless household, then it is single parent, mainly single mother households that should be the main focus. However, this raises controversial normative issues about whether single mothers should be expected to work. One view is that they should not work and instead concentrate on raising their children. An alternative view, adopted in many Western countries, is that they should be expected to enter job training or seek work when their youngest child reaches school age. At present in

2 In this table no age restrictions are imposed for household heads.

Germany some single parents take work when their youngest child enters school, but even so the three-year jobless rate for children in families where the youngest is at least six years old was still 12.2% in 2004-06.

It may be time for the German Government to begin to consider programs to get single parents back to work when their children are in school. The programs would have to offer a mixture of financial incentives and sanctions to promote job training and job search. Further, mothers could not sensibly work unless they could find affordable child care. Especially in the Western states, there is a serious shortage of subsidised kindergarten and child care places (see the article by Spiess and Wrohlich in this Report). Pressing single parents to work seems contrary to the traditions of German welfare and family policy, but may be worth consideration in the face of a serious problem of jobless households.

References

Gregory, Robert G. and Hunter, Boyd (1995)
The macro-economy and the growth of ghettos and urban poverty in Australia', Centre for Economic Policy Research Discussion Paper No. 325, Canberra: ANU.

Headey, Bruce W. and Verick, Sher (2005)
Jobless Households: Longitudinal Analysis of the Persistence and Determinants of Joblessness Using HILDA Data for 2001-03. Canberra: Report to the Department of Employment and Workplace Relations.

Do 'bad' jobs lead to 'better' jobs? Evidence for 1996–2006

Bruce Headey

For some years now the German Government has been imposing increasingly strict job search requirements on unemployed people. One aim of current policy is to ensure that, if citizens accept unemployment benefits, they must actively search for work. Clearly, case managers try to match jobs to the qualifications of their clients, but it is generally required that individuals must take any job they are capable of doing, or risk losing benefits. One implied and sometimes stated justification for the requirement is that, once a person enters or re-enters the job market, he/she may have an improved chance of finding a better paying or more satisfying job, compared with someone who remains unemployed. Simply put, the idea is that any job is better than none, that 'bad' jobs may lead to 'good' jobs, or at least to 'better' jobs.

An alternative view is that people in low-paying jobs are often trapped in what are termed 'dead-end' jobs and rarely get ahead in the labour market. On this view, a person who is unemployed may not be making a mistake by holding out for a well paid or more satisfying job, rather than taking almost any job offered.

These competing viewpoints can only be assessed by using medium or long term panel data; data which provide records of the labour force experiences and wages earned by the same individuals for a period of years. This article uses the last ten of data from the SOEP Survey to provide preliminary evidence. It must be conceded, though, that the issues are extremely complex and that more sophisticated methods than are used here might lead to different conclusions.

As a final introductory point it is important to bear in mind that the last ten years have all been problematic for the German labour market and the economy as a whole. Compared to boom times, these were difficult years for unemployed and low skill people to get any sort of job, let alone a good job.

Prime age men—it can be assumed that almost all want full-time jobs

Initially, our main focus will be on what economists term 'prime age men'—men of prime working age, defined here as those aged 30-54 - because for this group, unlike other groups in the community, it is absolutely clear what they want from the labour market.[1] These are men in their main family-raising and working years. They have almost all completed their education, and they are mostly not yet thinking of retirement. In virtually all cases, they want full-time jobs,[2] and we can of course assume that they would prefer a high rate of pay to a low rate. In SOEP almost all men in this age group specifically report that they want a full-time job. In fact, 14.8% of men in this age group actually held part-time jobs in 1996, but they too mostly wanted full-time positions.

The analysis is based on following the careers of the same men for ten years; technically this is a 'balanced' panel of men who were prime

1 Men with a health disability are omitted from the analysis.
2 In the case of men, although not women, almost all part-time jobs pay quite low hourly rates.

Table 1

Labour force status and earnings in 2001 by status and earnings in 1996: prime age men (30-54)*

Status and earnings in 2001	1996		1996				
	Not in full-time work		Full-time work				
	Un-employed	Part-time work	Lowest quintile earnings	2nd quintile earnings	3rd quintile earnings	4th quintile earnings	Highest quintile earnings
	%		%				
Unemployed	**25.8**	**12.0**	**10.9**	5.2	1.3	12	1.7
Part-time work	**16.1**	**17.2**	**3.9**	3.5	6.5	6.1	3.4
Lowest quintile	**22.6**	**15.3**	**55.0**	22.2	7.3	4.5	2.1
2nd quintile	**22.6**	**10.0**	**16.6**	38.3	26.3	8.5	1.7
3rd quintile	**9.7**	**16.7**	**8.7**	19.6	31.0	24.4	7.7
4th quintile	**0.0**	**15.3**	**3.9**	8.7	18.1	36.2	20.4
Highest quintile	**3.2**	**13.4**	**0.9**	2.6	9.5	19.1	63.0
	100.0	**100.0**	**100.0**	100.0	100.0	100.0	100.0

*Population weighted results. The sample is restricted to men who were prime age throughout the period (n=1412).
Source: SOEP.

age and wanted work throughout the 1996-2006 period. Let us divide the men into seven groups according to what is assumed to be their ascending order of preference in terms of labour force status and current hourly earnings.[3] The division is made in 1996, then five years later in 2001, and then ten years later in 2006.

1. unemployed
2. part-time work
3. full-time work but in lowest quintile (20%) of full-time hourly earnings
4. full-time work and second quintile of earnings
5. full-time work and third quintile of earnings
6. full-time work and fourth quintile of earnings
7. full-time work and highest quintile of earnings.

The first five years

Table 1 shows what happened to these men in the labour market in the five year period 1996-2001.

The key result here is that men who held low-paying jobs in 1996—that is, they were in the lowest quintile of full-time earnings—achieved clearly better outcomes by 2001 than men who were unemployed in 1996. 90.1% were in work (85.2% full-time) in 2001, compared with 74.1% (58.1% full-time) of the previously unemployed. Those who were part-timers in 1996 also recorded much better outcomes by 2001 than men who had been unemployed, although a fairly high proportion (17.2%) remained in part-time work.

In general, the earnings distribution is moderately 'sticky'; many men remain in the same quintile in 2001 as they were in 1996. So, for example, 55% of those in the bottom quintile of full-time earnings in 1996 were in the same quintile in 2001, as were 38.3% in the second quintile, 31.0% in the third quintile, 36.2% in the fourth, and 63.0% in the top quintile. It should be noted that, although the top and bottom quintiles may appear more stable than the middle ones, this is misleading. Members of the 'extreme' quintiles can only move in one direction, not both.

The second five years

Table 2 now reports what happened to the same men in the second five year period, 2001-06. As we know, most of those who had been unemployed or part-time in 1996 had found full-time jobs by 2001, but some (just over 40% of the unemployed and about 30% of part-timers)

3 The earnings distribution referred to is for full-time prime age men with no health disability.

Table 2

Labour force status and earnings in 2001 by status and earnings in 1996: prime age men (30-54)*

Status and earnings in 2006	2001		2001				
	Not in full-time work		Full-time work				
	Un-employed	Part-time work	Lowest quintile earnings	2nd quintile earnings	3rd quintile earnings	4th quintile earnings	Highest quintile earnings
	%		%				
Unemployed	**24.5**	**11.3**	**6.2**	2.0	0.0	1.9	0.0
Part-time work	**36.7**	**29.6**	**12.3**	7.7	7.4	4.3	1.9
Lowest quintile	**26.5**	**11.3**	**52.3**	21.4	10.0	1.0	1.4
2nd quintile	**4.1**	**18.3**	**19.0**	36.7	24.7	9.7	1.4
3rd quintile	**6.1**	**8.5**	**6.7**	23.0	34.7	26.6	7.4
4th quintile	**2.0**	**15.5**	**3.6**	6.1	21.1	42.0	18.5
Highest quintile	**0.0**	**5.6**	**0.0**	3.1	2.1	14.5	69.4
	100.0	**100.0**	**100.0**	100.0	100.0	100.0	100.0

*Population weighted results. The sample is restricted to men who were prime age throughout the period (n=1124).

Source:SOEP.

had not become full-timers. It is well known that the longer one remains unemployed, the harder it becomes to get a job, so we may expect to find less evidence of employment and wage mobility here.

Again in this second five years, it appears to be the case that it is better to have any job than no job. Only 38.8% of those who were unemployed in 2001 had a full-time job by 2006, compared to 59.1% of those who had been part-timers. Among those in the lowest quintile of full-time earnings in 2001, 52.3% were still in the same quintile in 2001, 6.2% had become unemployed, 12.3% were part-timers and the rest (29.3%) had moved up the earnings distribution.

Overall, as expected, there is less evidence of mobility in this second five year period. We already noted that the longer a person is unemployed, the harder it is to get a job. The same 'state dependence' applies to other labour market states and to relative earnings. Among these prime age men whose careers we are following, there is less movement among earnings quintiles in 1996-2001, as well as between labour market states, than there was in the earlier period.

The ten year picture 1996-2006

We now look at the picture for the full ten years in order to get an overview of changes in labour market states in the medium to long term.

It is clear that, if the aim is to get a full-time job, those who were unemployed in 1996 were still the worst off group ten years later. By the same criterion, those who were part-timers in 1996 remain the second worst off group. However, there are some puzzles. Quite a high proportion of previously unemployed men (20%) reached the top two quintiles of the hourly earnings distribution by 2006, as did 29.1% of those who were part-timers in 1996. In this respect they recorded more upward mobility than men who started in the bottom two quintiles of the full-time earnings distribution.[4]

Can the results be trusted? Taking account of human capital

The results so far appear to show that, for the sake of later advancement in the labour market, it is generally preferable for prime age men to have almost any sort of job—a part-time and/or low paying job—rather than no job at all. However, it could be that the evidence in Tables 1-3 is misleading, because the evidence just consists of transition matrices, which do not tell us anything else about these men except their labour force status and earnings at three points in time. It is possible, indeed likely, that the men who were initially unemployed or in part-time jobs

4 This puzzle is clearly worth further inquiry. However, results in the next section, where account is taken of human capital, cast some light.

Table 3

Labour force status and earnings in 2006 by status and earnings in 1996: prime age men (30-54)*

Status and earnings in 2006	1996		1996				
	Not in full-time work		Full-time work				
	Un-employed	Part-time work	Lowest quintile earnings	2nd quintile earnings	3rd quintile earnings	4th quintile earnings	Highest quintile earnings
	%		%				
Unemployed	**15.0**	**12.1**	**6.0**	6.0	0.0	2.1	0.0
Part-time work	**20.0**	**18.2**	**16.5**	7.1	8.2	6.2	2.6
Lowest quintile	**10.0**	**13.9**	**47.3**	23.6	11.2	4.1	2.6
2nd quintile	**25.0**	**12.1**	**17.6**	28.6	26.0	14.9	5.1
3rd quintile	**10.0**	**14.5**	**5.5**	19.2	30.6	26.2	11.2
4th quintile	**15.0**	**11.5**	**4.9**	11.5	18.4	30.3	23.0
Highest quintile	**5.0**	**17.6**	**2.2**	3.8	5.6	16.4	55.6
	100.0	**100.0**	**100.0**	100.0	100.0	100.0	100.0

*Population weighted results. The sample is restricted to men who were prime age throughout the period (N=1136).

Source: SOEP.

Table 4

Labour force status and hourly rates in 2006 of prime age men by status and hourly rate in 2001: ordered probit analysis

Explanatory variables	Dependent variable: labour force status and earnings quintile in 2006 (7 ranked categories)
Employed part-time 2001[a]	0.91***
Quintile 1 of full-time earnings 2001[a]	0.63***
Quintile 2 in 2001[a]	1.27***
Quintile 3 in 2001[a]	1.71***
Quintile 4 in 2001[a]	2.29***
Quintile 5 in 2001[a]	3.45***
Age	-0.04**
Years of education	0.09***
Work experience[b]	0.02*
L.R. Chi square (9)	756.14***
Pseudo R squared	0.20
N	1016

a Reference group: men who were unemployed in 2001.

b Years in paid work since completing full-time education.

*** significant at 0.001 **significant at 0.05 *significant at 0.10.

Source: SOEP

in 1996 had less human capital—less education, skill and work experience—than the men who were already in full-time jobs. Similarly, the men who found jobs sometime between during the decade are likely to have had more human capital than those who did not.

In order to test this possibility it is necessary to undertake more complicated multivariate analysis. Ordinal scale (ordered probit) regression analyses, based on the seven groupings used in Tables 1-3, appeared to confirm the main results reported above.[5] The analysis took account of (or 'controlled for') standard human capital variables—differences in age, years of education and years of work experience—among the men in the seven groups. Table 4 gives results just for the 2001-06 period, when the policy of pressuring unemployed people to take any job offered was more strongly enforced than earlier.

The comparison group (or reference group) for all others in this table is men who were unemployed in 2001. Compared with them, and allowing for the effects of human capital, all other groups were significantly better off by 2006. However, the gains made by part-timers were actually greater than the gains achieved by those in the bottom quintile of the full-time earnings dis-

5 In this analysis it is explicitly assumed that the seven groups can be ordered according to the desirability (utility) of their situation in 2001 and again in 2006.

Table 5

Labour force status and earnings in 2006 by status and earnings in 1996: prime age women (30-54)*

Status and earnings in 2006	1996		1996				
	Not in full-time work		Full-time work				
	Un-employed	Part-time work	Lowest quintile earnings	2nd quintile earnings	3rd quintile earnings	4th quintile earnings	Highest quintile earnings
	%		%				
Unemployed	**29.7**	**8.8**	**6.0**	9.3	2.4	2.5	1.3
Part-time work	**43.2**	**59.3**	**33.7**	26.7	24.4	29.6	32.1
Lowest quintile	**13.5**	**8.8**	**28.9**	10.5	4.9	2.5	1.3
2nd quintile	**8.1**	**6.5**	**20.5**	22.1	7.3	2.5	1.3
3rd quintile	**0.0**	**7.0**	**8.4**	17.4	20.7	16.0	12.8
4th quintile	**5.4**	**4.0**	**2.4**	12.8	29.3	24.7	11.5
Highest quintile	**0.0**	**5.5**	**0.0**	1.2	11.0	22.2	39.7
	100.0	**100.0**	**100.0**	100.0	100.0	100.0	100.0

*Population weighted results. The sample is restricted to women who were prime age throughout the period (N=845). Women not in the labour force and not seeking work are omitted, as are women with a health disability.

Source: SOEP

tribution. This could be interpreted as showing (once human capital is taken into account) that being a part-timer is at least as good a stepping stone into the labour market as getting a poorly paid full-time job. Part-timers with good human capital can move up the earnings distribution, as the evidence in the previous table suggested.

A methodological reservation needs to be entered. The tentative conclusion that any job is better than no job appears to hold true, netting out the effects of human capital. But this does not rule out the possibility that other unmeasured influences (intelligence? looks? motivation?) may account for the results.

Results similar for prime age women

An analysis of prime age women's labour market outcomes is unavoidably more ambiguous, because it certainly cannot be assumed that all women want full-time, well paying jobs in preference to part-time or lower paying jobs. Indeed, most part-timers report that they prefer to remain part-time. There is also little doubt that, because of child-rearing and domestic responsibilities, some women prefer a lower paying job that is more conveniently located to a higher paying job that is less convenient.

Despite the ambiguities, it is of interest to record the destinations of women who started out in different labour market groups in 1996. Only the ten-year results (1996-2006) are shown in Table 5.[6]

It is clear that prime age women who started out in the lowest full-time earnings quintile in 1996 achieved much better outcomes by 2006 than those who were unemployed and seeking work. Part-timers do much better still. But, as noted earlier, many women prefer part-time work. Some evidence for this can be gleaned by noting that quite high proportions of women who were in the top two earnings quintiles in 1996 had switched to part-time work ten years later. It is likely that many were high skill people who did so voluntarily.

Discussion

It seems quite likely that the evidence supporting the proposition that prime age men who already have a part-time job, or a low paying full-time job, are in a better position to move on to higher paying job than those who are unemployed can be generalised to other sections of the workforce. It is harder to test the proposition for non-prime age men and for women because their job preferences are less clear-cut and more likely to change, so the outcomes they achieve cannot readily be ranked.

6 Analysis is confined to prime age women who had a job or were seeking a job at both dates and who did not have a health disability.

The findings here may seem obvious or 'commonsense'. To some observers it might seem overwhelmingly likely that employers, faced with a range of job applicants, would generally prefer those who already had a job, especially if they also had good references, to those with no job. However, the findings do run counter to some research which claims that people in low paying jobs tend to be 'trapped' and rarely move out of their 'dead-end' jobs. Overall, it is clear that there is a moderate degree of labour force and earnings mobility both for men and women.

The gender pay gap in Germany

How large is it? Is it decreasing? How much is due to workplace discrimination?

Elke Holst and Anne Busch

Nobody seriously doubts that there is a gender wage gap in Germany – women clearly earn less than men. But how large is the gap? Is it decreasing? How does Germany compare with other Western countries? More controversially, how much of the gap is due to discrimination against women in the labour market (Holst 2006)?

Social scientists, like nearly everyone else, find it hard to agree on a definition of discrimination and how to measure it. When economists assess labour market discrimination, they sidestep many controversial issues by narrowing their focus to discrimination in job–hiring, plus discrimination in the workplace by employers, and perhaps also by colleagues and/or customers. Having narrowed the definition, economists then do not consider it discriminatory if it transpires that women earn less than men because of, say, differences in job training or more time spent fulfilling child care responsibilities.[1]

In principle, in the eyes of an economist, a non–discriminatory labour market would be one in which earnings depended solely on an individual's productivity; the value of his/her output per hour. If we could measure individual productivity, there would plainly be no problem in measuring gender discrimination. We would simply find out whether women are paid more or less than men for the same output.

Normally, however, it is not feasible to measure individual productivity. The reason is simply that most of us work in groups, or in large organisations, which have a collective output that cannot readily be attributed to individuals. So labour economists have to use proxy measures of individual productivity. They often assume that earnings (or earnings per hour) can be used as a valid proxy measure, but obviously this assumption is no use if the whole aim of the research is to explain why women earn less than men, and assess whether part of the difference is due to discrimination.

The approach to investigating discrimination developed by the economists who founded human capital theory is to explain as much of the gender pay gap as possible, using variables which are correlated with productivity (Mincer, 1962; Becker, 1985).[2] Education, total work experience and length of time with one's current employer are key human capital variables. If it turns out that women get worse returns on their human capital investments than men, this may be prima facie evidence of discrimination. But it is necessary to go further. The aim is to include in one's analysis all variables which might help to account for variance in earnings, but which have—according to human capital theory—nothing to do with workplace discrimination.[3] It is then inferred that any remaining variance—any remaining gender pay gap—which has not already been accounted for, could be due to discrimination. Strictly speaking, this variance must be due to all unmeasured or omitted variables, not just

1 The possibility of 'constrained choice' due to social expectations and pressures is ruled out by this perspective. By contrast, many sociologists and other social scientists take the view that social pressures constrain women's (and men's) choices and can, in a sense, be discriminatory in so far as career prospects and earnings are reduced.

2 In some research projects employers and employees are asked about their perceptions of discrimination. Clearly, however, there is no sense in treating these perceptions as valid evidence about what actually occurs.

3 For example, information is usually included about marital status, number of children, industry and occupation; see Table 2 below.

to discrimination, but if a researcher has tried to include everything else that might explain differences, then it is reasonable to put forward one's estimate as an upper limit of discrimination.

The gender pay gap: SOEP evidence for 2002 and 2006

In this article we investigate the gender pay gap in Germany in 2002 and 2006. We start the analysis in 2002 because in that year a new sample of high income households was added to the panel. High income households were defined as those with a monthly net–income of at least 4.500 Euro. The reason for wanting to include this new sample is simply that it is of particular interest to investigate possible discrimination in top jobs. To assess whether the gender pay gap has declined in Germany, we will compare results for 2002 with results for the latest year for which evidence is available, namely 2006. Clearly, it would be better to have a longer time period, but a four–year window will give us a pointer to recent trends.

How large is the gender pay gap? Has it decreased?

Table 1 reports on the gender pay gap in 2002 and then 2006. The gap is measured by calculating the average (mean) monthly earnings of women divided by the average for men. The sample is restricted to individuals in full–time work; at least 35 hours a week.

In 2002 women's earnings averaged 78% of men's. Four years later the figure had risen to 82%. Among younger women the pay gap is much lower than for older women, and it is perhaps a promising sign that by 2006 women under 30 were earning only 4% less than men in the same age group. However, it should be pointed out that promising–seeming age related differences in earlier decades have not borne fruit, in the sense that, as particular cohorts of women have aged, their gender pay gap has widened. This is mainly the case in the period of life when children are born. It remains to be seen whether the same happens to women who are now in the twenties.

