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## DISCUSSION PAPER SERIES

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# ABSTRACT

# Shocked by Therapy? Unemployment in the First Years of the Socio-Economic Transition in Poland and its Long-Term Consequences[1]

We examine long-term implications of unemployment for material conditions and well-being using the Polish sample from the Survey of Health, Ageing and Retirement in Europe (SHARE). Retrospective data from the SHARELIFE survey are used to reconstruct labour market experiences across the threshold of the socio-economic transformation from a centrally planned to a free market economy in Poland. These individual experiences are matched with outcomes observed in the survey about 20 years later to examine their correlation with unemployment at the time of the transition. We find that becoming unemployed in the early 1990s correlates significantly with income, assets and a number of measures of well-being recorded in 2007 and 2012. Using plant closures to reflect exogenous changes to labour market status at the time of the transition, we are able to confirm the causal effect of unemployment on income and house ownership 20 years later, but find no evidence for a long-term causal relationship between unemployment and such measures of well-being as life satisfaction, depression and subjective assessment of material conditions.

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**1. Introduction**

Almost 30 years after the political breakthrough of 1989 and a major socio-economic transformation that took place in Poland and the region of Central and Eastern Europe in the early 1990s, little is known about the long-term consequences of individual experiences at the time of the transition. Overall, and in particular relative to many neighbouring countries, the Polish transition with its 'shock therapy' approach to economic policy has been seen as a success story. In 2015 Poland's real GDP per capita was more than double the level in the late 1980s and the unemployment rate in recent years has been measured in single digits. However, while the majority of the population managed to avoid significant economic difficulties, many families experienced the painful hardship of the transition period expressed in job losses, poverty and exclusion.

Deterioration in the standard of living of these families did clearly follow the implementation of the reforms, but the nature of causality between the reforms themselves, as well as the pace of market liberalisation, and the observed negative welfare outcomes is complex. The process of reform cannot be lived through again and we shall never know how socio-economic conditions in Poland would have looked under numerous alternative reform scenarios or under continued central planning. Therefore a purely causal approach to the relationship between overall developments in the early 1990s and later individual outcomes is impossible. Our objective in this paper is more modest. Treating the reforms as a major exogenous shock, we focus on the relationship between the experience of unemployment in the early years of the transition and a number of welfare outcomes observed about 20 years later. Therefore we do not provide an overall assessment of the implications of the reform package on welfare, but more specifically we look at the experience of unemployment that followed market liberalisation. We argue that by differentiating between the reasons behind unemployment, we are able to identify its causal effects on some long-term outcomes. At the same time, we demonstrate that the observed strong correlation between unemployment in the initial years of the transition and a number of subjective welfare measures is endogenous and may reflect unobservable individual characteristics. This endogeneity may be important in evaluating the implications of the overall reform package.

In the analysis we use individual-level data from the Polish part of the Survey of Health, Ageing and Retirement in Europe (SHARE; see, for example: Börsch-Supan and Jürges, 2005; Börsch-Supan *et al*., 2008, 2013; Börsch-Supan, 2017a, 2017c). SHARE is a multidisciplinary panel survey focusing on individuals aged 50 years and over. It covers such aspects of life as health, economic conditions,

labour market activity and social networks. We use retrospective data on the Polish SHARE respondents collected in the SHARELIFE survey in 2008–09 (see: Börsch-Supan *et al*., 2013; Börsch-Supan, 2017b) and match detailed labour market histories, which identify transition-related job losses, with current information on several measures of material conditions and well-being.

There are many studies in the literature on developments in the Polish labour market during the early 1990s (for example: Boeri and Keese, 1992; Góra, 1995, 1996; Hagemejer, 1996; Svejnar, 1999). There is also literature that examines broad welfare outcomes in the transition countries after implementation of the reforms (for example: Guriev and Zhuravskaya, 2009). However, to our knowledge there are no quantitative studies at the individual level analysing labour dynamics in Poland, or other countries of the region, across the transition threshold, and no studies that would link these experiences with later outcomes. By taking advantage of a unique data source, we thus shed new light on the nature of the Polish transition and provide the first evidence on its long-term implications at the individual level. We find that the experience of unemployment in the early years of the transition significantly correlates with material conditions and well-being about two decades later. By using plant closures to reflect exogenous job separations, we confirm the causal effect of unemployment on income and house ownership, but find no causal implications for the subjective welfare measures we use in the analysis. The estimates suggest that losing a job between 1989 and 1991 leads to a 30 percent long-term reduction in total household income and reduces the probability of house ownership by about 10 percentage points.