In 2006, the gender pay gap between female and male full–time blue collar workers (Arbeiter/–innen) is 30%, between salaried employees (Angestellte) it is 26%, and between tenured public servants (Beamte/–innen) it is 18%. Women at the top of the public service still averaged only 88% of the monthly salaries of male counterparts in 2006, although this was up from 74% four years earlier. Women who are not married, and who mostly therefore do not take career breaks to have children, earned 92% of men's earnings in 2006, compared to 77% for married women. East German women suffer a smaller wage penalty than Westerners. In East Germany before reunification, most women worked full–time and took only short breaks to have children, whereas historically in the West they often stopped paid work permanently, or at least for a lengthy period, when children arrived. In the East women now earn 91% of male counterparts; in the West the figure is 82% in 2006.

International comparisons of gender pay gaps invariably show that the German gap is one of the largest in the industrialised world. For example a recent EU study indicated that only Cyprus and Estonia have larger gaps (Commission of the European Community, 2008). In most countries the gap is much smaller in the public than the private sector; in fact, in many Western countries, Governments have taken the lead in promoting equality of pay. In Germany women have a bigger share of public sector than private sector jobs, but are less likely to reach senior positions than men and on average are less well paid.

How much of the gender pay gap is due to labour market discrimination?

For reasons already discussed, the straightforward descriptive information in Table 1 cannot be regarded as anything like conclusive evidence of discrimination. Nor can international comparisons just be taken at face value.[4] In order to assess discrimination, we need to take account of differences in women's and men's human capital, and other factors related to occupational choice, family responsibilities and so forth.

There is a further complication, relating to what social scientists call selection bias. Almost all prime age men want to work, or at least recognise that they need to work. But many women do not work for part of their adult lives, often in order to raise children. Others, however, have no children, or carry on working when their children are born, taking only a short break. It is

4 International comparisons can be misleading when returns to human capital differ sharply. For example, if in both country A and country B men had 10% more human capital (however measured) than women, but returns to capital were substantially greater in A than B, then A would report a larger gender pay gap. However, it would make no sense to claim that gender discrimination was greater in A than B.

Table 1

The gender pay gap 2002, 2006: full–time employees only

		2002 Women's earnings/men's earnings ratio	2006 Women's earnings/men's earnings ratio
		%	%
Total		78	82
	Angestellte (salaried employees)	68	74
	With higher duties or comprehensive management tasks	74	83
	Arbeiter/innen (blue colour workers)	71	70
	Beamt/innen (tenured public servants)	85	82
	Höherer Dienst (senior levels)	74	88
Marital status			
	Married	73	77
	Not married	87	92
Region			
	West Germany	78	82
	East Germany	86	91
Age group			
	Under 30	86	96
	30 to 44	82	87
	45 to 59	76	80
	60 and more	65	67
Sector			
	Public sector	81	79
	Other	76	82
Industry			
	Manufacturing and trade	81	95
	Commerce, hospitality and transport	75	77
	Other service sector	75	74
Size of workplace			
	Less than 20 employees	80	82
	20–199 employees	79	83
	200–1,999 employees	78	80
	2,000+ employees	80	86

Source: SOEP 2002, 2006.

likely that those who self–select into paid work (with little or no break) do so partly because they have more human capital and can earn more than those who self–select into child–rearing and home duties. If researchers just ignored these differences, they would get incorrect, biased results when they investigated pay discrimination. In effect, they would be comparing all men with higher skill women, and would understate discrimination.[5]

The American economist, James J. Heckman, won a Nobel Prize partly for developing new

5 Assuming that women not in paid work were omitted from the analysis because they had zero wages.

Table 2

What accounts for differences in women's and men's earnings (full–time employees only)?[1]

	2002		2006	
	Coefficient	Interaction: Female x Variable	Coefficient	Interaction: Female x Variable
Female	–0.179 ***		–0.167 ***	
Education (in years)	0.054 ***	+*	0.060 ***	
Occupational experience (in years)	0.023 ***	+**	0.024 ***	+***
Occupational experience (quadratic)	–0.000 ***	–**	–0.000 ***	–***
Part–time work experience as % of total	–0.003 ***		–0.003 ***	+*
Tenure with current employer (in years)	0.006 ***		0.007 ***	
Average working time per week	0.012 ***		0.013 ***	
Married (ref.: not married)	0.013	–***	0.039 ***	–***
Number of children under 16 in household	0.029 ***		0.037 ***	
Region: East Germany (ref.: West Germany)	–0.286 ***	+**	–0.286 ***	
Occupational status (ref: blue collar workers)				
Salaried employees (public service)	0.220 ***	+***	0.249 ***	+***
Salaried employees (not in public service)	0.210 ***		0.238 ***	+***
Tenured public servants	0.080 ***		0.145 ***	+***
Industry (Ref: Tradespeople, including building trades)				
Agriculture, forestry and fisheries	–0.171 ***		–0.202 ***	
Energy and water resource	0.001		0.073 *	
Building and construction	0.014		0.009	
Commerce and hospitality	–0.153 ***	+***	–0.195 ***	
Transport and communication	–0.089 ***		–0.115 ***	
Banking and insurance	–0.013		–0.020	
Real estate	0.004		–0.054 ***	
Public administration and related employment	–0.115 ***	+**	–0.161 ***	
Public and private management	–0.113 ***		–0.119 ***	–**
Workplace size (ref: less than 20 employees)				
20–199 employees	0.091 ***		0.092 ***	
200–1,999 employees	0.179 ***		0.189 ***	
2,000+ employees	0.199 ***	+*	0.220 ***	
Constant	6.227 ***		6.078 ***	
Wald Chi2	7103.95 ***		6009.09 ***	
Rho	0.016		0.070	
N	6966		5218	

1. Added Heckman selection variable: age of youngest child in household; * significat at 10% level; ** significant at 5% level; *** significant at 1% level.

Source: SOEP 2002 and 2006.

methods of 'correcting' for selection bias. He used women's decisions about employment in many of his examples. His statistical procedure for avoiding misleading conclusions involved adjustment of results to take account of the probability that a woman would choose to work.

The aim of the analysis reported in Table 2 is to assess whether there is still a gender pay gap when full account is taken of differences between women and men in human capital, family commitments, occupational choice and so on… and when a correction is also made for Heckman selection bias.

The key evidence here is that women who work full–time were (ceteris paribus) paid 18% less than men in 2002, and still 17% less in 2006. The small change in this four year period is not statistically significant, so we can infer that no substantial progress has been made. Results in the last column of the table help to explain lack of progress by highlighting some important differences between women's and men's careers and earnings.[6] For women the number of years of experience accumulated in their chosen occupation is a much more important factor in determining earnings than is the case for men. This is because family responsibilities lead many women to drop out of the labour force for several years, reducing their work experience. While they are not at work, their skills may decline or become somewhat out–of–date. They then find it very difficult to make up for lost time, and may suffer a long term loss of earnings.

Another approach to understanding the gender pay gap is to do a 'simulation' – a kind of statistical mind game.[7] One says, 'Imagine that women were assigned the same human capital and related characteristics as men have right now, what would their earnings be?'

In effect, this approach divides the gender pay gap into two components: one is the share due to differences in human capital and other characteristics on which women and men differ (often referred to as 'endowments'), and the other is the share due to gender differences in returns to endowment. However, it should again be pointed out that this latter share also includes unexplained variance.

Following this approach, it transpires that in 2006, 38% of the difference in the earnings between full–time female and male employees was due to differences in endowments and 62% was due to a combination of differences in returns to endowment and unmeasured factors. In 2002 the corresponding figures were 44% and 56%. So, using this measure, the gender pay gap appears to have worsened between 2002 and 2006. This may be partly because women have recently caught up with men in terms of most kinds of formal educational qualification – a key aspect of human capital—but not caught up to an equal extent in earnings.

Discussion and concluding points

Unless and until the gender pay gap disappears, debates about its causes are always going to be intense. Most studies in most countries continue to report evidence of discrimination. The EU, the International Labor Organization and OECD regularly produce league tables of international comparisons and find a gender pay gap in all countries (for up–to–date evidence, see European Commission, 2008). A comprehensive review of American evidence by the prestigious Council of Economic Advisers (1998) found that almost all studies, regardless of different approaches and methods, found that some discrimination occurs. This was true, for example, of studies which measured female and male productivity in those few occupations, like door–to–door selling and real estate, where direct individual measures of output are possible. Discrimination has also been found in experiments in which the gender of job applicants was hidden from recruiters. In one such study female and male musicians applying for jobs in a symphony orchestra were randomly assigned to two groups: a hidden group who played to recruiters but could not be seen, and a control group who could be seen as well as heard. Women did better if they could not be seen (Goldin and Rouse, 2000).

Even so, there are still a few studies using high quality data and advanced methods, which report little or no discrimination. For example, an American study by O'Neill (1999), which had unusually detailed data on women's and men's educational and job training, plus cognitive skills and specific working conditions, found that only 2.5% of gender differences in earnings could not be accounted for by these factors. So the debate on this important public policy issue is certain to continue. SOEP researchers are well placed to make constructive contributions, as the Survey continues to trace the careers and earnings of employees at all levels. The barriers to entry which women may face at top levels ('the glass ceiling') are currently being investigated, and will soon be the subject of a special report.

6 Results show whether the variable in question has a positive or negative effect on women's earnings compared to men, and whether the gender difference is statistically significant.
7 Technically a Blinder–Oaxaca decomposition.

References

Becker, G.S. (1985)
Human capital, effort and the sexual division of labour, *Journal of Labor Economics,* 3, Part 2, 33–58.

Commission of the European Community (2008)
'On the Equal Standing Of Women and Men.' Brussels, European Community.

Council of Economic Advisers (1998)
Explaining Trends in the Gender Wage Gap. Washington, D.C.

Goldin, Claudia and Rouse, Cecilia (1997)
Orchestrating impartiality: the impact of ‚blind' auditions on female musicians. *National Bureau of Economic Research Working Paper No. 5903*.

Holst, Elke (2006)
Women in Managerial Positions in Europe: Focus on Germany. In: *management revue 17,* 122–142.

Mincer, Jacob (1962)
‚Labor force participation of married women' in *G. Lewis ed. Aspects of Labor Economics.* Universities–National Bureau Conference Series, No. 14, Princeton, N.J. 63-97.

O'Neill, June (2003)
The gender gap in wages, circa 2000, *American Economic Review,* 93, 309–314.

The set-point theory of subjective well-being has serious limitations: SOEP results challenge the dominant theory

Bruce Headey

SOEP results challenge the main theory of subjective well-being (life satisfaction). This theory—now generally known as set-point theory—has been widely accepted for at least the last ten years. The theory claims that adult well-being (life satisfaction) is stable; it has a set-point. That is, the same people tend to remain well satisfied with life, while others are permanently dissatisfied, or just moderately satisfied. The theory allows for temporary (perhaps one or two-year) fluctuations in life satisfaction as a consequence of major life events (for example, getting married or becoming unemployed), but after a temporary deviation, adults are expected to revert to their normal set-points.

There is a great deal of evidence in favour of set-point theory, including evidence of the importance to well-being of stable personality traits (Costa and McCrae, 1980; Headey and Wearing, 1989). It is clear that individuals who rate high on the personality trait of extroversion (sociable, outgoing) are happier than average, and that people who rate high on the trait of neuroticism (emotional instability) are generally unhappy. There is also strong genetic evidence from twin studies (Lykken and Tellegen, 1996). These studies are often taken to imply that a person's life satisfaction or happiness is mainly a consequence of characteristics that he/she was born with or developed early in life. Finally, there is also specific evidence that most people do revert to set-point even after very major life events (Brickman and Campbell, 1971; Clark et al, 2008).

But one crucial type of evidence has been missing. Until SOEP did so, there was no study in the world which actually followed the same individuals for decades, recording their levels of well-being/life satisfaction to see if they were actually stable. Some members of the West German sample in SOEP—about 3,000 individuals—have now been interviewed for more than 20 years, reporting their life satisfaction every year. Their reports cast serious doubt on set-point theory. It transpires that over a quarter of these respondents have recorded substantial changes in their life satisfaction; changes large enough to move them from the bottom third of the distribution to the top third, or vice-versa. These results cannot easily be reconciled with set-point theory, as currently understood. It seems that the theory is in need of serious revision, or perhaps replacement by a theory which can both account for the new results, as well as for the fact that a majority do not change much.

Long term SOEP data on life satisfaction

For the purposes of this article, only long term evidence can be used. Somewhat arbitrarily, twenty years will be regarded as 'long term'. So results are based on the responses of the West Germans and immigrants who had already joined the SOEP sample by 1987 and who gave interviews in which they recorded their life satisfaction every year up to 2006. This still provides an adequate sample size of 2,904.

The question in SOEP to assess life satisfaction comes later than a series of questions about satisfaction with particular areas or domains of life —job satisfaction, satisfaction with household income, health and so forth—and directly after questions about life events which may have happened in the last year. Respondents are then asked, "How satisfied are you with your life in general?" The response scale runs from zero ("completely dissatisfied") to 10 ("completely satisfied").

Table 1

Changes in life satisfaction between 1987-1991 and 2002-2006: 0-10 response scale*

Changes on the 0-10 life satisfaction scale from 1987-1991 to 2002-2006	%
Less than plus or minus 1.0 point	52.2
Plus or minus 1.0 to 1.49 points	21.2
Plus or minus 1.5 to 1.99 points	9.5
Plus or minus 2.0 points or more	17.1
	(100.0)

* Weighted results. Panel of 2,904 SOEP respondents who recorded life satisfaction each year in 1987-2006.
Source: SOEP.

Substantial minorities record large changes in life satisfaction

Clearly, in order to know whether individual respondents change their life satisfaction set-points over the years, we need a method of determining what those set-points were initially. To avoid being at the mercy of temporary annual fluctuations in life satisfaction, which set-point theory allows for, we will take five-year averages. An individual's average life satisfaction score in the first five-year period, 1987-91, is regarded as his/her initial set-point. His/her score in the last available five-year period, 2002-06, is then regarded as the 'final' set-point. The question is: how many people changed and by how much? (Table 1).

The evidence in Table 1 lends some support to set-point theory, but also suggests limitations to the theory. Just over 50% of these long-serving SOEP respondents recorded changes of less than a single point on the 0-10 life satisfaction scale in this 20 year period. So a majority do stick close to their initial set-point. So far so good for set-point theory. But just over a quarter of the sample (26.6%) changed by 1.5 points or more. These appear to be long term, more or less permanent changes in life satisfaction. A change of 1.5 points is enough to move a person up from the bottom third of the distribution to the top third, or vice-versa.[1] A change of 2 or more points, made by 17.1% of the population in this period, moves one from the bottom to the top quarter, or vice-versa. This evidence is clearly not in line with current theory; the challenge is to account for it.

It is matter of considerable interest, although not directly relevant to the debate about set-point theory, that average levels of life satisfaction in Germany appear to have declined in the last 20 years. The average (mean) score in 1985 was 7.4; in 2006 it was 6.8. Or taking five-year averages, we find a mean of 7.3 for the 1987-91 period, with a decline to 6.9 in 2002-06. These changes are clearly statistically significant. One cause was probably the relative decline in national economic performance. In the later 1980s and early 1990s the West German economy was booming. In the early years of the 21st century economic growth was positive but disappointing. In these circumstances, most of the people who recorded substantial changes in life satisfaction recorded declines. About three-quarters (75.8%) of those who changed by 1.5 points or more in fact recorded declines, while one-quarter (24.2%) recorded gains.

Personality traits partly account for changes in life satisfaction: some people 'roll the dice' with a positive bias (upside risk); others roll with a negative bias (downside risk)

We now attempt to make a start on explaining why non-trivial minorities record substantial changes in life satisfaction. What is it about these people, or the events that happen to them, that produces more or less permanent changes?

We conjecture that the individuals who are most prone to change are those who rate high on the personality traits of extroversion or neuroticism, or both. As mentioned earlier, extroversion is associated with high levels of life satisfaction and neuroticism with low levels. It has also been shown that extroverts repeatedly experience more favourable or positive life events (for example, getting promotion at work) than introverts, while neurotic (emotionally unstable) individuals repeatedly experience more negative or adverse events, including marital and job difficulties (Headey and Wearing, 1989). Extending this line of thinking, it transpires that people who rate high on extroversion and simultaneously low on neuroticism repeatedly experience many posi-

1 Average (mean) scores on the 0-10 scale have been around 7.0 in recent years, with a standard deviation of about 1.4. So a change of 2 points represents almost 1.5 standard deviations; easily enough for movement from the top to the bottom quartile, or vice-versa.

Table 2

Upside and downside risks of long term change in life satisfaction (LS): ordinary least squares (OLS) regressions

	Outcome variable: change in life satisfaction			
	$LS_{2002-2006} - LS_{1987-1991}$			
	All	Men	Women	Age 30-74
Extroversion	**0.15*****	0.14***	**0.16*****	**0.13*****
Neuroticism	**–0.27*****	–0.26***	**–0.28*****	**–0.29*****
Female	0.02	–	–	0.08
Age	0.02	–0.00	0.03	0.06
Age^2	-0.00	0.00	–0.00	–0.01
$LS_{1987-1991}$	–0.49***	–0.48***	–0.50***	–0.49***
R^2	24.8%	22.9%	26.3%	24.8%
N	2904	1376	1528	1645

*** significant at 0.001 level.

Source: SOEP.

tive events and few negative events.[2] They can be thought of as repeatedly 'rolling the dice' with a positive bias or spin. So we hypothesise that they have a higher than average upside risk of gains in life satisfaction. Similarly, people who rate low on extroversion and high on neuroticism repeatedly experience few positive events and many adverse ones. They roll the dice with a consistently negative bias. So we hypothesise that they have an above average downside risk of losses in life satisfaction.

A point of clarification: it is not suggested that most of the individuals who we think of as running either high upside risks or high downside risks will actually record large long term gains or losses in life satisfaction. We know from previous evidence that this is not what happens. Instead we are attempting to account for changes recorded by substantial minorities. To put it another way, not everyone who takes a chance scores big wins or losses.

SOEP only allows a partial test of these ideas. The personality traits of extroversion and neuroticism were measured in 2005, along with other traits.[3] However, a life events inventory has only recently been included, so it is not possible within SOEP to check that the characteristic patterns of life events which we would expect to have happened to particular individuals actually occurred. The likelihood of these events just has to be assumed on the basis of previous research.

Table 2 shows linkages between the personality traits of extroversion and neuroticism and upside and downside risks of changes in life satisfaction between 1987-91 and 2002-06. The outcome measure here is simply life satisfaction scores averaged for the first five-year period subtracted from scores for the last five-year period. Results are given for all respondents, then separately for men and women, and finally for those who were aged 30 to 74 throughout the period. The reason for excluding the under 30s in this last piece of analysis is that it is generally thought that personality is still somewhat malleable up to about age 30. The very old (75+) are excluded for health reasons, which at the end of life typically lower life satisfaction.

It turns out that there is a fairly strong positive relationship between being extroverted and experiencing gains in life satisfaction. Conversely, people who rate high on neuroticism were much more likely than average to experience a decline in satisfaction in this period. So our hypotheses about the upside risks run by extroverts and the downside risks run by neurotics receive some support.[4] It follows, of course, that people who are

2 The two traits are empirically uncorrelated, so there are many people who display this combination.

3 A short version of the Big Five personality inventory (Costa and McCrae, 1991) was included in SOEP for the first time. Here it is assumed that adult personality is essentially stable.

4 As the evidence in the Table indicates, these results hold while controlling for gender and age. They also hold with additional controls for health, educational attainment and disposable household income (and also with a set of dummy variables for age groups). The inclusion of LS1987-91 in the equation is needed because, as with many attitudinal variables, there is a negative relationship between the mea-

both high on extroversion and low on neuroticism have doubly favourable prospects, while the prospects of those who rate high on neuroticism and low on extroversion are quite negative.[5]

Discussion

The importance of SOEP's challenge to set-point theory can hardly be overstated. Set-point theory was developed, mainly by psychologists, during the last forty years. In the last decade or so, economists have also begun to work intensively in the same area, treating measures of subjective well-being as measures of subjective utility (Frey and Stutzer, 2002). Some economists are advocating that the standard approach in economics of inferring utility from changes in consumption and leisure should be augmented or replaced by use of subjective measures. A key aim of public policy, they suggest, should be to improve the subjective utility (life satisfaction) of citizens. But set-point theory implies that it is very difficult, if not impossible to do this. If it is true that adult well-being basically does not change (except for temporary fluctuations), then there is no point in adopting this particular policy goal.