We begin in Section 2 with a brief outline of the Polish economic transition, focusing particularly on the early years of the economic recession and restructuring. In Section 3 we examine individual experiences during the transition and show how we can identify labour market shocks from the retrospective data collected in the third wave of the SHARE survey – SHARELIFE. In Section 4 we propose a model to analyse the relationship between job separations at the time of the economic transformation and respondents' later life outcomes. Results of the estimations are presented in Section 5, which is followed by our conclusions in Section 6.

## 2. The Polish economic transition and labour market dynamics

The policies of the 'shock therapy' implemented by Leszek Balcerowicz, the Finance Minister of the first post-communist government, were introduced with the primary objective to address the massive macroeconomic disequilibrium with currency inconvertibility, an anti-service sector bias and

extensive price controls combined with highly expansionary macroeconomic policies (Balcerowicz, 1992; Berg and Sachs, 1992; Gotz-Kozierkiewicz and Kołodko, 1992; Kołodko, 1993; Berg and Blanchard, 1994; Rosati, 1994). As in other countries of the region, the macroeconomic policy package had to go in parallel with substantial changes on the labour market. As argued in Góra (1996), the conditions on the labour market before and after 1990 are essentially incomparable. Unemployment became part of the official reality, and the structure of the economy had to be adjusted in the new environment, with major implications for employment in a number of sectors of the economy (Boeri and Keese, 1992; Jackman and Rutkowski, 1994; Svejnar, 1999). Excess demand for labour and overemployment were quickly replaced by excess supply.

The Polish economy suffered a significant reduction in output during the initial years of the transition and registered unemployment grew rapidly from the official 0 percent under central planning to over 16 percent in 1993 (see Figure 1). The rise in unemployment figures reflected a wave of job losses in response to falling demand and adjustments of labour hoarding (Góra, 1993, 1995). At the same time, there were substantial inflows into the labour force of the formerly inactive population who registered to claim the new unemployment benefits.[2] While the economy recovered relatively quickly – GDP was back at the pre-transition level already in 1995 – high unemployment became a long-term feature of the Polish economy, and only in 2008 briefly fell below the 10 percent level (see Figure 1).

**Figure 1. GDP and registered unemployment in Poland between 1988 and 2013**
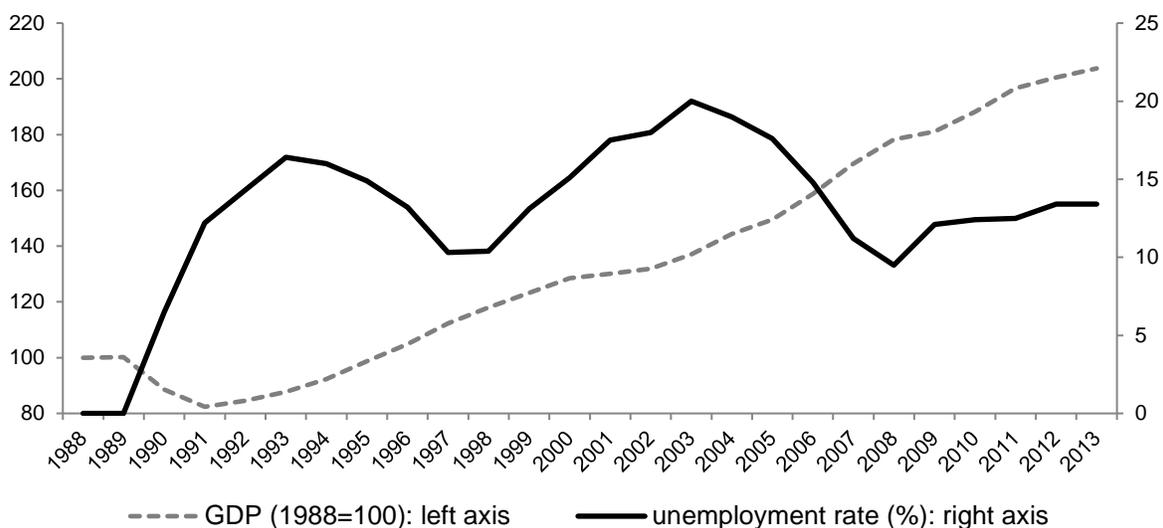


*Source*: GUS (Central Statistical Office), 2014.

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[2] Some estimates put the extent of the inflow into the labour force at over 60 percent of the overall number of the newly unemployed between 1989 and 1991 (Góra, 1996). Such inflows can also be observed in the SHARELIFE data.