However, if the SOEP results are confirmed, then the whole field of subjective well-being/subjective utility is opened up again. The finding that the life satisfaction of many people can and does change means that the next challenge for research is to discover much more about how and why these changes occur. It may also mean that individuals can do much to help themselves, or even that public policy can make a difference.

sure at an earlier point in time and subsequent changes.
5 It can also be inferred that those who score high on both extroversion and neuroticism may be at high risk of change in either direction, while those who score low on both measures are at low risk.

References

Brickman, Philip D. and Campbell, Donald T. (1971)
Hedonic relativism and planning the good society. In M.H. Appleby ed., Adaptation-Level Theory, 287-302. New York.

Clark, Andrew E., Diener, Ed, Georgellis, Yannis and Lucas, Richard E. (2008)
Lags and leads in life satisfaction: a test of the baseline hypothesis. SOEP Papers 84.

Costa, Paul T. and McCrae, Robert R. (1980)
Influences of extroversion and neuroticism on subjective well-being. *Journal of Personality and Social Psychology,* 38, 668-678.

Costa, Paul T. and McCrae, Robert R. (1991)
NEO PI-R. PAR: Odessa, Fla.

Frey, Bruno S. and Alois Stutzer (2002)
What can economists learn from Happiness Research? *Journal of Economic Literature,* 40, 402-435.

Headey, Bruce W. and Wearing, Alexander J. (1989)
Personality, life events and subjective well-being: towards a dynamic equilibrium model. *Journal of Personality and Social Psychology,* 57, 731-39.

Lykken, David and Tellegen, Auke (1996)
Happiness is a stochastic phenomenon. *Psychological Science,* 7, 186-189.

Underweight? Overweight? How is weight linked to physical and mental health?

Hanfried H. Andersen, Markus M. Grabka and Johannes Schwarze

Just over 50% of the German population (59% of women and 41% of men) tell the SOEP interviewers that they are following a health conscious diet.[1] Most of these people are presumably trying to lose weight and believe that being overweight is bad for one's health. Clearly, most medical practitioners share this view and advise patients to avoid or reverse obesity. But the contrary view, that being overweight is not a serious danger to health, is also occasionally put forward. An example is a recent bestseller entitled 'The Great Obesity Myth' in which a great deal of statistical evidence is adduced to show that only extreme obesity is associated with early death, and that being underweight and also dieting unsuccessfully both pose greater risks (Campos, 2005).

1 They claim to be following their diet 'very strictly' or 'strictly'.

Since 2002 SOEP has collected evidence on how many people are under- and overweight, and how many are in the normal range. The Survey also includes questions to measure physical and mental health, and use of health services. In this article we provide a brief overview of evidence linking health and weight.

Good health and bad health are somewhat ambiguous terms. In the past most discussions of health centered on physical health and, implicitly at least, good health just meant the absence of illness and disease. The World Health Organization (WHO) has taken the lead in pressing for a more comprehensive definition and wider ranging measures of good health. WHO defines good health as complete bodily, spiritual and social well-being. The term 'well-being' is used to assert explicitly that good health is not just the absence of illness (or 'ill-being') but includes positive factors like physical fitness, good mental health and social integration into one's local community. In this article, in line with WHO thinking, we report results relating to mental as well as physical health, using scales which cover the full range of possibilities and do not just classify individuals as 'healthy' or 'unhealthy'.

Evidence about health and weight

Questions about health play an increasingly prominent role in SOEP. The main battery of questions used to assess general health is the SF-12 Health Survey, which was specifically designed to enable members of the public to assess their own physical and mental well-being. A typical physical health item is, 'Does your health status affect your ability to climb stairs – greatly, slightly, not at all?' A sample mental health item is, 'During the last four weeks, have your felt well-balanced and relaxed?' For this last item five answers are possible, ranging from 'always' to 'never'. A standard method of reporting results for the SF-12 is to calculate separate physical and mental health scores ranging between 0 and 100 (Ware, Snow and Kosinski, 2000). A high score connotes good health and 50 gives the mean value for the adult population.

SOEP also collects evidence about use of health services. Respondents are asked how many times they have been to see a doctor (any sort of medical doctor) in the last three months. They are also asked whether they have stayed overnight in hospital during the last year, and if so, how many nights.

Table 1

Body-Mass Index in Germany 2002-2006

Weight categories	BMI	Risk of accompanying problems	2002	2004	2006
Underweight	under 18.5	low	3.2	2.9	2.7
Normal weight	18.5 – 24.9	average	48.6	47.5	47.3
Overweight	over 25				
Predisposition	25 – 29.9	slightly raised	34.7	35.3	34.6
Obese	30 – 34.9	raised	10.9	11.2	11.7
Very obese	35 - 39.9	high	2.0	2.3	2.7
Morbidly obese	over 40	very high	0.6	0.8	1.0

Source: SOEP 2002, 2004, 2006

The standard way to measure whether individuals are overweight is to calculate Body-Mass Index (BMI). Respondents in SOEP are asked to report both their own height and weight. Clearly, the data would be more accurate if direct measures were taken, but checks have shown that most survey respondents report their own height and weight quite accurately, although there is a slight tendency for overweight people to underestimate (Kroh 2005).

BMI is calculated as weight in kilograms divided by height in meters squared (w/h^2). A BMI under 18.5 is considered underweight, between 18.5 and 24.9 is within the normal range, 25.0 to 29.9 is overweight, 30.0 to 34.9 is obese, 35.0 to 39.9 is very obese, and 40 and over is classified as morbidly obese.

Underweight and overweight 2002-2006

Table 1 summarises changes in BMI in Germany between 2002 and 2006. As well as the percentages in each weight group, the table indicates the level of health risk conventionally attributed to each group.

The percentage of obese individuals in Germany has risen sharply. The ranks of those who are 'very obese' have increased by nearly a third since 2002, and 'morbid obesity' is up by two-thirds. By 2006 3.7% of the population were in these two categories combined. A further 11.7% (up from 10.9% in 2002) had a BMI between 30 and 34.9 and so were classified as obese. There has been little change in the percentage who are in the normal BMI range. Fewer people are underweight.

German rates of obesity are higher than French, but considerably lower than American and British rates. In most countries more women than men are obese, but in Germany the gender difference is slight, and in fact by 2006 rather more men than women were affected. Men tend to exercise more than women—and, of course, exercise helps—but more women than men diet to lose weight. Rates of obesity are a little higher in East Germany than West, but the difference narrowed between 2002 and 2006.

In Germany, as in other Western countries, obesity is associated with lower levels of education and income. People with lower levels of education are generally less well informed about health matters, they have fattier diets and take less exercise than better educated and higher income individuals.

Worldwide, the number of people who are obese exceeded the number who are malnourished for the first time in the year 2000.

Health risks associated with being underweight and overweight

It is generally believed that being overweight is associated with poor physical health. But what about mental health? And is being underweight generally linked to good or to poor physical and mental health? Table 2 gives results which will probably surprise most readers, although epidemiologists may be familiar with them (I talked to my colleague, yes, it is well-known).

People who are either under-weight or in the normal weight range have better physical health (on average) than people who are overweight. People

Table 2

Links between BMI and physical and mental health (SF-12)[1]

BMI	2002		2004		2006	
	Physical health	Mental health	Physical ealth	Mental health	Physical health	Mental health
Underweight	52.4	46.7	50.3	46.8	51.6	46.0
Normal weight	51.3	48.6	51.4	49.1	51.5	48.7
Overweight	48.0	49.6	47.9	49.8	48.1	50.5
Obese	44.7	49.1	44.7	50.4	45.0	50.3
Very obese	41.1	48.4	42.6	48.6	42.1	48.2

1 The total mean value for each scale is set to 50 points and a standard deviation of 10 points. A value of 50 would mean that this value lies precisely at the mean value of the total adult population of SOEP in the year 2004.

Source: SOEP 2002, 2004, 2006.

who are very obese or morbidly obese clearly have considerably worse physical health than the rest of the population.

An unexpected result is that individuals who are underweight are the group with the worst mental health, at least as measured by the SF-12. They actually have worse mental health than those who are very obese or morbidly obese. Another surprise is that people who are overweight record higher mental health scores than people who in the normal weight range. In 2004 and 2006 people who were obese (but not very obese or morbidly obese) also rated higher than people of normal weight. The mental health differences are not large, but they are statistically significant.[2]

It needs to be emphasised that these statistical associations do not imply that being over-or under-weight are necessarily causes of health outcomes. The causation may run both ways. In other words, bad physical or mental health may affect a person's weight (for example, by affecting diet and exercise), as well as the other way round. In general, causation can only be established by bio-medical research, not by statistical evidence alone. (There is, in fact, clear bio-medical evidence that being very obese or morbidly obese is a risk factor for heart disease, cancer, diabetes and other serious health problems).

Use of medical services

SOEP evidence also enables us to trace linkages between BMI and use of medical services. People who are obese use the services of doctors nearly 30% more often than the rest of the population.

2 At the 5% level, controlling for age and sex.

Table 3 shows even more striking evidence about a very high cost component of health provision, namely overnight stays in hospital.

People who are underweight are much more likely to be hospitalised than others (16.4% were in hospital during 2006), and they stay there much longer than average (20 nights compared with 14). So altogether their use of hospitals is about 92% above average. Individuals who are obese are hospitalised about 20% more than average.

Tabulations of this kind need to be checked, using more sophisticated methods of statistical analysis. To check conclusions from Table 3, we undertook a form of regression analysis (negative binomial regression) designed for situations in which the outcome of interest (nights in hospital) is a 'count' measure.[3] Regression results confirmed that both under-weight and morbidly obese people (but not the obese or very obese) are hospitalised significantly more often than the rest of the population. These results held, controlling for the gender, age, educational and income levels of respondents.

Discussion

This article has reported links between BMI, physical and mental health, and use of health services. There is evidence that being underweight is more strongly associated with mental health problems and also with hospitalisation than be-

3 More specifically, a negative binomial regression is appropriate when the outcome variable is a 'count' measure characterised by 'over-dispersion'; that is, a standard deviation larger than the mean.

Table 3

Links between BMI and use of hospital services

	2002	2004	2006	2002	2004	2006
	In hospital in last year (%)			Average number of nights in hospital		
Underweight	14.1	12.5	16.4	14	21	20
Normal weight	11.6	11.1	10.0	13	14	13
Overweight	12.9	14.0	13.5	15	14	14
Obese	15.7	14.6	14.3	17	16	13
Very obese	13.0	23.1	15.7	17	17	17
Morbidly obese	12.6	12.6	19.5	10	10	12
Totals	**12.6**	**12.8**	**12.2**	**15**	**15**	**14**

Source: SOEP 2002, 2004, 2006.

ing overweight. On this basis it appears that the standard view, that low weight poses low health risks, may need to be revised. Being morbidly obese (BMI over 40) is clearly linked to many health problems, but the evidence is much less conclusive for those who are obese, or even very obese. These issues are likely to remain controversial. By following the same very large sample of individuals over time, and observing linkages between changes (or stability) in body weight and changes (or stability) in health outcomes, SOEP should be able to contribute to the debate.

References

Campos, Paul (2005)
The Great Obesity Myth. New York, Penguin.

Kroh, Martin (2005)
Intervieweffekte bei der Erhebung des Körpergewichts in Bevölkerungsumfragen, *Gesundheitswesen, 67*, 646-655.

Ware, John E., Snow, K.K. and Kosinski, Mark (2000)
SF-36 Health Survey: Manual and Interpretation Guide. Lincoln, R.I.

German attitudes to immigration linked to economic self-interest

Ingrid Tucci

The main proposition running through this article is that Germans who gain direct financial benefits from the presence of immigrants have mixed feelings about immigration into this country, while those who feel economically threatened have strongly negative attitudes. The proposition is tested using evidence from SOEP for the year 2006.

German research about immigrants mainly focusses on their attitudes and their adaptation to life in this country. But adaptation is a two-way street, which means that successful integration into the host community depends as much on the attitudes and behaviour of the hosts as on the immigrants themselves.

When sociologists began to study immigration, the main hypotheses they investigated related to social contact and social distance. Simply put, these hypotheses rested on the optimistic view that more close and frequent contact between hosts and immigrants would lead to better understanding and greater social integration. It soon became clear that these hypotheses were, indeed, too optimistic. It appeared that social contact only helped under specific and favourable conditions. Engagement in cooperative activities (e.g. planning a festival) promotes improved attitudes. But competitive activities (e.g. a football match between teams of different ethnic origins) can harm relations. Contact between immigrants and 'natives' of roughly equal status helps, but status differences tend to make things more difficult (Allport, 1954; Amir, 1998). Other studies have reported even more pessimistic findings. Studlar (1977) found that social contact had no influence at all on racist attitudes. Harvard's Robert D. Putnam, perhaps the world's best known specialist on social capital, has conceded that it is very difficult to pinpoint reliable ways in which trust between groups from divergent backgrounds can be improved (Putnam and Feldstein, 2003).

It is usually found that, on average, better educated and more widely traveled people ('cosmopolitans') tend to have more favourable attitudes towards immigrants than less well educated people ('locals').[1] It is possible, however, that the reasons behind the attitudes of better educated people's attitudes have more to do with their economic interests—they are generally quite well off—than their cosmopolitanism or tolerance. Indeed, a major theme of immigration research, especially in more recent times, has been that attitudes may be substantially based on economic self-interest. Some generally well off groups, notably businesspeople whose businesses require a great deal of unskilled and semi-skilled labour, lobby for immigration for the most obvious of economic reasons. By the same token, unskilled workers are often found to be hostile to immigrants because they believe that the newcomers take their jobs, or at least provide low wage competition. This last finding has led to formulation of the 'losers from modernisation' hypothesis; the idea that people whose skills are not in strong demand in more modern industries, or even in the public sector, seek scapegoats for their own misfortune and may blame immigrants. They may also, of course, tend to support nationalist, anti-immigrant political parties.

Much of the evidence linking economic self-interest to immigration attitudes has been indirect or inferential. It has been inferred that, because opposition to immigration is associated with low socio-economic status, then the motivation must be economic. Similarly, it has been inferred that economic motives explain the finding that op-

1 The terms 'cosmopolitan' and 'local' were coined by Robert K. Merton (1949).

position to immigration tends to rise during economic recessions and diminish in boom times (Citrin et al, 1993).

Research linking immigration attitudes would be on a sounder footing if it could be directly shown that those who gain financially from the presence of immigrants support their presence, while those who perceive themselves as losing financially are anti-immigrant. This article tests five hypotheses which come closer to establishing direct links, although even so our measures are not ideal. The first two hypotheses about support for immigration may seem a little strange, or even flippant, but they take us in the direction we want to go.

Economic beneficiaries from immigration

1. Individuals living in households which have a maid support immigration.

2. Individuals who eat out frequently support immigration.

The rationale for the first hypothesis derives from the fact that cheap immigrant labour lowers the price of services, including domestic services and cleaning, in many areas of the economy. Many maids in Germany are from immigrant background. German maids are less readily available and more expensive (Schupp, 2002, Alt, 2004). So families who hire a maid are getting domestic services which would be otherwise hard to obtain, and at a cheap price. They benefit directly from immigration. It must be conceded that the SOEP data, which will be used to test the hypothesis, do not tell us about the ethnic origin of maids; it will simply be assumed that most have an immigrant background (Schupp, 2002, Alt 2004).

The rationale for the second hypothesis is much the same. Many cafés and restaurants are owned and staffed by immigrants, who initially at least are willing to work for low profits and wages. So Germans who eat out regularly benefit financially from the presence of immigrants. Again, it has to be conceded that the SOEP data are not as direct as might be wished. We do not know who chooses "ethnic restaurants" and who chooses "German restaurants". It will be assumed that much of the dining out which our respondents report themselves as doing is at "ethnic places".

Clearly, people who have a maid and people who eat out regularly are, in most cases, reasonably well off. So in testing these 'economic beneficiary' hypotheses, it will be essential to net out ('control for') the effects of income and associated variables.

Economic losers from immigration

The first two hypotheses about economic losers from immigration directly test the idea that people who themselves report that they are worried about job security and financial matters will be more likely than others to oppose immigration. The final hypothesis is less direct. It is expected that parents whose children go to school in areas where many of their fellow students are from immigrant backgrounds oppose immigration because of concerns about their children's future. They believe that the children's educational performance and hence careers and incomes will suffer.

1. Individuals who are worried about their job security oppose immigration.

2. Individuals who are worried about their financial situation oppose immigration.

3. Parents whose children go to school in areas of high immigrant concentration oppose immigration.

SOEP data on attitudes to immigration

The SOEP Survey includes indicators of subjective well-being and worries. One of the questions put also in 2006 to just over 22,000 respondents in about 12,000 households:

What is your attitude towards the following issues—are you concerned about them?

Immigration to Germany

very concerned	1
somewhat concerned	2
not at all concerned	3

In the results given in the next section, only the responses of German citizens who were not born abroad are included. In the present context it would make little sense to report the responses of immigrants themselves. Also excluded are individuals of German ethnic origin who were born abroad. They are immigrants themselves, having

lived much of their lives in previously Communist East European countries.

Economic beneficiaries are supportive of immigration

Are people who have maid, and those who eat out frequently, supportive or at least 'unconcerned' about immigration? Table 1 gives a first view.

The results here are mixed; they give just limited support to our hypotheses about economic beneficiaries. On the one hand, having a maid regularly and eating out frequently are associated with less concern than is found in the rest of the population about immigration. Both groups were significantly more likely than average to be 'not all at concerned', but only those who employ a maid regularly are significantly less likely to be 'very concerned' than average. On the other hand, these groups cannot be described as pro-immigrant. Among those who had occasionally a maid or those who ate sometimes out, there were approximately equal numbers who were 'very concerned' and 'not at all concerned'.

Pursuing the matter further, we need to 'control' for other factors which are also associated with attitudes to immigration, in order to see whether having a maid and eating out frequently still make difference. Technically, the analysis in Table 2 is an ordered probit regression in which the outcome variable is 'degree of concern about immigration'. The explanatory variables of main interest are 'maid in the household' and 'frequently dining out'. The other variables are included essentially as 'controls'. In interpreting results, positive coefficients should be read as pro-immigration, and negative coefficients as anti-immigration.

The key results are that, even controlling for many other factors, people who have maids are more supportive (or less negative) about immigration. Statistically, the relationship between this economic benefit and attitudes towards immigration is highly significant and the effect is quite strong. It is also clear that more pro-immigrant attitudes are found among younger people, people living in cities rather than less rural areas, and people with higher levels of education, with good jobs and incomes. Blue collar workers, but not (for reasons unclear) unemployed people, are more concerned about immigration.

Economic losers are more opposed to immigration

Next we consider the attitudes to immigration of individuals who are worried about their job security and current financial situation. Table 3 also reports the attitudes of parents whose children attend schools which include many students from immigrant background.

It is clear that people who are worried about their jobs and/or their financial situation are much more concerned about immigration than people

Table 1

Concern about immigration (%)

	Very concerned	Somewhat concerned	Not all concerned
Maid in the house?			
Regularly	24,1	45.8	30.2
Occasionally	27.3	46.9	25.8
Never	37.0	44.0	19.0
Eats out?*			
Frequently	26.2	38.8	35.0
Sometimes	28.9	44.3	26.8
Seldom/never	28.9	46.0	25.0

* SOEP-data for the year 2003. Only German natives respondents are included.

Source: SOEP 2006. Population weighted results.

Table 2

Economic beneficiaries of immigrant labour – are they less concerned about immigration?

	Immigration attitudes		
	Coefficients	t-value	
Benefit indicators			
Maid in the household (Ref: No maid)	0.250	(4.88)	**
Frequently dining out	0.069	(0.58)	
Sometimes dining out (Ref: Never)	0.033	(0.41)	
Age	-0.09	(8.94)	**
Sex (Ref.: Men)	0.017	(0.71)	
Single	0.021	(1.98)	*
Type of municipality (Ref: High density)			
Medium density	-0.081	(2.88)	**
Rural area	-0.048	(1.55)	
Status variables (Ref.: Not in labour force)			
Unemployed	-0.299	(5.90)	**
Blue-collar worker	-0.270	(6.57)	**
Self-employed	-0.027	(0.53)	
White-collar worker	-0.073	(2.05)	*
Civil servant	-0.040	(0.68)	
Education level (Ref: Low education)			
High education level	**0.506**	(12.29)	**
Middle education level	**0.136**	(3.76)	**
Household equivalent income	**0.00003**	(2.91)	*
Observations	**9668**		
Pseudo R^2	**0,03**		

Absolute value of z statistics in parentheses

+ significant at 10%; * significant at 5%; ** significant at 1%

Source: SOEP 2003 and 2006, only German natives respondents are included.

who are not worried about these issues. Anti-immigration feeling is even stronger among parents whose children attend school with a high concentration of foreigners. Multivariate analyses of the kind reported in Table 2 showed that these relationships still held when 'controls' were present for educational attainment, income, occupational status and so forth. So we can conclude with reasonable confidence that individuals who see themselves as being personally financially threatened are strongly opposed to continued immigration.

Discussion

Most previous work linking economic self-interest with attitudes to immigration has relied on rather indirect inferences. Furthermore, research has concentrated on those who may be financially threatened by a strong immigrant presence. In this article we have shown more direct links between economic outcomes for individuals and their immigration attitudes. We have also included economic beneficiaries and shown that they generally have less negative (but, even so, not positive) attitudes to immigrants. It would be interesting, in future research, to find out if high status professional groups (for example, medical doctors) who may be face competition from immigrant professionals are more negative. Overall, a research strategy which involves detailed consideration of the perceived economic gains and losses accruing to specific groups in the community should remain a high priority. From a Governmental standpoint, these are the com-

Table 3

Concern about immigration (%)

	Very concerned	Somewhat concerned	Not at all concerned
Worried about job security?			
Yes	39.3	41.8	18.8
No	26.7	44.2	29.1
Worried about financial situation			
Yes	38.9	43.0	18.1
No	24.7	45.8	29.5
Many foreigners in children's school*			
Yes	66.3	26.4	7.2
No	34.1	37.9	28.0

* Only parents whose children (aged 16 or 17) responded the youth questionnaire in 2006. Only German natives respondents are included.

Source: SOEP 2006. Population weighted results.

munity groups—along with immigrant groups—which should be consulted and, if possible, reassured when changes to immigration policy are contemplated.

References

Allport, Gordon W. (1954)
The nature of prejudice. Cambridge.

Alt, J. (2004)
Frauen und illegale private Ausländerbeschäftigung. Presentation at the Fachtagung „Grauzone Privathaushalt" des Berufsverbands Katholischer Arbeitnehmerinnen in der Hauswirtschaft. München-Fürstenried, 7./8. Mai 2004

Amir, Yehuda (1998)
Contact hypothesis in ethnic relations. In: Eugene Weiner (ed.) *The handbook of interethnic coexistence. New York,* 161-181.

Citrin, Jack, Green, Donald P., Muste, Christopher and Wong, Cara (1997)
Public opinion toward immigration reform : The role of economic motivations, Journal of Politics, 59, 585-881.

Merton, Robert K. (1949)
Social Theory and Social Structure. New York.

Putnam, Robert D. and Feldstein, Lewis (2003)
Restoring The American Community. New York.

Schupp, Jürgen (2002)
Quantitative Verbreitung von Erwerbstätigkeit in privaten Haushalten Deutschlands. In: Claudia Gather, Birgit Geissler, and Maria S. Rerrich (eds.): Weltmarkt Privathaushalt – Bezahlte Haushaltsarbeit im globalen Wandel. Münster, pp. 50-70.

Studlar, Donlay T. (1977)
Social context and attitudes toward coloured immigrants. *British Journal of Sociology* 28, 168-184.

Voluntary activities in an ageing society: East and West Germany

Harald Kuenemund and Juergen Schupp

SOEP respondents have been asked about their participation in voluntary activities ever since the Survey started in 1984. Here we provide evidence about stability and change in levels of participation over the last twenty years. It is often suggested that an ageing society requires, or would benefit from more voluntary and caring activity. More people are in need of assistance and there may be more people, including the retired and semi-retired, with enough time to provide it. In April 2008 Federal Minister Ursula von der Leyen (Ministry of Family Affairs, Senior Citizens, Women and Youth) announced a new initiative to foster the voluntary activities of Senior Citizens with a budget of 22 Million Euro.

In the 1970s, in the heyday of alternative society and self-help movements, the concept of voluntary activity was regarded as almost obsolete. Many people appeared to be more self-regarding and less other-regarding. But now the concept of volunteering is bound up with intense interest in social capital and the development of civil society. The Harvard social scientist, Robert D. Putnam, through his research on declining social capital in Southern Italy and the U.S., has perhaps done more than anyone to stimulate interest in the topic (Putnam, 1995). Transitions in Eastern Europe to representative democracy and market economics have also led to a renewed focus on how the institutions of civil society develop and can be promoted (Schelsky, 1965). Obvious signs of the perceived prestige and importance of voluntary activity came when 1996 was declared the Year of Voluntary Work and then 2001 became the Year of Volunteers!

Voluntary activity means different things to different commentators. Core ideas are that the activities must be unpaid and that they take place in the context of institutions and clubs—including churches, welfare organisations and political parties—which people join voluntarily. Some analyses of voluntary activity are at the macro level; they seek to understand the function of voluntary organisations in a modern state and society. From this perspective they can be seen as promoting social solidarity and serving as intermediate links between individuals and the bureaucratised welfare state (Schelsky, 1965; Evers and Olk, 2002).

Micro-level analyses, as in this article, are focused on the motives, characteristics and specific activities of volunteers themselves. As far as motives are concerned, there has been a shift away from the traditional assumption that voluntary activity must be altruistic and towards the view that volunteers participate to help themselves as well as others (Braun et al, 1997). They gain satisfaction from the process of participation, of being involved. They may enjoy a sense of solidarity with fellow participants and may, in some cases, wish to get ahead and take on prestigious leadership roles in voluntary organisations (Klages, 2002).

The organisational and social context of voluntary activity has to some extent changed. Traditional institutions, especially the churches and the major welfare organisations, were quite hierarchical and bureuacratised. It is clear that from the 1970s onwards more informal and flexible groupings and initiatives developed in response to new social movements, including the women's movement and the environmental movement.

20 years of SOEP evidence on the prevalence of voluntary activity in East and West Germany

A question now put to SOEP respondents every two years requires showing a list of activities and then, for each activity, asking respondents whether they participate 'every week', 'every month', 'seldom' or 'never'.[1] The item about voluntary activities comes after questions about sport and church-going (in order to minimise overlap) and refers specifically to 'voluntary activities in clubs, associations or social services'.

Figure 1 gives results for West Germany from 1985-2005 and Figure 2 reports for East Germany from 1990-2005.

In West Germany levels of participation have changed little in 20 years. About 7-9% participate weekly and another 6-8% monthly. There may have been a slight increase in recent years,[2] but the trend is not consistent, even though 2005 appears to be the year with the highest recorded level of voluntary activity. (Preliminary results for 2007 indicate that high levels of activity appear to have been maintained).

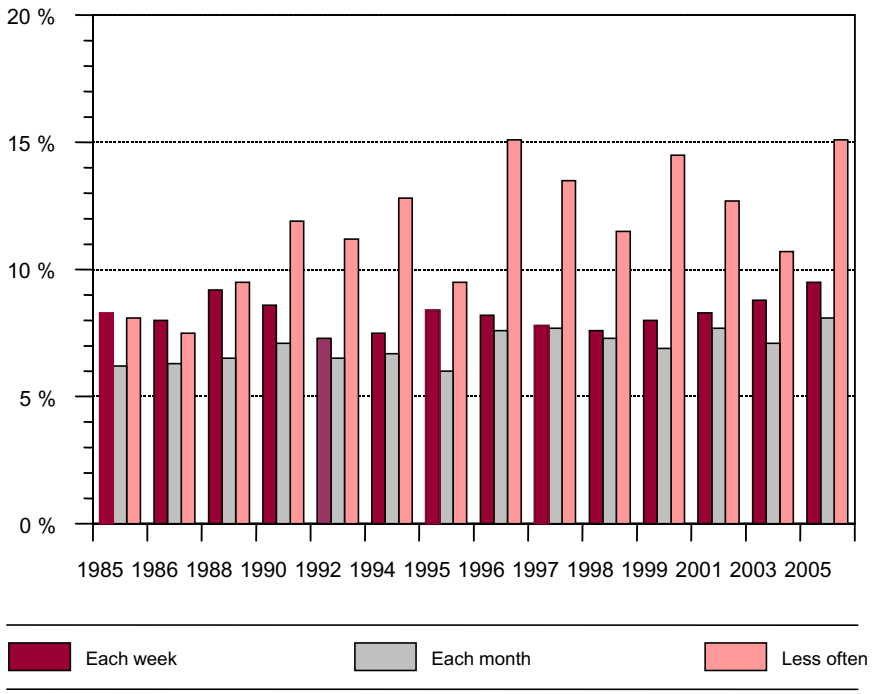
In East Germany there clearly has been a change. Participation was at about the same levels as the Western states when the question was first asked in 1990; that is, before reunification. However, after reunification voluntary activity plainly declined, falling below Western levels, before picking up again from 1999 onwards. By 2005 participation was not quite back to where it had been in 1990, and was still somewhat lower than in the Western states. One somewhat speculative interpretation is that personal anxieties generated by transition problems may have made East Germans temporarily more preoccupied with their personal affairs, and less willing to find time for others.

What are the characteristics of people who are more rather than less willing to be engaged in voluntary activities? Is it the case that older people, who may have fewer work and direct family responsibilities, are more likely than others to participate? Table 1 provides some answers. The evidence is just for 2005 (given that the characteristics of participants scarcely changed over the years) and includes a comparison between East and West Germans. Technically, Table I reports logistic regression results in which the outcome

1 The question was asked annually until 1999, since when it has been biannual.
2 However, much of this increase is just among those who report 'seldom' participating, rather than 'never'.

Figure 1

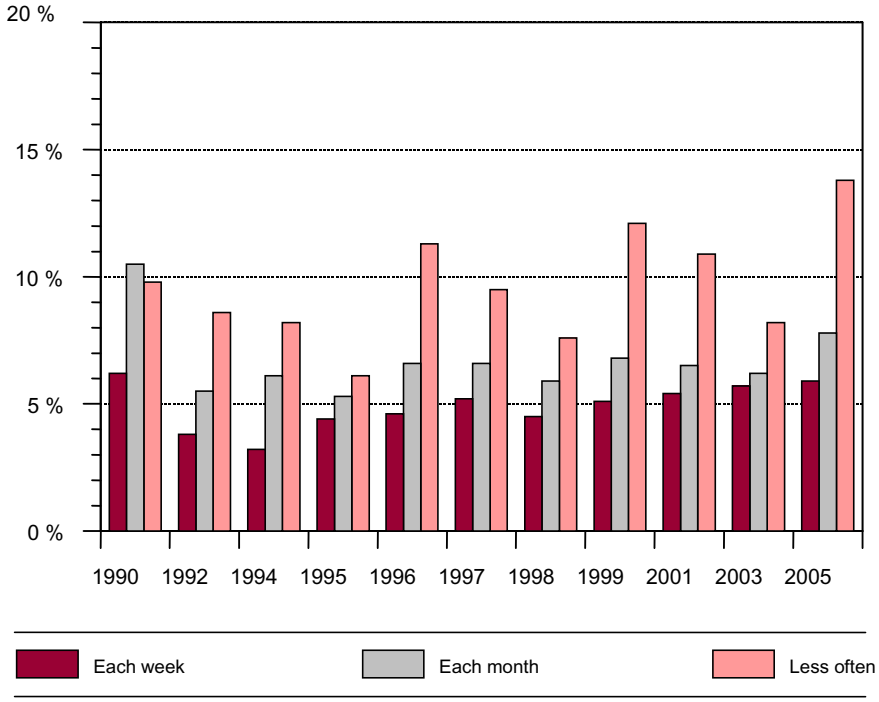
Voluntary Activities 1985-2005: West Germany



Source: SOEP 1990-2005.

Figure 2

Voluntary Activities 1990-2005: East Germany



Source: SOEP 1990-2005.

being explained is whether or not survey respondents participated in voluntary activities at least once a month. The statistics in the table are odds ratios, and their interpretation is straightforward. For example, the first odds ratio of 0.67 applies to East Germany and means that the odds of an East German participating monthly in voluntary activity were about two-thirds those of a West German.

Perhaps the most interesting result, in the context of Germany's ageing society, is that it transpires that middle aged and older people, from 50 right up to 79 years old, are more likely to volunteer than younger people. Also, those who are marginally employed ('geringfuegig erwerbstaeting') are more likely to engage in voluntary activity than more fully employed individuals. But people who are unemployed and searching for work volunteer less. Better educated people, as is well known, volunteer in greater numbers than those with less formal education, probably because they have greater skills and confidence to engage in most forms of social activity.

The evidence in Table 1 indicates that men engage in more voluntary activity than women, but this needs to be understood in context. Surveys of carers make it clear that many more women engage in direct caring activities than men (Schupp and Kuenemund, 2004). Men, however, are

Table 1

Participates in voluntary activities at least monthly 2005: logistic regressions

	2005
East Germany (ref: West Germany)	.67**
Women (ref: men)	.71**
Nationality (ref. German)	.42**
Age group (ref: 35-49)	
16-34	.75**
50-64	1.30**
65-79	1.28**
over 79	.47**
Education: (ref: less than Realschule)	
Realschule or Fachhochschulreife	1.32**
Abitur	1.55**
Employment status (ref: not employed)	
employed	1.07
marginally employed	1.82**
unemployed	.64**
Health disability (ref: none)	.66**
Constant	–.65
Pseudo R^2	.05
N	21.105

Source: SOEP 2005 (* p<.05; **p<.001).

more involved in clubs and in voluntary activities like sports coaching.

Discussion

Various attempts have been made to put a monetary value on voluntary activities, as if they could be treated as an alternative to the welfare state, and hence as saving money from the public purse. However, their value cannot really be quantified, especially in so far as they promote social solidarity and are of psychological and emotional benefit to the givers as well as the receivers. There is also some danger of exaggeration when commentators heap praise on the amount of voluntary activity which occurs. In reality, the available evidence, including the evidence in SOEP, is too general for researchers to be able to estimate the range of benefits which may accrue. We need detailed time budget studies which enable us to document precisely who helps whom, and with what beneficial (and other) effects. Initially, these studies should include open-ended questions, so that givers and receivers can describe in their own words what they are doing and why.

References

Braun, J. and Claussen, F. (1997)
Freiwilliges Engagement im Alter. Nutzer und Leistungen von Seniorenbüros. Stuttgart.

Evers, Adalbert and Olk, Thomas (2002)
Bürger Engagement im Sozialstaat – Randphänomen oder Kernproblem? *Aus Politik und Zeitgeschichte,* B9/2002, 6-14.

Klages, Helmut (2002)
Der blockierte Mensch. Zukunftsaufgaben gesellschaftlicher und organisatiorischer Gestaltung. Frankfurt am Main.

Künemund, Harald and Schupp, Jürgen (2008)
Konjunkturen des Ehrenamts – Diskurse und Empirie. In: Marcel Erlinghaben and Karsten Hank (eds.); *Produktives Altern und informelle Arbeit in modernen Gesellschaften*. Wiesbaden, 145-163.

Putnam, Robert D. (1995)
Bowling Alone: America's Declining Social Capital. *Journal of Democracy,* 6, 65-78.

Schelsky, Helmut (1965)
Freiwillige Hilfe in der bürokratischen Gesellschaft. In: H. Schelsky, *Auf der Suche nach Wirklichkeit.* Gesammelte Aufsätze. Düsseldorf, 294-304.

Schupp, Jürgen and Künemund, Harald (2004)
Private Vorsorgung und Betreuung von Pflegedürftigen in Deutschland *Wochenbericht des DIW Berlin,* 20, 289-294.

Part II

Technical Appendix

1 Introduction to the technical appendix

by Joachim R. Frick

This appendix provides an overview of key technical issues in the SOEP survey and the SOEP database, basic documentation, training courses, and user support facilities, as well as the SOEP team members in charge of these areas.

While some of the activities described in the following are aimed at providing information on SOEP to all interested parties (via the SOEP homepage and the SOEPnewsletter), others are aimed at improving the interaction among the steadily growing network of international users (SOEP's mailings are sent out via listservers at DIW Berlin and at Cornell University in Ithaca, New York).

Support features for active users of SOEP data

Researchers who make active use of the micro-data receive support through **SOEPinfo,** an interactive user information system containing variable names, frequencies, and a program-generating tool. Responses from the SOEP community to our user surveys repeatedly confirm that SOEPinfo is of tremendous help to first-time as well as advanced users in retrieving data from the several hundred single data files that accompany each release of SOEP data. Bugs found in the data after the DVD has been released are announced via the SOEP homepage and **SOEPnewsletter** together with information on how to fix them. The **SOEPmonitor** provides users with consistent and ready-to-use time series information on a huge number of prototypical analyses from a cross-sectional and longitudinal perspective, for East and West Germany separately. Activated in 2006, **SOEPremote** allows users to incorporate otherwise inaccessible regional data (e.g., geo-coded information at the county level).

Like all the other support features, the searchable literature database **SOEPlit** can be accessed online via our homepage. It contains bibliographic references to almost 5.000 publications based on SOEP data and provides an easy means of finding out what other researchers have already published on a specific research question.

User training

Given the huge amount of data (and the correspondingly large number of files) covering more than 20 years of micro data at the household, individual, and event levels, the SOEP dataset is growing into an increasingly complex structure which can be difficult to handle for first-time SOEP users, even if they are experienced empirical analysts. In order to help users cope with this complexity, introductory courses for German users are held each year in Berlin in German, and for international users every two years at Cornell University in Ithaca, New York (see also **SOEP-campus**).

All of these key features of SOEP's comprehensive user support and information system are described in more detail in the next section. The remainder of this appendix gives more information about the 2007 data release, the weighting procedures used on the SOEP data from 1984 to 2007, and SOEP's contributions to the international statistical infrastructure.

2 The SOEP user support and information system

by Silke Anger, Deborah A. Bowen, Michaela Engelmann, Joachim R. Frick, Jan Goebel, Markus M. Grabka, Olaf Groh-Samberg, Hansjörg Haas, Elke Holst, Peter Krause, Martin Kroh, Christine Kurka, Henning Lohmann, Rainer Pischner, Uta Rahmann, Christian Schmitt, Jörg-Peter Schräpler, Jürgen Schupp, Ingo Sieber, Thomas Siedler, C. Katharina Spiess, Martin Spiess, Ingrid Tucci and Gert G. Wagner.

2.1 The SOEP homepage

The SOEP homepage is at the heart of our user support system and provides links to a vast array of useful information. In the following we offer a short introduction to a number of user support features that will be described in more detail in the remainder of this chapter.

In the "**Overview**" section we start with a brief description of the history, development, and aims of the SOEP study. The most important questions about SOEP are dealt with in the "**FAQ**" section (Frequently Asked Questions), which also includes a section for active users with questions about the current data release (changes since the previous distribution and organizational information). We provide information about the conditions for getting access to and using SOEP, followed by contractual questions. Finally, we give hints on how to deal with problems users commonly encounter when analyzing SOEP data.

Additionally, the sections "**SOEPnewsletter,**" "**SOEPlit**" (both described below) and "**News**" provide current general-interest information on events, new data releases, etc. The "**Data Center**" provides information on the various packages in which SOEP data is provided, either as standalone data or in combination with other cross-nationally comparative datasets.

Active users of SOEP data find the sections "**Service and Documentation**" extremely useful. Here we offer links to the original household and individual questionnaires used since 1997 in Adobe Acrobat (pdf) format (in German as well as in English, the latter only since 2000), as well as all important documents concerning the structure of the data(sets), generated variables, structure and development of the number of interviews at household and individual level, and the documentation of SOEP-specific assumptions and methods (for weighting, imputation, etc.). Known data bugs in the currently available microdata and the corresponding bug fixes developed after the respective data release are announced here. A section on "**Data Quality**" informs users about recent publications dealing with this topic, and there is a link to the "**SOEPmonitor**" (pdf version) providing time-series data on a wide range of cross-sectional and longitudinal indicators of living conditions.

Beyond information on how to make active use of the data, the SOEP homepage also provides information about the various "**SOEPawards,**" i.e., prizes awarded by the Society of Friends of DIW Berlin (VdF) and the sponsors of the bi-annual International SOEP Users Conference. The SOEP Prize is conferred either for the best presentation at the User Conference or—in the years between these conferences—for the best publication based on SOEP data. A special session at the bi-annual conference is devoted to the Felix Büchel Award, a prize for excellence in SOEP data use.

The homepage also provides links to current events such as the celebration of "**25 Waves of SOEP.**"

The personal homepages of the SOEP staff members can be found at the "**contact**" section. For more information, please contact Uta Rahmann <urahmann@diw.de>.

2.2 The SOEPnewsletter

The quarterly SOEPnewsletter is our main tool for informing SOEP users about new developments directly and regularly. It also aims to foster networking in the SOEP community. Since the 2008 relaunch of the SOEPnewsletter, this information is presented in a new, more user-friendly layout, now starting with an editorial and overview of the contents and followed by an article on a special topic, usually written by one of the members of the SOEP staff. The newsletter now has four main sections, allowing readers a quick overview of the main issues:

- The "**German Section**" is written in German and contains information that is only relevant for German users, such as conferences or workshops in German taking place in Germany. Of special importance here is the information on the SOEPcampus seminar series, where the SOEP staff supports German universities in teaching empirical research methodologies using SOEP.

All other sections are written in English and are equally relevant to German and international users.

- The "**Data&Service**" section is crucial for those who want quick information on new SOEP data releases, data corrections, new developments such as changes in the database, etc. International users receive information on new releases of the SOEP international scientific use file and the Cross-National Equivalent File (CNEF, see section 4 below), provided by our partners at Cornell University, and any changes that have been made in these data.

- The "**Events&Activities**" section gives information on SOEP-related conferences and calls for papers, workshops, public seminars, etc. These events can be helpful to SOEP users not only as venues for presenting their own research but also as chances for networking and exchanging knowledge.

- The "**People&Papers**" section concentrates on events and activities of the SOEP staff and immediate SOEP network, including the Cornell University staff, with information on new positions, honors, lectures, teaching activities, etc. In addition, and of equal importance, the reader finds news about researchers visiting the SOEP group in Berlin. Furthermore, this section contains references to new SOEP publications, a list of new SOEP data users, a listing of DIW/SOEP research professors and affiliates, as well as our contacts at the fieldwork organization. Finally, we list all the SOEP staff members with their research fields, email addresses, and phone numbers. As a result, this section offers another rich opportunity for networking and exchange.

The last part of the SOEPnewsletter is reserved for special announcements. The appendix provides space for job offers, flyers on relevant conferences, calls for papers from outside institutions, meeting announcements, SOEP data order forms, etc.

We announce each new SOEPnewsletter to the SOEP community via the SOEP and Cornell listservers.

For more information please contact Elke Holst **<eholst@diw.de>**.

2.3 The SOEP Mailing Lists

In order to join the English listserver based at Cornell University for users of the SOEP and CNEF data, please send an email to: **<listproc@cornell.edu>** and in the **body** of the email, include just the following line:
subscribe GSOEP-L gsoep

We suggest erasing any signature you might have at the bottom of your email.

The "soep-l" mailing list is a service of the SOEP group for the rapid dissemination of news to SOEP data users and all those interested in the Socio-Economic Panel longitudinal study. SOEPl notifies the list members of additions and updates to the SOEP homepage (e.g., the quarterly SOEPnewsletter); it also provides information on conferences and symposium activities (calls for papers) directly or indirectly related to the SOEP as well as on any job vacancies of interest.

Last, but not least, the mailing list serves as a forum for SOEP data users, who can use it to discuss major or minor problems of longitudinal data analysis and to provide the SOEP group with suggestions for improving its services. We urge all our users to play an active role in this discussion forum.

To become a member of the list, send an email to: **<sympa@list.diw.de>**, with the subject: **subscribe soep-l**

For security reasons, you will receive an email from the return email address asking you to con-

firm your subscription to the list. To do so, send a reply to the return address.

For security reasons, only contributions from list members are circulated. To send a mail to the list, simply address it to: **<soep-l@list.diw.de>**

Finally, to unsubscribe from the list, send an email to: **<sympa@list.diw.de>,** with the subject:
unsubscribe soep-l

If you are only interested in receiving notification about the SOEPnewsletter but not receiving mails from the list, please subscribe to the list by sending a request to **soep-nl@list.diw.de** as detailed on the SOEPnewsletter homepage.

For more information please contact Ingo Sieber **<isieber@diw.de>**.

2.4 The user support hotline SOEPmail

The SOEP user support hotline at **<soepmail@diw.de>** is the first address to contact for any questions on SOEP services, whether regarding data management (how to get access to SOEP data) or contract management (how to complete a data distribution contract).

The **SOEPhotline** provides advice on which contract is appropriate in each particular case and explains the required steps. The hotline staff prepares, approves, and sends data distribution contracts to external users. When dealing with users from outside the EU, the SOEPhotline staff works together with the team at Cornell University to guarantee a smooth process and quick delivery of the Scientific Use Version of the SOEP data, which is available to users outside the European Union, as well as the Cross-National Equivalent File.

Thanks to our close contact with SOEP data users, the SOEPhotline offers specially tailored contracts for the use of regional data, or data access via our SOEPremote system. Users are guided through the requirements of the German data protection law step by step until the contract is completed.

SOEPhotline handles orders for SOEP and CNEF data. Orders can be placed online, by e-mail, fax, or mail and will be processed promptly.

Finally, SOEPhotline provides assistance to new SOEP users who need help getting started, as well as to SOEP "power users" who want to discuss more ambitious applications. Through the hotline, they get in touch with the experts from the SOEP team who can answer their questions. All questions about SOEP, including issues about the dates of the next data release and the next SOEP user workshop, the use of SOEP data for teaching purposes, and all data-related requests are dealt with immediately (although the turnaround time for more complex issues may be up to 48 hours).

The SOEPhotline is managed by Michaela Engelmann **<SOEPmail@diw.de>**.

2.5 SOEPinfo

SOEPinfo is the central web-based user support system accessible via the SOEP homepage. **SOEPinfo** is updated regularly to include the most recent release of micro data. The application is programmed completely with open-source software by members of the SOEP group, as is the case for the administration of the underlying database and server.

This allows researchers to search for information on almost all variables in SOEP online. For instance, one can search using explicit variable names, if known, or by thematic category. Due to the dynamic nature of the SOEP, however, variable names are not consistent over time but correspond to the order of the variables in the respective questionnaires. Numerous user-friendly variables have also been generated additionally, leading to the difficult task of somehow grouping variables over time. Thus, if one knows that the "gross wage" in 1984 is the variable AP3301, one can find out what the variables are called for gross wage in all other years. This is very useful for panel studies, allowing the work of selecting variables to be done only once.

SOEPinfo includes the following features

- An item-correspondence list of all available SOEP variables with frequencies (information includes variable and value labels, names, and the file in which they are stored).
- A link to the corresponding questions in the original survey instrument (in German and English).
- A tool for generating program syntax files for retrieving SOEP micro-data (available for major statistical software packages SPSS, Stata, SAS).

The integration of the questionnaires is currently being redesigned completely, on the one hand, to more closely resemble the printed original, and on the other, to minimize errors due to the complex and error-prone conversion process from MS Word to html. In SOEPinfo, more than 160 different questionnaires are available (for each year e.g. individual and household level questionnaires in German and English) and around 100 have been converted up to now.

For more information please contact Jan Goebel <jgoebel@diw.de> or Ingo Sieber <isieber@diw.de>.

2.6 SOEPremote

SOEPremote is our new remote execution system for statistical analysis using sensitive regional data in combination with SOEP data. The service was activated in 2006 after an internal test run in 2005. It allows to analyze the SOEP regional data at the county level without the need to be physically present at DIW Berlin. The system works like the well-known LISSY remote system of the Luxemburg Income Study (LIS).

At present, we have 28 users who have signed a contract for use of SOEPremote. The number of jobs submitted per month is rather volatile, but nevertheless the trend is increasing. An overview of the number of jobs submitted can be found in Figure 1 below.

Due to data protection laws, users are required to sign an extended contract with DIW Berlin before using SOEPremote. After having done so, they can use SOEPremote to send their syntax (currently only in STATA) by email to our server. The server then carries out the retrieval automatically—after checking that the data protection requirements are fulfilled—and sends the results back by e-mail as a log file. Currently we are in contact with LIS for a relaunch of this service to allow users to send their jobs by a client-server based application without the use of an email client.

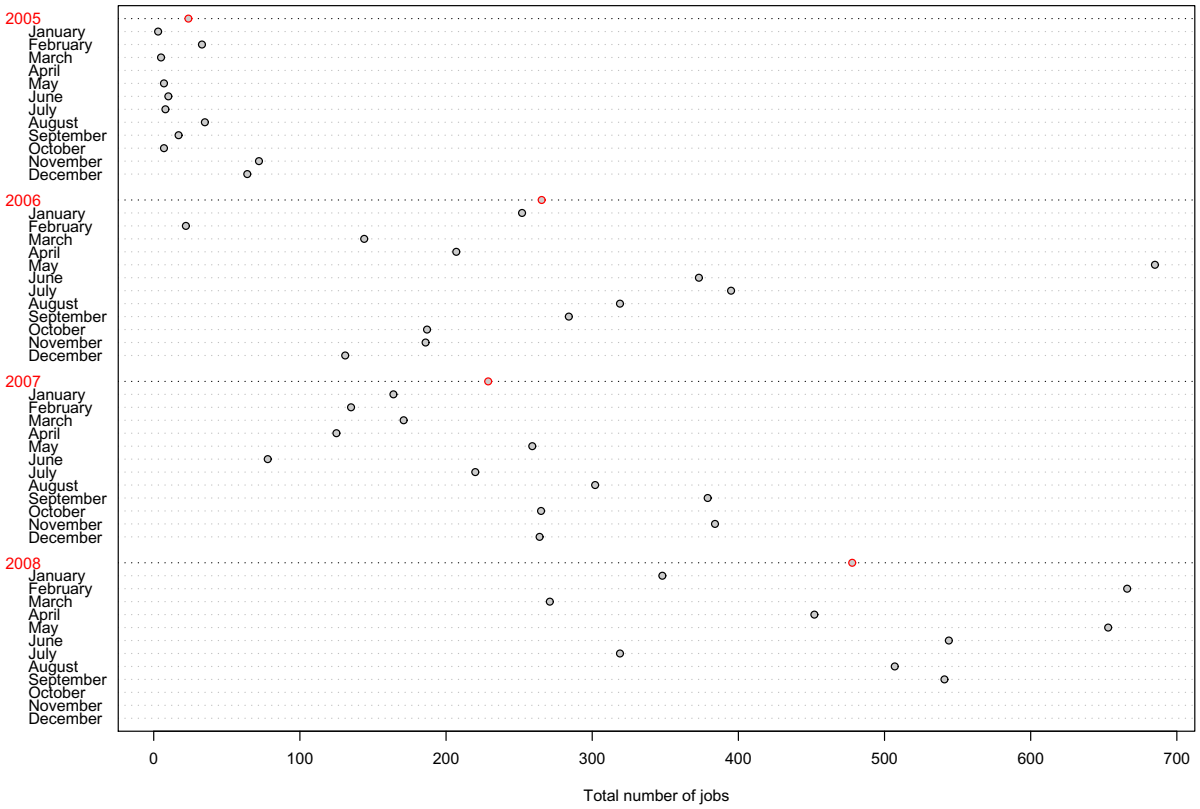
For further information on SOEPremote and for questions on the regional data, please contact Jan Goebel <jgoebel@diw.de>.

2.7 SOEPcampus

With more than 250 data files covering more than 20 years of micro data at the household, individual, and event levels, the SOEP dataset has grown into a highly complex structure that can

Figure 1

Number of jobs submitted to SOEPremote



be difficult to handle for first-time users—even those who are experienced empirical analysts. Thus, SOEP provides active user support by offering introductory courses to German users (in German) each year at DIW Berlin, and to international users at Cornell University in Ithaca, New York once every two years.

These workshops no longer stand alone but have become one element in a larger program we call **SOEPcampus**. Under this heading, SOEP provides a range of training activities, summer schools, etc. In 2007, SOEP held its first five-day summer school at the University of Duisburg-Essen. Besides the hands-on introduction to SOEP data, the course included an overview of techniques of panel data analysis and a discussion of young researchers' SOEP-based empirical work.

Since user demand by far exceeded our initial expectations, we now aim to intensify our cooperation with universities. In general, these activities are targeted at (graduate) students and young researchers. In 2008 SOEPcampus had again been hosted by the University of Duisburg-Essen. A similar event had also taken place in cooperation with the Graduate School of Economic and Social Sciences (GESS) at the University of Mannheim.

Presenters and instructors of these courses include SOEP staff but also other experienced users of SOEP data and lecturers from the cooperating universities. The diverse backgrounds of those involved allow us to cover a variety of topics. The panel data techniques that have been or will be covered in SOEP courses include event-history analysis, structural equation modeling, sequence analysis, matching techniques, panel regression, and multilevel analysis. The examples dealt with in the lectures and tutorials are taken from different disciplines, such as sociology, psychology, and economics.

In addition to summer schools and large-scale workshops, we also support university teaching of panel data analysis on a smaller scale. For example, members of SOEP staff are regularly invited to present their practical experience in courses on survey methodology and to give introductory courses on secondary data analysis using SOEP data. Above and beyond the courses at the DIW Berlin and at universities, SOEP staff are also available to provide in-house workshops given a sufficient number of interested users. As such, SOEPcampus goes to users and potential new users.

For more information, please contact Henning Lohmann **<hlohmann@diw.de>**.

2.8 SOEPmonitor

In order to provide a benchmark for SOEP-based analyses, the **SOEPmonitor** provides readers with time series information covering the period 1984 up to the most recent year of observation (currently 2007) on a wide range of cross-sectional and longitudinal indicators of living conditions, given separately for East and West Germany. Areas covered include education and training, leisure and social capital, employment, health, income and inequality, housing, and subjective indicators.

The **SOEPmonitor** makes reference to the underlying SOEP variables in order to facilitate easy replication. All of these analyses make use of the standard SOEP weighting factors and thus provide a representative picture of the entire population living in private households in Germany. As such, the SOEPmonitor first of all provides benchmark results for external SOEPusers working in different fields. In addition, it serves as ready-to-quote information for interested parties (e.g., journalists searching for time trends on income inequality and poverty).

More information is available from Joachim Frick **<jfrick@diw.de>**.

2.9 SOEP Publications

Accessible via the SOEP homepage in the section on additional information about SOEP-based publications, **SOEPlit** contains a list of published studies using SOEP data. As of October 2008, this archive includes nearly 5,000 entries.

The web version of SOEPlit is based on a local archive maintained by the SOEP group at DIW Berlin. SOEPlit gives complete bibliographic information and can be searched using various categories. This archive stores (either electronically or in hard copy) all of the literature submitted by SOEP users, as stipulated in the data distribution contracts. However, not all users fulfill this obligation—in particular, "indirect" users of SOEP data stored in comparative databases (like ECHP, LIS/LWS, EUROMOD, CHER, etc.) are probably not aware of our archive—so in Berlin, we also conduct extensive searches for SOEP-based literature. We manage the archive through a local database, which also includes "grey" literature and forms the basis for SOEPlit on our homepage.

As SOEP and the number of SOEP-based literature have grown, we have been working intensively to create an improved web-based platform to manage the SOEP-based publications. This would dispense with a second part of the SOEP-based publications section, "Documents," which currently contains SOEP-based publications available online—mostly discussion papers, but also reports and sample articles from online journals.

Our newest service for SOEP-based publications is the series "**SOEPpapers** on Multidisciplinary Panel Data Research at DIW Berlin". Launched in 2007, the series is designed to open up research work in progress to an international audience for discussion and debate. We welcome and publish research from all scholarly disciplines within the social sciences. As of October 2008, more than 130 papers have appeared in this series. SOEPpapers are listed in the database "Research Papers in Economics" (RePEc), and the English titles can be found and downloaded from the "Social Science Research Network" (SSRN).

For more information, please contact **Uta Rahmann** <urahmann@diw.de> .

3 Weighting procedures in SOEP from 1984 to 2007

by Martin Kroh and Martin Spiess

This section provides, first, a general overview of the longitudinal development of the response rate in the SOEP survey over the past 23 years. Not completely random attrition occurs when the characteristics of those households that respond are systematically different from those that drop out. Weighting can be one strategy to compensate for attrition bias in applied analysis. SOEP's weighting strategy distinguishes between survey-related reasons for dropping out, and reasons unrelated to the survey (for a detailed description of the SOEP weighting strategy, see Rendtel 1995 and for a general overview, Haisken-DeNew & Frick 2005). We ignore the latter form of panel attrition in cases where respondents moved abroad or died, since these technically represent an exit from the underlying population. Moreover, among the survey-related forms of drop-out, we distinguish between unsuccessful follow-ups of mobile households and the refusal of households to participate in the survey, since the motivations behind these two forms of attrition may differ. The second part of this section reports the derivation of longitudinal weights between waves 2005 and 2006.

Table 1

The frequency of households to be recontacted and the relative proportion of successful follow-ups by subsample and Year

	A /B		C		D		E		F		G	
	n	%	n	%	n	%	n	%	n	%	n	%
1985	6051	98.1										
1986	5814	98.6										
1987	5465	99.0										
1988	5342	99.1										
1989	5156	99.1										
1990	5044	99.1										
1991	5029	99.5	2246	98.5								
1992	5006	99.6	2304	99.5								
1993	5049	99.1	2227	99.1								
1994	5008	99.2	2136	99.4								
1995	4900	99.4	2113	99.6								
1996	4817	99.6	2104	99.5	544	99.6						
1997	4733	99.5	2091	99.5	542	99.3						
1998	4695	99.4	2081	99.4	498	99.4						
1999	4616	99.5	2041	99.7	529	99.1	1100	99.5				
2000	4495	99.6	2028	99.6	467	99.8	968	99.2				
2001	4371	99.5	2036	99.7	454	99.1	922	99.1	6172	99.0		
2002	4290	99.6	2010	99.5	450	99.8	875	99.4	5451	99.5		
2003	4170	99.6	1982	99.6	434	99.5	834	99.3	4965	99.7	1056	99.1
2004	4063	99.7	1962	99.6	436	99.8	797	99.7	4736	99.6	1010	99.7
2005	3999	99.7	1959	99.7	429	99.3	783	99.1	4577	99.7	1001	99.7
2006	3909	99.7	1941	99.4	425	98.8	775	99.1	4401	99.3	995	99.5

n = Number of households to be recontacted

Table 2

The frequency of recontacted households and the relative proportion of participation by subsample and year

	A / B		C		D		E		F		G	
	n	%	n	%	n	%	n	%	n	%	n	%
1985	5937	90.4										
1986	5732	91.1										
1987	5398	85.5										
1988	5285	88.8										
1989	5095	87.4										
1990	4982	85.4										
1991	4985	84.2	2213	91.7								
1992	4977	85.0	2290	88.2								
1993	4994	84.7	2208	89.2								
1994	4960	86.2	2122	92.3								
1995	4863	86.3	2101	92.2	634	82.3						
1996	4795	86.3	2092	93.3	542	91.9						
1997	4703	85.0	2076	93.6	537	89.2						
1998	4658	87.5	2066	91.3	523	84.3						
1999	4585	88.6	2030	93.3	495	85.9	1084	81.7				
2000	4464	89.0	2018	93.1	466	91.2	959	87.8				
2001	4347	88.3	2028	91.2	450	88.4	913	88.8	6109	80.4		
2002	4265	88.7	1996	91.1	449	89.5	868	89.1	5420	84.6		
2003	4155	87.8	1974	91.5	432	92.4	828	89.9	4951	88.6	1047	87.0
2004	4053	87.7	1955	92.7	435	89.2	795	92.1	4719	89.7	1007	89.8
2005	3988	88.7	1954	90.6	426	89.0	782	90.3	4564	89.2	998	88.1
2006	3897	89.2	1930	89.0	420	85.7	768	89.3	4370	89.1	990	86.8

n = Number of recontacted households.

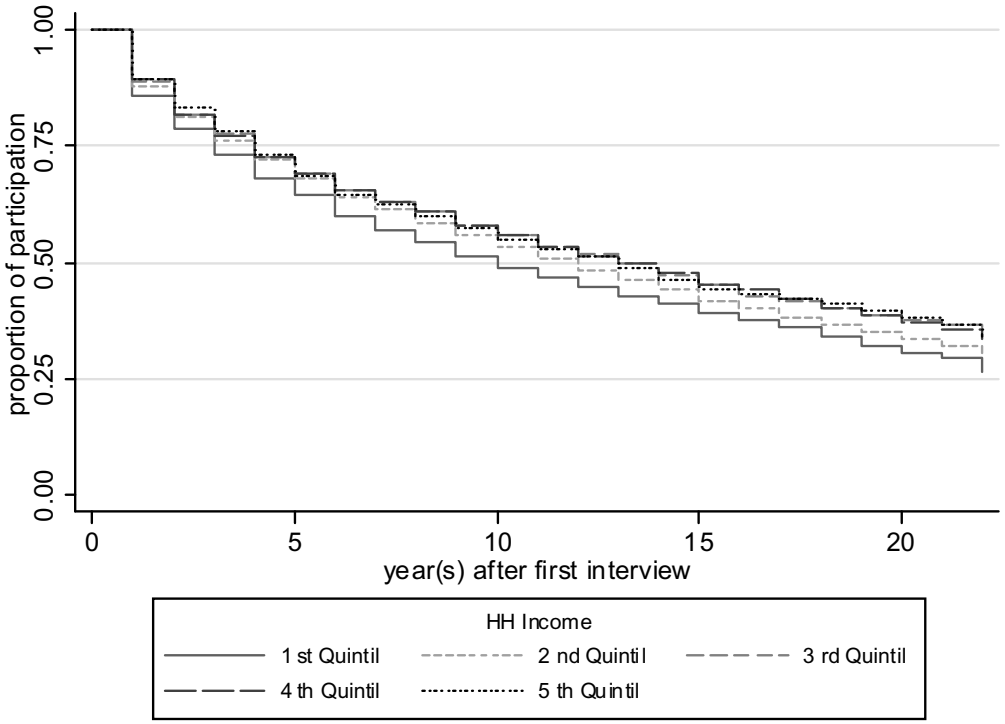
3.1 Attrition between 1985 and 2006

As shown in Table 1, 3,909 households in subsamples A and B should be recontacted in 2006. This includes old households interviewed in 2005 and new split-off households that evolved out of existing SOEP households in subsamples A and B between waves 2005 and 2006. Of these 3,909 households, 99.7 percent were relocated successfully by the interviewer, and the remaining 11 households were untraceable. Note that the sample sizes of the "English-language scientific use version" of SOEP and the full SOEP version available to users within the EU differ by approximately 5 percent. This 5 percent of the original SOEP data was excluded in compliance with German data protection laws, which was accomplished technically by randomly selecting 5 percent of the original Wave 1 households and dropping these and the persons living in them from the scientific-use version. Hence the difference in sample sizes is not always exactly 5 percent. The sample sizes documented below refer to the original 100% database.

Interviews were obtained from 3,476 households from the recontacted households in subsamples A and B in 2006, resulting in a household response rate of 89.2 percent, as shown in Table

Figure 1

Successful re-interviewing of first-wave respondents by income quintiles in t_0. Kaplan-Meier estimates of survey-related attrition ignoring deaths and moves abroad



2. The participation rate for households responding in the previous wave is comparatively low in the first waves of each subsample but is steadily increasing over time. However, we also observe lower participation rates in the most recent samples from 2000 and 2002—a general trend in survey-based research—compared to the SOEP subsamples drawn in the 1980s.

The following Figure 1 displays not the wave-to-wave but the longitudinal participation rate of Wave 1 respondents conditional upon their household income in the year of sampling, to illustrate that—by and large—long-run attrition is only very loosely linked to concepts of interest to many SOEP users. Note that the Kaplan-Meier estimates of the risk of unsuccessful follow-ups and refusals ignore survey-unrelated exits (moves abroad and deaths).

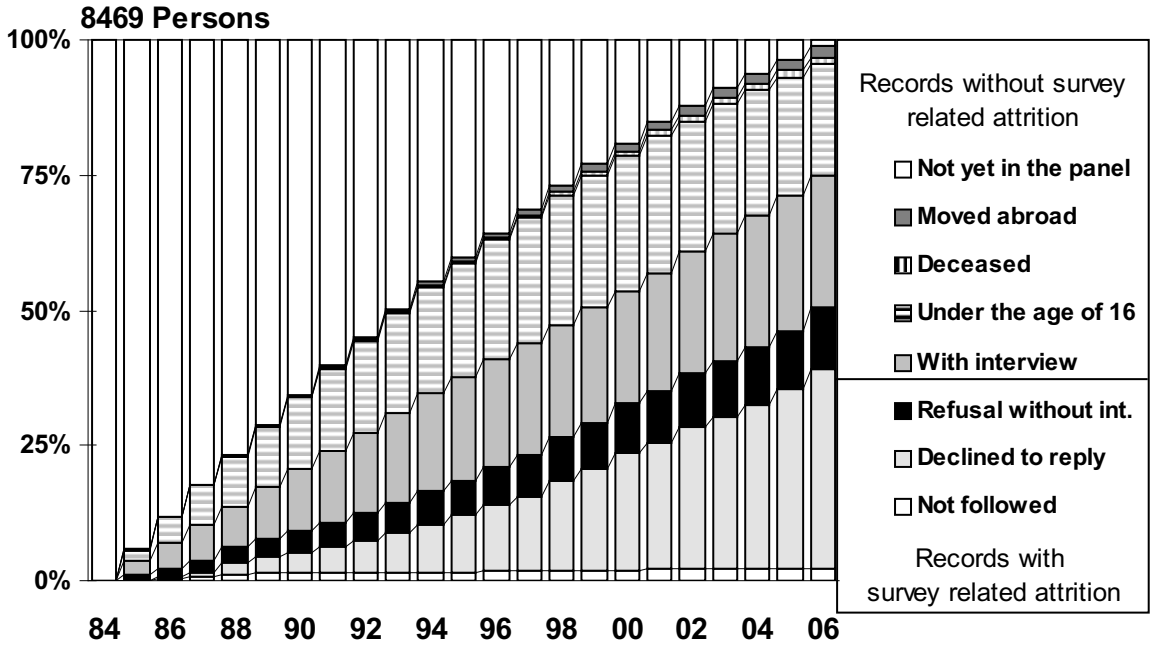
Although the sample of original Wave 1 individuals and households is constantly diminishing, the longitudinal SOEP study also incorporates new households and persons that enter the survey at later points in time—for example, when SOEP households split (i.e., individuals move out and form their own households), when people move into SOEP households, and when an original sample member gives birth to a "new sample member" (Spiess, Kroh, Pischner and Wagner, 2008, detail the rules for inclusion of new sample units, their frequency, and their treatment within the weighting framework). Figure 2 gives examples from subsamples A and B of the participation behavior of non-original sample members and their entrance into the survey, distinguishing between continued participation, exits due to non-survey-related attrition, and exits due to survey-related attrition.

3.2 Analyses of unsuccessful follow-ups and refusals in 2006

In each panel wave, the first step in successful reinterviewing is the relocation of the households from the preceding wave. The second step in successful reinterviewing after relocating households from the preceding wave is to obtain each household's confirmation of willingness to participate in the survey. Among the very large number of household and interview characteristics measured in 2005 that we tested in preliminary analyses, we identify a smaller number of variables that exert a robust effect on the probability of either stage ($p < 0.05$). The individual attributes refer in many cases to the head of the household in the previous wave, but for split-off

Figure 2

New sample members from subsamples A and B and their participation behavior



households, the attributes refer to the person who moved out of the panel household (in the case of several mobile persons, the first person mentioned in the address protocol). Table 3 reports the subsample-specific estimates of logit models of the probability of recontacting a household relative to unsuccessful follow-up and Table 4 does the same for the probability of agreement vs. refusal to participate in the survey.

The estimates in Table 3 indicate that—depending on the specific sub-sample—it is more difficult to follow up on households that split off, move, or live in large apartment blocks, and on single-person households. Due to the few cases of unsuccessful follow-ups (99+ percent were relocated), these models contain only very few regressors that exert robust effects.

Among the regressors included in the models of refusal, we want to highlight three clusters of variables. First, changes in the living circumstances of the respondents and changes in the interview situation between waves seem to be associated with refusals to participate. Indicators of such changes are household split-offs, separations, irregular employment, and changes in interviewers between waves. Second, a number of motivation indicators measured in 2005 predict unit non-response in 2006, such as the disclosure of email address and phone number to the interviewer, the interviewer's rating of the respondent's willingness to participate, the respondent's experience with the SOEP, and participation in an additional behavioral experiment in the 2005 survey. The third cluster of determinants of participation relative to refusal contains personality styles and demographic characteristics. Respondents who were very dissatisfied with their lives, concerned about their job prospects, and who had high values on neuroticism tended to drop out more often.

Based on the regression models of unsuccessful-follow ups and refusals, we derive predicted observation probabilities. The inverse of the product of these predicted probabilities gives the longitudinal weighting variables for the year 2006: WHBLEIB and WPBLEIB. Based on the inverse of the probability of observing households and persons in 2005, the staying probability in 2006, and additional post-stratification to meet benchmarks of known marginals of the underlying population in 2006, we derive the cross-sectional weights WHHRF and WPHRF. Finally, using a simple modular strategy, users can easily define the longitudinal weight for the balanced panel data of interest to their analysis by simply multi-

plying the cross-sectional weight for the starting wave by the inverse "staying probabilities" of the following waves. For example, the longitudinal weight for a balanced panel of individuals taking part in the SOEP from wave U to wave W would be made up by UPHRF*VPBLEIB*WPBLEIB.

References

Haisken-DeNew, John P. and Frick, Joachim R. (eds.) (2005):
Desktop Companion to the German Socio-Economic Panel Study (GSOEP), Version 8.0 – Update to Wave 21, DIW Berlin.

Rendtel, Ulrich (1995)
Panelausfälle und Panelrepräsentativität, Frankfurt/M.- New York.

Spiess, Martin, Kroh, Martin, Pischner, Rainer and Wagner, Gert G. (2008)
On the Treatment of Non-Original Sample Members in the German Household Panel Study (SOEP)— Tracing, Weighting, and Frequencies. *DIW Data Documentation, No. 30.*

Spiess, Martin (2001)
Derivation of design weights: The case of the Socio-Economic Panel (SOEP), DIW Research Notes No. 5.

Table 3

Estimates of logit models of the probability of recontacting a household (relative to unsuccessful follow-up) in 2006

	Sample A	Sample B	Sample C	Sample D	Sample E	Sample F	Sample G
Intercept	-3..59 (0.44)***	-4.83 (0.62)***	-3.14 (0.34)***	-2.50 (0.63)***	-2.65 (0.46)***	-0.77 (0.36)**	-3.85 (0.48)***
New HH	-1.98 (0.44)***	-1.76 (0.62)***	-2.25 (0.55)***	-1.73 (0.66)***	-2.03 (0.59)***	-2.83 (0.35)***	-1.72 (0.48)***
Moved HH			-1.94 (0.55)***	-1.33 (0.64)**	-2.03 (0.59)***	-1.99 (0.25)***	
Single HH				-1.57 (0.59)***		-1.23 (0.31)***	
(Moved HH)*(Single HH)	-1.75 (0.59)***						
3+ Person HH						-0.87 (0.30)***	
Non-German Nationality						-1.14 (0.29)***	
Large Building						-0.51 (0.25)**	-1.12 (0.49)**
Urban			-0.71 (0.33)**				
Rural					-0.91 (0.44)**		
Likelihood Ratio (Pr > Chisq)	****	****	0.43	0.22	0.65	0.53	0.89

Note. *** p < 0.01; ** p < 0.05; * p < 0.10; standard errors in parentheses. **** The specified and the saturated models are the same.

Table 4a

Estimates of logit models of the probability of re-interviewing a household (relative to refusal) in 2006

	Sample A	Sample B	Sample C	Sample D	Sample E	Sample F	Sample G
Intercept	1.06 (0.07) ***	0.34 (0.24)	1.63 (0.20) ***	3.87 (0.76) ***	-0.42 (0.28)	0.98 (0.11) ***	-0.17 (0.36)
First Wave HH	0.25 (0.06) ***						
New HH	-0.70 (0.16) ***		-0.90 (0.15) ***			-0.70 (0.13) ***	
Face-to-Face				-2.62 (0.75) ***			
CAPI					0.30 (0.13) **		0.28 (0.13) **
Experiment						0.14 (0.06) **	
Change in Interviewer	-0.75 80.08) ***	-0.62 (0.18) ***	-0.89 (0.13) ***		-0.62 (0.20) ***	-0.86 (0.07) ***	-0.64 (0.15) ***
Non-Regular Interview	-0.28 (0.07) ***	-0.59 (0.14) ***	-0.55 (0.09) ***	-2.73 (0.71) ***		-0.91 (0.07) ***	-0.80 (0.18) ***
Pace of Interview	0.14 (0.62) **		-0.22 (0.09) **			-0.12 (0.05) **	
SOEP Experience		0.03 (0.01) ***					
Low Cooperation	-0.31 (0.08) ***	-0.49 (0.13) ***	-0.46 (0.09) ***	-1.09 (0.24) ***	-0.57 (0.16) ***	-0.27 (0.07) ***	-0.42 (0.14) ***
E-mail Disclosed	0.15 (0.07) **						
Phone Disclose					1.37 (0.22) ***	0.27 (0.10) ***	0.89 (0.32) ***
Gender							0.32 (0.13) **
2 Person HH							0.29 (0.11) **
4+ Person HH						-0.15 (0.07) **	
Non-German HH					-0.95 (0.30) ***		
Age 25-34	0.26 (0.09) ***						
Age 35-64						0.22 (0.06) ***	
(Age 25-34)*(Old-HH)		0.43 (0.18) **					

Note. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; standard errors in parentheses. **** The specified and the saturated models are the same.

Table 4b

Estimates of logit models of the probability of re-interviewing a household (relative to refusal) in 2006

	Sample A	Sample B	Sample C	Sample D	Sample E	Sample F	Sample G
Unmarried	-0.19 (0.08) **					0.15 (0.07) **	
Separation	-0.55 (0.18) ***	-0.59 (0.27) **			-0.77 (0.24) ***		
(Separation)*(Old-HH)			-1.54 (0.43) ***				
Rural							-0.27 (0.10) ***
Care	-0.41 (0.15) ***						
Savings							-0.51 (0.26) **
Tertiary Education			0.17 (0.08) **				
No Vocational Eduction	-0.15 (0.07) **						
Unemployed			-0.43 (0.19) **				
Irregular Employment	-0.14 (0.59) **	0.40 (0.14) ***	-0.40 (0.19) **				
Job worries						-0.12 (0.06) **	
Extraversion	0.02 (0.01) **		-0.02 (0.01) **				
Neuroticism							-0.04 (0.01) ***
Reciprocity			0.03 (0.01) **				
Dissatisfaction				-0.72 (0.29) **			
Likelihood Ratio (Pr>Chisq)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Note. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; standard errors in parentheses.

4 Compensating for missing data in the SOEP

By Martin Spiess

Almost all surveys that are based on voluntarily participation are affected by nonresponse. Traditionally, a distinction is made between unit and item nonresponse. The former indicates the situation where units (e.g., households or individuals) are not observed at all, whereas item nonresponse refers to the situation where units that are otherwise willing to respond are not completely observed, i.e. do not answer all survey questions. In panel data sets, a specific type of unit-nonresponse is attrition which denotes the situation where units observed at least once drop off the survey in a later wave. Traditionally, researchers deal differently with both kinds of nonresponse: weighting is a technique usually adopted to compensate for unit nonresponse and attrition, whereas some imputation strategy is often chosen to compensate for item nonresponse. However, looking more closely at the distinction between unit and item nonresponse reveals that it is rather artificial: unit nonresponse is simply an extreme form of item nonresponse. On the other hand, up to now there is no unifying approach available to satisfactorily deal with both problems simultaneously.

To compensate for unit nonresponse, the SOEP supports weighting strategies by delivering various weights together with the SOEP data. Weighting as a strategy to compensate for known sampling probabilities is standard in design-based statistics (e.g. Horvitz and Thompson, 1952; Särndal, Swensson and Wretman, 1992). With unit nonresponse, an additional selection stage, from the gross sample to the observed sample, is introduced where the "selection" probabilities are, however, unknown and must be estimated. Weighting in this context is standard under the assumption that missingness depends on observed variables only and response probabilities can consistently be estimated, although the fact that the weights are in part based on estimates, is usually ignored. In model-based approaches, weighting as a means to compensate for differing sampling and response probabilities has only been dealt with for approximately 10 to 15 years. Up to then the problem was largely ignored.

The work of Robins and colleagues (e.g. Robins, Rotnitzky and Zhao, 1994, 1995) and by Wooldridge (2002a, 2002b, 2004) goes far beyond what has been discussed in the design-based literature. For example, in the papers of Robins and colleagues, strategies to compensate for first wave nonresponse, attrition and missing items in the context of semi-parametric estimation of panel data models are developed. Wooldridge (2002a, 2002b, 2004) discusses weighting as a strategy to compensate for different selection probabilities as well as unit nonresponse in the context of extremum estimators for cross sectional and a certain class of panel models.

Important results from this line of thinking and research imply that as many information as possible should be incorporated into the models to estimate response probabilities ("kitchen sink" approach). In fact, it can be shown that including many variables does not increase the (asymptotic) variance of the resulting estimators of a wide class of estimators of interest. Furthermore, ignoring the fact that weights are based on estimated probabilities, leads to an, usually only minor, overestimation of the standard errors and thus to conservative inferences, which is seen as being less problematic than anti-conservative inferences. Unfortunately, with standard software, it is not possible at present to use information that allows to compensate for the uncertainty in the estimated weights, even if this information were delivered with a data set. On the other hand, weighted estimation leads to larger standard errors than unweighted estimation (if both strategies are valid), weighted estimators based on estimated weights nevertheless have smaller variances than estimators based on known weights.

The strategy adopted for the SOEP in 1984—almost 25 years ago (cf. Galler, 1987)—to use as much information as possible to estimate re-

sponse probabilities and to base the weights on a sequence of estimated response probabilities is in line with this literature. Further, by providing various weights (design weights, the inverse of estimated attrition probabilities, denoted as "staying factors", and cross sectional weights; cf. Rendtel, 1995; Spiess, 2005) researchers may derive their own weights according to their assumptions and needs to account for different sampling probabilities, observation probabilities possibly adjusted for various sampling probabilities as well as different versions of longitudinal weights to estimate panel data models. Although most standard software is not yet able to deal with, e.g., time varying weights, such weights are already available with the SOEP.

A theoretically sound approach that became applicable through corresponding software with increasing computing power within the last years to compensate for missing items is the method of multiple imputation (e.g. Rubin, 1987, 1996). However, up to now, available techniques and statistical software does neither allow the (proper) imputation of complex surveys nor does it allow the substitution of weights by imputations (but see Spiess 2006 for the imputation of dropouts in a longitudinal analysis). First experiences with imputations are gathered in the SOEP by generating predictions for missing wealth and household income values.

As for the weighting strategy, of course, not any imputation procedure allows the generation of imputations that lead to valid inferences in the design-based or model-based analyses of interest. If the imputation procedure is proper in the sense of Rubin (1987, 1996), then the inferences of interest based on a multiply imputed data set should be valid as well, if the analysis method applied to the complete data set would lead to valid inferences. According to Rubin, a multiple imputation procedure tends to be "proper" if the imputations are (independent) draws from the corresponding predictive posterior distribution of all variables with missing values (for details see Rubin, 1987, 1996). However, in complex data sets with different types of variables (continuous, binary, truncated, ordered categorical etc.) this is complicated and may even not be practical. And in fact, available software does not allow to draw imputations from such distributions. Furthermore, although necessary in complex data sets, most of the available software packages do not allow to generate imputations under restrictions, e.g. on the range of the variables to be imputed or under other logical constraints. There does exist software (e.g. IVEware, MICE) that allows researchers to generate imputations based on univariate marginal distributions for some simple data structures (e.g. assuming that the data are not clustered) and univariate parametric models. Adopting such an approach it might happen that a common posterior distribution for all variables with missing values does not exist. Although a few results are available that imply that this might have only negligible consequences for the inferences of substantive interest, there is still need for further research.

Other problems with software currently available are that the imputation models usually are not able to adequately deal with clustered data structures, e.g. individuals within households, within geographical units etc., different types of variables and restrictions in a minimal restrictive way (e.g. semi- or nonparametric models) at the same time. Further, the imputation models adopted are usually parametric models, and although multiple imputation can be 'self-correcting' in the sense of multiple imputations (at least) being 'confidence proper' (Rubin, 1996, 2003), there still is lack on research with respect to the consequences of misspecified imputation models.

To further improve the weighting procedure as well as to be able to generate proper multiple imputations for a complex data set like the SOEP, and thus to support users to draw valid inferences even in the presence of missing data for a wide range of situations, future projects involve the implementation of fast and stable estimation procedures for (preferably) very flexible models with arbitrary variables to be imputed. Further, since theoretical and empirical results in the statistical literature imply that as much information as possible should be used to generate weights as well as imputations, the estimation procedures must be augmented, e.g., by additional techniques to prevent the estimation of the large models to abort due to high multicollinearity. Further, much more research is needed with respect to the consequences of misspecified models to generate weights and imputations.

However, the basic decision which was taken a quarter of a century ago to generate weights for the SOEP based on a sequence of detailed attrition analyses is again justified by the latest model-based research on weighting.

References

Galler, Heinz P. (1987)
Zur Längsschnittgewichtung des Sozio-ökonomischen Panels. In: Hans-Jürgen Krupp and Ute Hanefeld (eds.); *Analysen 1987.* Frankfurt/M. - New York, S. 295-317.

Horvitz, D.G. and Thompson, D.J. (1952)
A Generalization of Sampling without Replacement from a Finite Universe. *Journal of the American Statistical Association,* 47, 663-685.

Rendtel, Ulrich (1995)
Lebenslagen im Wandel: Panelausfälle und Panelrepräsentativität. Frankfurt.

Robins, James M., Rotnitzky, Andrea G. and Zhao, Lue P. (1994)
Estimation of Regression Coefficients when some Regressors are not always observed. *Journal of the American Statistical Association,* 89, 846-866.

Robins, James M., Rotnitzky, Andrea G. und Zhao, Lue P. (1995)
Analysis of Semiparametric Regression Models for Repeated Outcomes in the Presence of Missing Data. *Journal of the American Statistical Associatio*n 90, 106-121.

Rubin, Donald B. (1987)
Multiple Imputation for Nonresponse in Surveys. New York.

Rubin, Donald B. (1996)
Multiple Imputation After 18+ Years. *Journal of the American Statistical Association,* 91, 473-489.

Rubin, Donald B. (2003)
Discussion on Multiple Imputation. *International Statistical Review* 71, 619-625.

Särndal, Carl-E., Swensson, Bengt and Wretman, Jan (1992)
Model Assisted Survey Sampling. New York.

Spiess, Martin (2005)
Derivation of design weights: The case of the German Socio-Economic Panel (SOEP). *DIW Berlin Data Documentation 8.*

Spiess, Martin (2006)
Estimation of a Two-Equation Panel Model With Mixed Continuous and Ordered Categorical Outcomes and Missing Data. *Journal of the Royal Statistical Society: Series C* (Applied Statistics), 55, 525-538.

Wooldridge, Jeffrey M. (2002a)
Econometric Analysis of Cross Section and Panel Data. Cambridge, Massachusetts.

Wooldridge, Jeffrey M. (2002b)
Inverse Probability Weighted M-Estimators for Sample Selection, Attrition and Stratification. *Portugese Economic Journal* 1, 117-139.

Wooldridge, Jeffrey M. (2004)
Inverse probability weighted estimation for general missing data problems. CeMMAP Working Papers, CWP05/04.

5 The 2007 SOEP data release

by Jan Goebel, Peter Krause and Ingo Sieber

5.1 Documentation of changes over previous data releases

In 2007 the SOEP data was distributed on DVD for the first time. Due to the increased storage space and an update of the installation program, users can now change the language of the variable and value labels even in the course of the SOEP data installation.

In 2006, the SOEP microdata was expanded to include yet another sub-sample—refreshment sample H. These new survey households, which are representative for Germany as a whole, were also included in the weighting scheme. Intensive tests were conducted to determine how sample H can be further adapted to external information, including external data on neighborhoods for the gross sample.

A further important change is the introduction of a new survey instrument for first-time respondents who reached the age of 17 in the year 2006. These individuals now receive an expanded youth questionnaire that provides current information supplementing the biographical data already collected and rendering the previous individual questionnaire distributed to this group obsolete. This also means that the survey population for the standard individual questionnaire (stored in the files $P) changed slightly, and 17-year-olds have no longer been included in the $P-files since the survey year 2006. First-time surveying of sample H is an exception, because there, 17-year-olds were still surveyed using the standard individual questionnaire due to the usual postponement of the biographical survey into wave two of new subsamples.

This means that we now have two instruments instead of one to obtain data on respondents: the individual questionnaire and the youth questionnaire. To ensure consistent differentiation over time, it is therefore necessary to either include the youth population of the most current survey year 2006, or to increase the age limit for all previous survey years. As a consequence, we revised the $NETTO variables in the file PPFAD which indicate the respondent's survey status (now in a more comprehensive two-digit coding scheme) and introduced the wave-specific file $PAGE17.

- The connection between survey population and survey instrument can easily be retraced with the help of these revised $NETTO variables, which help to identify the change in the survey population as well as the expansion of the survey instrument to include detailed information on biographical contexts. To ease the transition to the new variable for "old friends" of SOEP, the recent one-digit variable is still provided as well under the variable name $NETOLD.

- From 2007 on, persons who have reached the age of their first individual SOEP interview (17 years) are not given the usual individual questionnaire but a special youth questionnaire. Wave-specific information not contained in the biographical data or in other generated datasets (such as $PGEN and HEALTH) is provided in the dataset $PAGE17. The youth questionnaire respondents are identifiable with the help of the new $NETTO code "17".

The educational variables in the generated datasets ($PGEN) have been revised: the integration of vocational qualifications obtained abroad has been improved, and the corresponding variables

have been subjected to extensive testing for consistency.

The variables contained in the file WPEQUIV (wave 2006) relating to previous year's income take into account the various structural changes in the tax and transfer system, using these as part of the basic informational framework for generating and simulating annual income, including taxes and social security contributions. Not only the changes in the 2005 tax rate (reduction of the top tax rate, personal exemptions) play an important role here but also the new guidelines contained in the Old Age Income Act (*Alterseinkünftegesetz*). The introduction of Unemployment Benefit II (*Arbeitslosengeld* II) also plays an important role, along with the extensive changes it entails for the transfer system (Social Security, Rent Subsidy, etc.). The generated information on (previous) year's income from SOEP survey year 2006 has thus been subjected to thorough testing for internal and external consistency. Up to the 2006 data release, the variable I11105$$ in $PEQUIV containing the fictitious income advantage from owner-occupied housing ("imputed rent") had been generated only for persons living in owner-occupied housing. In line with recent research findings as well as the European Commission's guidelines for the generation of imputed rent in EU-SILC, this important non-cash income component is now delivered for persons in rental households as well if those report paying below-market rent. These include households in rent-free housing, in socially subsidized housing, and in rental properties offered at a special rate (company dwellings, apartments provided by relatives at reduced rent, etc.).

To support variance estimation, the information on SOEP sample design previously compiled in the dataset VARIANZ (Spiess 2001) is now being disseminated in a revised and amended dataset DESIGN. Documentation can be found on our homepage and on the new DVD.

Starting in 2002, the SOEP health module in the individual questionnaire has been revised and put on a two-year replication period. In the HEALTH file, users find the newly generated SF-12 variables (measuring health related quality of life) as well as variables on height and weight with imputation flags and a user-friendly, longitudinally checked generated variable of the Body Mass Index (BMI). Complete documentation can be found on the SOEP homepage or on the new DVD.

The wealth data collected in 2002 were thoroughly revised and checked for inconsistencies. The data are now provided in two (multiply) imputed datasets at the individual and at the household level, together with corresponding flag variables for identification of the imputed values. The two datasets also each contain a generated variable on "net wealth" (see Frick, Grabka and Marcus 2007). In 2007, this wealth module was replicated, and longitudinal information is now available for the first time. However, the imputation of missing wealth information for 2007 is still underway and will not be available until 2009 due to complexity of the longitudinal imputation process and comprehensive consistency checks.

Starting in 2007, the interviewer dataset has been fully integrated into the standard data distribution under the name INTVIEW and is now provided in all statistical software formats supported by SOEP (SAS, SPSS, STATA).

Four new variables on pregnancy status have been generated, based essentially on the month of the interview from $P and the month and year of the child's birth, as well as the duration of pregnancy in weeks from the file BIOAGE01. Furthermore the beginning and end of pregnancy are now available as spell data. Analogously to BIOMARSM, for example, we start counting with month 1 (January 1983), such that December 2007 is month 300.

In the dataset $PGEN a variable for identification of job change was generated to supplement ERWTYP$$ (and eventually to replace it). The categories for this variable are independent of whether the information was obtained in a first-time or subsequent interview. For respondents to a subsequent interview, JOBCH$$ refers to job changes since the last interview and for first-time respondents, it refers to job changes since the beginning of the previous year. Respondents who started their first job and respondents who made a job change are reported separately. In contrast to ERWTYP$$, JOBCH$$ has been subjected to a check for longitudinal consistency. Cases showing inconsistencies—such as duplicate entries of the same job change in two subsequent interviews—have been corrected. The variable on firm tenure in $PGEN has also undergone tests for longitudinal consistency. Cases that proved longitudinally inconsistent were corrected. For more information please have a look at the $PGEN documentation file on the SOEP homepage.

In 2006, a separate survey was carried out in all households with twins. This twin survey had the goal of validating the data on all twins in SOEP and gaining new information. As a result, the following variables have been changed or added in the file BIOTWIN:

- The variable BIOMONOZ differentiates between identical and fraternal twins based on a question asked to first-time respondents. This information used to be obtained through a question asking whether the twins were of the same or different sexes. New codes have been introduced for the variable BIOMONOZ to reflect the improved information now available. The values are thus no longer compatible with those from prior to wave W contained in variable BIOMONOZ in the dataset BIOTWIN.

- The variable INFOTWIN has been introduced. This variable tells whether information on twins was given in the 2006 twin survey, whether the information was derived from previously existing SOEP data, and whether previously existing data on the twins coincides with the results of the twin survey.

Summing up, there is an increasing variety of types of data and datasets in the 2007 SOEP data release as shown below:

- Originally surveyed data obtained with the standard questionnaires is stored in the data files $P, $PKAL, $PBRUTTO, $KIND, $PAGE17 at the individual level and in the files $H, $HBRUTTO at household level.

- There is new data derived by non-standard means to improve the measurement of otherwise difficult-to-observe characteristics such as physical grip strength (see Hank et al., 2008), cognitive abilities (see Solga et al. 2005, Lang et al. 2005), personality traits (see Dehne and Schupp, 2007), and behavioral experiments (see Fehr et al., 2002, Dohmen et al., 2005). For a general overview of these developments see Wagner, Frick and Schupp (2007).

- User-friendly generated data is stored in the files $PGEN and $HGEN. The variables at the household level ($HGEN) focus on housing and household composition, whereas variables at the individual level include longitudinally consistent labor market information, education, and otherwise unavailable prestige scores; many of these variables are coded according to international standard schemes (e.g., NACE, ISCO, ISCED; CASMIN).

- Across various data files, there exist a set of pointer variables supporting links between partners and across generations. For example, the variable PARTNR$$ in data files $PGEN makes it possible to link married and unmarried partners, the variables VNR and MNR in the data file BIOPAREN provide pointers from adult respondents to their parents, and the variables $KMUTTI and $KMUP in the data file on children $KIND point to the mother and her partner, respectively.

- In order to provide a data structure supporting health-related panel analyses, the file HEALTH comes in *long* format, i.e., all relevant observations from the survey years 2002, 2004, and 2006 have been pooled.

- Comprehensive life course data (including spell-oriented data files) is derived from information collected by means of the biography and youth questionnaires. Time-dependent information (e.g., marital history, fertility, employment history) is being updated to the most recent individual interview and stored in a series of data files named BIO*, focusing on marital history, immigration, fertility, employment, etc. (see Frick, Lohmann and Groh-Samberg (eds.) 2008).

- Cross-nationally harmonized annual income data (including imputation in case of missing information due to item-non-response) is stored in the SOEP data files $PEQUIV and also provided as the German contribution to the Cross-National Equivalent File (CNEF, see section 6 below).

- Wealth information which was collected for the first time in 2002 at the individual level has been multiply imputed in case of missing data (item-non-response and partial unit-non-response) and is stored at the individual level in the file PWEALTH and in an aggregated version at the household level (in the file HWEALTH, see Frick, Grabka and Marcus, 2007).

- Geocoded data exists for various geographical aggregation levels, including official geographical units used by German administrative bodies, zip codes used by the postal service (Deutsche Post AG) to deliver mail to households in Germany (see Knies and Spieß 2007) as well as neighborhood information (see Goebel et al 2007).

- Quite extensive individual information has been collected by means of a special SOEP-style questionnaire given to the interviewers themselves, supporting better control of eventual interviewer-respondent effects. This data is stored in the file INTVIEW.

References

Dehne, Max and Schupp, Jürgen (2007)
Persönlichkeitsmerkmale im Sozio-oekonomischen Panel (SOEP): Konzept, Umsetzung und empirische Eigenschaften. *DIW Research Notes,* 26/2007.

Dohmen, Thomas; Falk, Armin; Huffman David; Sunde Uwe; Schupp, Jürgen und Wagner, Gert G. (2005)
Individual Risk Attitudes: New Evidence from a Large, Representative Experimentally-Validated Survey. DIW Berlin Discussion Paper 511.

Fehr, Ernst; Fischbacher, Urs, von Rosenbladt, Bernhard, Schupp, Jürgen and Wagner, Gert G. (2002)
A Nation-Wide Laboratory: Examining trust and trustworthiness by integrating behavioral experiments into representative surveys. *Schmollers Jahrbuch,* 122, 519-542,

Frick, Joachim R., Groh-Samberg, Olaf and Lohmann, Henning(Eds.) (2008)
Biography and Life History Data in the German Socio Economic Panel (Update to wave X, 2007), DIW Data Documentation 36, July 2008, Berlin: DIW Berlin.

Frick, Joachim R., Grabka, Markus M. and Marcus, Jan (2007)
Editing and Multiple Imputation of Item-Non-Response in the 2002 Wealth Module of the German Socio-Economic Panel (SOEP). SOEPpapers 18.

Goebel, Jan, Spieß, C. Katharina, Witte, Nils R. J., Gerstenberg, Susanne (2007)
Die Verknüpfung des SOEP mit MICROM-Indikatoren: Der MICROM-SOEP Datensatz. DIW Berlin Data Documentation 26.

Hank, Karsten, Jürges, Hendrik, Schupp, Jürgen und Wagner, Gert G. (2008)
Isometrische Greifkraft und sozialgerontologische Forschung: Ergebnisse und Analysepotentiale des SHARE und SOEP, *Zeitschrift für Gerontologie und Geriatrie,* Vol. 41 online first.

Knies, Gundi and Spiess, C. Katharina (2007)
Regional Data in the German Socio-Economic Panel Study (SOEP). DIW Berlin Data Documentation 17.

Lang, Frieder R. unter Mitwirkung von Dorothee Hahne, Stefanie Gymbel, Stefan Schröpper und Katharina Lutsch (2007)
Erfassung des kognitiven Leistungspotenzials und der „Big Five" mit Computer-Assisted-Personal-Interviewing (CAPI): Zur Reliabilität und Validität zweier ultrakurzer Tests und des BFI-S, DIW Research Note Nr. 9.

Nübling, Matthias, Andersen, Hanfried H., Mühlbacher, Axel (2006)
Entwicklung eines Verfahrens zur Berechnung der körperlichen und psychischen Summenskalen auf Basis der SOEP-Version des SF 12 (Algorithmus). DIW Berlin Data Documentation 16.

Schupp, Jürgen (2007)
Greifkraftmessung im Sozio-oekonomischen Panel (SOEP). DIW Berlin Data Documentation 23.

Solga, Heike; Stern, Elsbeth; Rosenbladt, Bernhard von; Schupp, Jürgen and Wagner, Gert G. (2005)
The Measurement and Importance of General Reasoning Potentials in Schools and Labor Markets: Pre-Test Report, DIW Berlin Research Note Nr. 10.

Spiess, Martin (2001)
Description of the variables: STRAT1, STRAT2 and SAMPOINT. Online document at **http://www.diw.de/english/soep/documentation/27921.html.**

Wagner, Gert G.; Frick, Joachim R. und Schupp, Jürgen (2007)
The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancement. In: *Schmollers Jahrbuch,*127, 139-169.

6 The German SOEP: An integral part of the international statistical infrastructure

by Joachim R. Frick and Markus M. Grabka

Over the years, the German SOEP has developed into one of the most important micro data sources for scientific research in the social sciences in Germany. Above and beyond this successful development at the national level, international scholars are showing an increasing interest in panel data on Germany for the purposes of cross-national research as well. In the attempt to identify best practise—not only within the framework of a growing European Union but internationally as well—cross-national research offers a powerful instrument to improve our understanding of human behaviour and its contribution to social change (taking account of institutional differences).

In general, cross-national analyses require databases with carefully harmonized information with equivalently defined variables that can be used to (a) effectively monitor (changes in) living conditions across time and space, (b) compare the performance across countries and representatives of different welfare regimes, (c) support the empirical evaluation of political actions (benchmarking) in order to provide input in the harmonization of (EU) social policies based on harmonized social statistics.

Thinking about dataset candidates that could be integrated into a cross-national database, one must consider that the duration of panels may vary with the analytical intentions and needs of data providers and users. The official statistical agencies (Eurostat and the national statistical agencies in the EU) have decided to discontinue the European Community Household Panel (ECHP) after eight waves in 2001 to be replaced by EU-SILC (EU Statistics on Income and Living Conditions) with a panel component of only four years (starting 2004). On the other hand, more research-driven panels such as the US PSID (started in 1968), the German SOEP (started in 1984), the UK BHPS (started in 1991), the Swiss SHP (started in 1999), and the Australian HILDA Survey (started in 2001 with funding currently secured for at least 12 waves) are ongoing, long-running panel studies eventually supporting the analysis of intergenerational issues (transmission) as well as "real" panel analysis on the basis of individual behavior over long periods of time, i.e., decades (making use of random-effects and fixed-effects models and controlling for unobserved heterogeneity).

Possible forms of harmonization differentiate between "input harmonization" and "ex-post harmonization." The first approach was chosen for the ECHP and is based on a kind of blueprint questionnaire to be centrally developed and then adapted to adequately capture national specificities. While this approach appears to be theoretically superior, the degree of centralization required from the very beginning may yield high transaction costs, which—together with the above-mentioned short-run focus of official statistics—can be seen as one of the reasons to terminate the ECHP. "Ex-post" harmonization of data from existing surveys, on the other hand, requires the definition of functional equivalents, which—given national specificities—may yield a loss of information due to aggregation at a higher level. However, there already exist various international standards which data from many national datasets can be transformed into without any major loss of accuracy: these include, e.g., the definition of (un-)employment according to the ILO, industry and occupation coding schemes such as NACE and ISCO, codes for regional identification (according to NUTS levels), education by ISCED and CASMIN, and last but not least, recommendations for the generation of comparable income concepts by the Canberra Group (2001). The harmonization of subjective variables with different coding schemes is certainly

more problematic in this respect. But with greater transparency, better documentation, and more flexibility in the harmonization process, even these obstacles can be overcome in the continued use of harmonized output in cross-national research. Burkhauser and Lillard (2005) discuss in more detail the successes and failures of efforts to create both ex ante and ex post harmonized data sets for cross-national research.

Based on these considerations, SOEP contributes to a range of cross-nationally harmonized databases. These include cross-sectional datasets such as the Luxembourg Income Study (LIS) and the Luxembourg Wealth Study (LWS) (**http://www.lisproject.org**), but more importantly, SOEP data contributes longitudinal microdata to the European Community Household Panel (ECHP) 1994-2001 directed by EUROSTAT (**http://circa.europa.eu/irc/dsis/echpanel/info/data/information.html**), to the Consortium of Household Panels for European Socio-economic Research (CHER) coordinated by CEPS/INSTEAD (www.ceps.lu), and to the Cross-National Equivalent File (CNEF) coordinated by researchers at the Cornell University, NY (**http://www.human.cornell.edu/che/PAM/Research/Centers-Programs/German-Panel/cnef.cfm**). In the following, two of the most important ongoing projects are described in more detail.

6.1 The Cross-National Equivalent File (CNEF)

The CNEF is an example of a long standing successful cooperation between different panel surveys around the world. At present the CNEF contains microdata from the US Panel Study of Income Dynamics (PSID), the German Socio-Economic Panel (SOEP), the British Household Panel Study (BHPS), the Household Income and Labour Dynamics in Australia Survey (HILDA), the Canadian Survey of Labour and Income Dynamics (SLID), and the Swiss Household Panel (SHP). The data are designed to support cross-national research by providing equivalently defined variables with a focus on income information, together with data on employment, demographics, and household structure. In recent years, health has become more important as well. In order to support analyses on the redistributive effect of taxes, public transfers, and social security schemes, the CNEF provides constructed variables such as total household pre- or post-government income, which are not directly available from the original surveys.

The provision of harmonized variables across countries requires a distinct alignment between the various surveys, which is hampered by the fact that the original surveys are generally not conducted to support cross-nationally harmonized data but to cover country-specific issues. Consequently, ex-post harmonization is required. A typical example is total household labor income, which is provided as an annual figure in the CNEF. The panel studies involved in the CNEF collect this information in the respective national context, which means that in the US, annual income figures are surveyed directly, in Germany, monthly incomes and one-time payments are generally surveyed separately. In the case of the BHPS, different periods are surveyed (per week, per fortnight, per four weeks, per calendar month or other durations), and in case of HILDA income is collected for the financial year instead of the calendar year. Any deviation from the final outcome measure in the CNEF thus needs to be investigated carefully before starting a harmonization process on the original information. The research-driven cooperation among the various panel studies within the CNEF significantly facilitates the harmonization of a range of constructed data, while still keeping in mind the potential methodological problems this entails (see, e.g., Frick and Grabka, 2007 on the relevance to harmonize the imputation procedures across countries as well).

A specific advantage of the CNEF is that it contains the identifiers from the original surveys at the individual and household levels. Thus, merging CNEF and the original data is an easy task that allows researchers to incorporate these constructed variables into their analyses based on the original data. Since the CNEF includes a range of constructed variables not directly available in the original surveys (e.g., the estimated household tax burden), it is a good example of how harmonized data reduces the burden each individual cross-national researcher may face. Furthermore it ensures that various scholars working on the same substantive question are able to do their comparative research on the basis of comparable data—provided by a group of researchers with longstanding experience in the production of harmonized micro data and a comprehensive understanding of the national specificities in the underlying micro-data and relevant institutional arrangements. Further details on the CNEF and the participating partners are given in Frick, Jenkins, Lillard, Lipps, and Wooden (2007).

An overview of the variables provided by the CNEF is given in Table 6.1 below.

6.2 The Luxembourg Income and Wealth Studies (LIS and LWS)

Currently providing income data for four survey years (for the years 1984, 1989, 1994, 2000) and the fifth under preparation, the SOEP has a long tradition of representing Germany in the Luxembourg Income Study (LIS). The LWS-SOEP cooperation yet gives another prime example of a successful research-driven data production project yielding the provision of cross-nationally harmonized wealth information (see Frick, Grabka, and Sierminska 2007). In December 2007, a new database containing harmonized wealth microdata was released by the Luxembourg Income Study (LIS) for public use, namely the Luxembourg Wealth Study (LWS). The first release of LWS contains thirteen datasets from ten countries including data for Germany based on the SOEP wealth module 2002, including multiple imputations in case of missing data (due to nonresponse). Future extensions of LWS may also cover the replication of this wealth module in 2007.

The aim of LWS is to foster novel cross-national comparative research and new insights into the measure of household net worth, portfolio compositions, and wealth distributions. As with all other contributions of the SOEP to the international data infrastructure, the hope is that this collaboration will enhance opportunities for scholarly exchange and development of better and more standardized cross-national research.

References

Burkhauser, Richard V. and Lillard, Dean R. (2005)
The Contribution and Potential of Data Harmonization for Cross-National Comparative Research, *Journal of Comparative Policy Research* 7, 313-330.

Canberra Group (2001)
Expert Group on Household Income Statistics: Final Report and Recommendations, Ottawa.

Frick, Joachim R., Jenkins, Stephen P., Lillard, Dean R., Lipps, Oliver and Wooden, Mark (2007)
The Cross-National Equivalent File (CNEF) and its Member Country Household Panel Studies. Schmollers Jahrbuch, 127, 627-654.

Frick, Joachim R., Grabka, Markus M. and Sierminska, Eva (2007)
Representative wealth data for Germany: The impact of methodological decisions around imputation and the choice of the aggregation unit.
SOEPpapers on Multidisciplinary Panel Data Research at DIW Berlin, No. 3, February 2007, Berlin: DIW Berlin.

Frick, Joachim R. and Grabka, Markus M. (2007)
Item-Non-response and Imputation of Annual Labor Income in Panel Surveys from „Cross National Perspective, SOEPpapers, No. 49/2007, Berlin: DIW Berlin.

Lillard, Dean R. with the assistance of Grabka, Markus M. and Freidin, Simon (2007)
Codebook for the Cross-National Equivalent File 1980-2005; BHPS – GSOEP - HILDA – PSID – SLID. Cornell University, Ithaca / New York (USA). **http://www.human.cornell.edu/che/PAM/Research/Centers-Programs/German-Panel/cnef.cfm**

Table 6.1

Variables included in the Cross-National Equivalent File 1980-2005

Label	Data	Variable name
Demographics:		
Age of Individual	B, G, H, P, S, CH	D11101_xxxx
Sex of Individual	B, G, H, P, S, CH	D11102LL
Marital Status of Individual	B, G, H, P, S, CH	D11104_xxxx
Relationship to Household Head	B, G, H, P, S, CH	D11105_xxxx
Number of Persons in Household	B, G, H, P, S, CH	D11106_xxxx
Number of Children in Household	B, G, H, P, S, CH	D11107_xxxx
Education With Respect to High School	G, H, P, S, CH	D11108_xxxx
Number of Years of Education	G, H, P, S, CH	D11109_xxxx
Race of Individual[a]	B, P, S	D11112LL
Employment:		
Annual Work Hours of Individual	B, G, H, P, S, CH	E11101_xxxx
Impute Annual Work Hours of Individual	B, CH	E11201_xxxx
Employment Status of Individual	B, G, H, P, S, CH	E11102_xxxx
Employment Level of Individual	B, G, H, P, S, CH	E11103_xxxx
Primary Activity of Individual	B, G, P, S, CH	E11104_xxxx
Occupation of Individual	B, G, H, P, S, CH	E11105_xxxx
1 Digit Industry Code of Individual	B, G, H, P, S, CH	E11106_xxxx
2 Digit Industry Code of Individual	B, G, H, P, S, CH	E11107_xxxx
Equivalence scale inputs:		
Number HH members age 0-14	B, G, H, P, S, CH	H11101_xxxx
Number HH members age 15-18	B, G, H, P, S, CH	H11102_xxxx
Number HH members age 0-1	B, G, H, P, S, CH	H11103_xxxx
Number HH members age 2-4	B, G, H, P, S, CH	H11104_xxxx
Number HH members age 5-7	B, G, H, P, S, CH	H11105_xxxx
Number HH members age 8-10	B, G, H, P, S, CH	H11106_xxxx
Number HH members age 11-12	B, G, H, P, S, CH	H11107_xxxx
Number HH members age 13-15	B, G, H, P, S, CH	H11108_xxxx
Number HH members age 16-18	B, G, H, P, S, CH	H11109_xxxx
Number HH members age 19+ or 16-18 and indep.	B, G, H, P, S, CH	H11110_xxxx
Indicator - Wife/spouse in HH	B, G, H, P, S, CH	H11112_xxxx
Yearly Income:		
Household Pre-Government Income	B, G, H, P, S, CH	I11101_xxxx
Household Post-Government Income	B, G, H, P, S, CH	I11102_xxxx
Household Labor Income	B, G, H, P, S, CH	I11103_xxxx
Household Asset Income	B, G, H, P, S, CH	I11104_xxxx
Household Imputed Rental Value	B, G, H, P, S, CH	I11105_xxxx
Household Private Transfers	B, G, H, P, S, CH	I11106_xxxx
Household Public Transfers	B, G, H, P, S, CH	I11107_xxxx
Household Social Security Pensions	B, G, P, S, CH	I11108_xxxx
Total Household Taxes	B, G, H, P, S, CH	I11109_xxxx
Individual Labor Earnings	B, G, H, P, S, CH	I11110_xxxx
Household Federal Taxes	G, P	I11111_xxxx
Household Social Security Taxes	B, G, P, CH	I11112_xxxx

Label	Data	Variable name
Household Post-Government Income (TAXSIM)	P	I11113_xxxx
Total Household Taxes (TAXSIM)	P	I11114_xxxx
Household State Taxes (TAXSIM)	P	I11115_xxxx
Household Federal Taxes (TAXSIM)	P	I11116_xxxx
Household Private Retirement Income	B, G, H, P, S	I11117_xxxx
Household Windfall Income	B, G, H, P, S, CH	I11118_xxxx
Impute Household Pre-Government Income	B, G, H, CH	I11201_xxxx
Impute Household Post-Government Income	B, G, H, CH	I11202_xxxx
Impute Household Labor Income	B, G, H, CH	I11203_xxxx
Impute Household Asset Income	B, G, H, CH	I11204_xxxx
Impute Household Imputed Rental Value	B, G, CH	I11205_xxxx
Impute Household Private Transfers	B, G, H, CH	I11206_xxxx
Impute Household Public Transfers	B, G, CH	I11207_xxxx
Impute Household Social Security Pensions	B, G, CH	I11208_xxxx
Impute Total Household Taxes	G, H, CH	I11209_xxxx
Impute Individual Labor Earnings	B, G, H, CH	I11210_xxxx
Impute Private Retirement Income	B, G, H	I11217_xxxx
Location:		
Area of Residence[b]	B, G, P, S, CH	L11101_xxxx
Region of Residence[1]	B, G, H, CH	L11102_xxxx
Medical/health:		
Whether spent night in hospital in last year	B, G, P, CH	M11101_xxxx
Number of nights (days) spent in hospital	B, G, P, CH	M11102_xxxx
Whether had accident in past year that required hospital	B, G, CH	M11103_xxxx
Frequency of sports or exercise	B, G, P, CH	M11104_xxxx
Have had stroke	B, P	M11105_xxxx
Have or had high blood pressure/hypertension	B, P	M11106_xxxx
Have or had diabetes	B, P	M11107_xxxx
Have or had cancer	B, P	M11108_xxxx
Have or had psychiatric problems	B, P	M11109_xxxx
Have or had arthritis	B, P	M11110_xxxx
Have or had angina or heart condition	B, P	M11111_xxxx
Have or had asthma or breathing difficulties	B, P	M11112_xxxx
Have trouble climbing stairs	B, G, P	M11113_xxxx
Have trouble with bath	B, P	M11114_xxxx
Have trouble dressing	B, G, P	M11115_xxxx
Have trouble getting out of bed	B, G, P	M11116_xxxx
Have trouble shopping	G, P	M11117_xxxx
Have trouble walking	B, P	M11118_xxxx
Have trouble doing housework	B, G, P	M11119_xxxx
Have trouble bending, lifting, stooping	B, P	M11120_xxxx
Health limits vigorous physical activities	B, P	M11121_xxxx
Height (in meters)	G, P, CH	M11122_xxxx
Weight (in kilos)	G, P, CH	M11123_xxxx
Disability Status of Individual	B, G, H, P, S	M11124_xxxx
Subjective Satisfaction with Health	B, G, H, S, CH	M11125_xxxx
Self-Rated Health Status	B, G, H, P, CH	M11126_xxxx

Label	Data	Variable name
Number of Times Visited Dr. in Past Year	G, CH	M11127_xxxx
Weights:		
Cross-sectional Weight - Respondent Individuals	B, G, H, P, S, CH	W11101_xxxx
Household Weight	B, G, H, P, S, CH	W11102_xxxx
Longitudinal Weight - Respondent Individuals	B, G, H, P, S, CH	W11103_xxxx
Population Factor for W11101_xxxx	B, G, P	W11104_xxxx
Individual Weight - Immigrant Sample	G	W11105_xxxx
Household Weight - Immigrant Sample	G	W11106_xxxx
Cross-sectional Weight - Enumerated Individuals	B, H	W11107_xxxx
Longitudinal Weight - Enumerated Individuals	B, H	W11108_xxxx
Population Factor for W11103_xxxx	B, G, P	W11109_xxxx
Population Factor for W11107_xxxx	B	W11110_xxxx
Population Factor for W11108_xxxx	B	W11111_xxxx
Equivalence Weight Algorithms		
Detailed Official U.S. Equivalence Weight		
General Official U.S. Equivalence Weight		
Official German Equivalence Weight		
ELES Equivalence Weight		
OECD Equivalence Weight		
McClements Equivalence Weight		
Other Equivalence Weights		
Identifiers:		
Unique Person Number	B, G, H, P, S, CH	X11101LL
Household Identification Number	B, G, H, P, S, CH	X11102_xxxx
Individual in Household at Survey	B, G, H, P, S	X11103_xxxx
Oversample Identifier	B, G, P, S	X11104LL
Person in Household Interviewed	B, G, H, CH	X11105_xxxx
Macro-level Variables:[c]		
Consumer Price Index	B, G, P, S	
Median Pre-government Household Income	B, G, P, S	
Median Post-government Household Income	B, G, P, S	
Purchasing Power Parity for East Germany	G	

(B) BHPS: 1991 2004 Survey Years

(G) GSOEP: 1984 2005 Survey Years

(H) HILDA: 2001-2004 Survey Years

(P) PSID: 1980 2003 Survey Years

(S) SLID: 1992 2003 Reference Years

(CH) SHP: 1999 2005 Survey Years

a Race in the BHPS and SLID is reported for all sample members. In the PSID, race is coded for any sample member who has ever been a household head or wife.

b Area of residence is the Local Authority District of Residence in the BHPS, the Bundesland in the GSOEP, the US state in the PSID, the Kanton in the SHP. The province of residence is not on the CNEF SLID files on the CD but are available from the CNEF SLID files at Statistics Canada. Local Authority District of Residence data for the BHPS is available by special arrangement with the University of Essex.

c Because macro-level variables do not vary across individuals or households, they are only listed in the codebooks for reference purposes.

7 Outlook

by Joachim R. Frick

Since the Desktop Companion (DTC), edited by John P. Haisken-DeNew and Joachim R. Frick, is still the most important general as well as detailed introduction to the SOEP, users should always consult DTC as well as the "FAQ" section on the SOEP homepage as well as the SOEPnewsletter for information on recent changes and additions.

The SOEP is a "living" database, not only collecting data for new waves but also continuously being improved and expanded to better capture the human life course by making use of new instruments, new questions, and new research foci. The SOEP study is able to take its external users' interests into consideration through the ongoing interaction of SOEP staff members with the user community at workshops, conferences and meetings such as the regular SOEP Young Scholar Symposium at the Bremen International Graduate School of Social Sciences (BIGSSS http://www.bigsss-bremen.de/) and the bi-annual International SOEP User Conferences, the next one being SOEP2010. Last but not least, SOEP internships and research stays at DIW Berlin allow guests the opportunity to present their ongoing work in the SOEP brownbag seminar series and also help to build strong personal relationships between SOEP staff and SOEP users.

This technical appendix will be updated regularly with each release of SOEP data to document changes. The SOEPnewsletter will alert users and all interested parties of new and updated documentation that will also be provided via the SOEPhomepage. An extra-ordinarily powerful example of such user support features is PanelWhiz (http://www.panelwhiz.eu/), a collection of Stata/SE® Add-On scripts that make using panel data sets easier, which has been developed by our former SOEP colleague John P. Haisken-DeNew (now at RWI Essen).

As such, be prepared for upcoming information about the production of more user-friendly variables and datasets (e.g., the file COGNIT06 to be distributed in 2008 will include information on cognitive abilities collected from CAPI interviewees), about the development and provision of improved imputation to cope with (selective) item-non-response (e.g., in 2008 we will distribute multiply imputed monthly net household incomes) and weighting procedures, as well as about the ongoing restructuring process of the SOEP database from a more cross-sectional or "wide" format into a "long" format. The general conversion to a long-format data structure will yield a major step forward to even more effectively exploit the panel nature of the underlying micro data (see SOEPnewsletter No. 80).

GLOSSARY

Absolute poverty

Confusingly, absolute poverty has two meanings in social science research. In this report absolute poverty means lacking the basics: food, clothing and shelter. However, sometimes fixed or 'anchored' poverty lines, like the American 'adequate diet' poverty line, are referred to as absolute poverty lines. They are absolute rather than 'relative' (see below for 'relative poverty') in the sense that they are not adjusted upwards as mainstream living standards rise.

Body-Mass Index (BMI) & obesity

The standard way to measure whether individuals are overweight is to calculate their body-mass index (BMI). BMI is calculated as weight in kilograms divided by height in meters squared (w/h^2). A BMI under 18.5 is considered underweight, between 18.5 and 24.9 is within the normal range, 25.0 to 29.9 is overweight, 30.0 to 34.9 is obese, 35.0 to 39.9 is very obese, and 40 and over is classified as morbidly obese.

Equivalised income

The purpose of constructing measures of equivalised income is to get a measure of material standard of living which adjusts for differences in household size. The most obvious adjustment would be household income per head, but this would make no allowance for economies of scale in larger household. Equivalised income is defined as household disposable income (i.e. income after taxes and transfers; pensions and benefits) divided by an equivalence scale (see below) based on household size. Normally, all individuals in a household are given the same equivalised income; the assumption being that income is shared, so that everyone's standard of living is the same.

Equivalence scale

An equivalence scale is used to calculate equivalised income. In this report we have used the OECD equivalence scale, which allows 1.0 for the first adult in the household, 0.5 for other adults, and 0.3 for children under 15. So a household of two adults and two children would have an equivalence score of 2.1 (1.0 + 0.5 + 0.3 + 0.3). Equivalised income is calculated by dividing household disposable income (income after taxes and transfers) by the equivalence score for the household.

Fertility intentions

Fertility intentions relate to the number of children one wishes to have, the gender balance (for example, one boy and one girl) and the gender sequence (for example, a boy followed by a girl). Demographers are acutely interested in fertility intentions as one factor determining likely future population levels.

Gender pay gap

The gender pay gap is the gap in earnings between women and men. It is usually calculated by dividing mean (or median) women's earnings by men's and expressing the result as a percentage. Analysis is often restricted to women and men who are full-time employees, omitting part-timers and the self-employed.

Human capital and returns to human capital

Human capital is a central concept in economics. It refers to skills and attributes ('endowments') which individuals have, which may affect their earnings or other aspects of job performance. Human capital is usually assessed by measuring formal educational attainment and work experience, but can also be directly measured by tests of skills (e.g. literacy and numeracy skills). 'Returns to human capital' are usually assessed by examining the relationship between earnings and measures of human capital (e.g. years of formal education). In this context, education is treated as an investment which an individual (or perhaps his/her employer) makes in earning capacity.

Household disposable (net) income

Household disposable income is the combined income of all household members after receipt of public transfers (Government pensions and benefits) and deduction of taxes. It could also be termed 'household post-government income' (see later entry).

Household expenditures and consumption

Households spend money on both non-durable and durable goods and services. Non-durables – goods consumed fairly soon after purchase – include such items as groceries, fuel and holiday expenditures. Durables, by contrast, may be 'consumed' over long periods of time. Durables include housing, cars and white goods. In measuring non-durable expenditure during a particular time period, the market price is all we need to know. In the case of durables, it is necessary to *estimate* a use value or rental value if no market rental value is immediately available. For example, in the case of homeowner housing, an imputed rent may be estimated which is conceived of as the rent the property would attract if it were rented out.

Household gross income

The combined cash income of all household members from all sources: labour income, asset income, private transfers and public transfers (Government pensions and benefits).

Household pre-government income

Household pre-government income means all income derived from market sources (labour income, asset income, private superannuation etc), plus inter-household gifts and bequests. The only income sources omitted here are Government benefits and taxes.

Household labour income

Household labour income is the sum of the wage, salary and self-employment earnings of all household members.

Income mobility

Income mobility is the extent to which incomes change *relative to each other*.

How many people—and with what characteristics—are moving up the income distribution, and what kinds of people are moving down the distribution?

Jobless households

In this report, a jobless household is defined as one in which no household member did 52 or more hours of work (one hour per week) in the previous calendar year.

Personality traits

Psychologists think of personality traits as relatively stable dispositions which influence a person's behaviour in a wide range of situations. It is thought that personality is quite stable in adulthood, especially from age 30 onwards. There is a semi-consensus in psychology that the 'Big Five' personality traits, measured in SOEP in 2005, capture most of what is known about adult personality. The 'Big Five' traits are NEO-AC: neuroticism, extroversion, openness to experience, agreeableness and conscientiousness.

Relative income poverty

A person or a household is in relative income poverty if they are unable to afford the goods and services needed to enjoy a normal or mainstream lifestyle in the country in which they live. Two different relative income poverty lines are used in this report. One defines individuals as poor if their equivalised household income is less than 50% of median equivalised income. The second relative poverty line uses a cut-off of 60% of median household income.

Social capital

Most measures of social capital are essentially measures of social networks, although measures of neighbourhood quality and safety are sometimes also included. One's social networks range from intimate attachments to spouse and family, through friendship and social support networks, to acquaintances (including neighbours) whom one may be able to rely on for relatively minor assistance.

Well-being

Well-being can be defined in many ways, but most observers treat it as at least partly a subjective, psychological concept. Two psychological variables central to the concept of well-being are 'life satisfaction' and 'stress'.

Impressum

German Socio-Economic Panel Study | SOEP
DIW Berlin
Mohrenstr. 58
10117 Berlin
Germany

Phone +49-30-897 89-283
Fax +49-30-897 89-109

Director:
Gert G. Wagner

Editors:
Bruce Headey and Elke Holst

Technical Office: Michaela Engelmann