Job losses in Poland in the 1990s have been primarily linked to the economic inefficiency of the old regime, with a high proportion of the labour force employed in agriculture and heavy industry, generally low levels of productivity, and the policy of 'full employment' which resulted in labour hoarding. Changes in the structure of the economy, reorientation of trade away from the Soviet bloc countries, and rapid privatisation have all contributed to plant closures and high numbers of layoffs. Naturally, not all job separations resulted in unemployment. Many older individuals took advantage of newly introduced liberal regulations on accessibility to disability and early-retirement pensions, which provided a long-term financial shelter.[3] Inability to take advantage of these paths out of the labour market, in combination with increasingly strict rules on eligibility for unemployment benefits and a very limited safety net outside of the social insurance system, has put the unemployed in a strongly disadvantaged position.

## 3. Using SHARE data to examine employment histories and current outcomes

### 3.1 Structure of SHARE data

Our analysis is based on individual-level data from the Survey of Health, Ageing and Retirement in Europe. SHARE is an international multidisciplinary panel survey of individuals aged 50+ combining information on the socio-economic situation with details on health and social relations (see, for example: Börsch-Supan and Jürges, 2005; Malter and Börsch-Supan, 2013, 2015; Börsch-Supan *et al.*, 2013, 2015; Chłoń-Domińczak, 2014). The interviews are conducted with the same respondents at biennial intervals and in 2017 the seventh wave of SHARE was completed in 26 European countries and Israel. Poland joined SHARE in its second wave, in 2006–07, and has also participated in waves 3, 4, 6 and 7. Crucially from the point of view of this paper, wave 3 of the survey, which was conducted in 2008–09, collected retrospective information in the so-called SHARELIFE interview (Schröder, 2011; Börsch-Supan *et al.*, 2013). This life-history survey covered such areas as family and marital history, residential mobility over the lifetime and health history. It also recorded very detailed labour market history including individual job spells and changes in labour market status as well as several main characteristics of all declared jobs and gaps between them. Although retrospective information is an imperfect substitute for contemporaneous data collected over the lifetime, the quality and usefulness of SHARELIFE data have been reflected in a number of

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[3] Three times more disability and early-retirement pensions were granted in the first two years of the 1990s than in the whole decade of the 1980s (Hagemejer, 1996).

publications (for example: Börsch-Supan *et al*., 2011; Attanasio *et al*., 2014; Kesternich *et al*., 2014) and there is evidence from this and other surveys on reliability of retrospective data in particular with respect to important major life events (for example: Beckett *et al*., 2001; Smith and Thomas, 2003; Havari and Mazzonna, 2011). Moreover, while the degree of detail collected in a retrospective survey on each particular period is relatively low, an important advantage of this type of information is that life histories generated on the basis of it do not suffer from panel attrition and can be matched with outcomes that are measured significantly later.

In this paper we combine the SHARELIFE data with information collected in two regular waves of the survey on the same respondents to link individual experiences from the time of the 'shock therapy' with outcomes observed in 2006–07 (wave 2) and 2012 (wave 4). In particular, we examine the relationship between labour market experiences at the time of the transition and current material circumstances and measures of well-being. By using the SHARELIFE data, we can delineate specific individual labour market histories, and use them to build annual retrospective panel data sets on employment patterns. Brugiavini *et al*. (2013) use these data to construct the SHARE Job Episodes Panel (see also Antonova *et al*., 2014a, 2014b) and we use the basic structure of this data set in our analysis, although we work from raw data in order to capture more detailed histories of each respondent in a given year of his or her life to ensure smoother continuity of working-life histories.[4]

### *3.2 Life histories in the Polish SHARELIFE data*

The Polish SHARE sample from wave 3 consists of 1,939 observations; of these, we have complete and consistent labour market history information for 1,815 individuals (794 men and 1,021 women).[5] Since we examine the consequences of job separations at the time of the transition, the final sample used for the analysis of the consequences of unemployment is narrowed down to individuals who were employed in 1988 and for whom the full set of variables used in the estimations is available. This gives us 1,320 observations in wave 3, which for the purpose of the analysis can be matched to

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[4] Given the focus on unemployment in our analysis, compared with the Job Episodes Panel (Antonova *et al*., 2014a, 2014b) we adopt a different approach to unemployment spells in order to recover information on long- and short-term unemployment interruptions between jobs in two consecutive years. In addition, while the Job Episodes Panel supplements information available in SHARELIFE with information collected in regular waves on events such as timing of retirement, we build the entire labour market histories on the basis of SHARELIFE data to ensure consistency and year-to-year continuity.

[5] We additionally limit the analysis to individuals born before 1957 since, to qualify for the SHARE sample in wave 2, respondents had to be at least 50 years old in 2006. There were 46 exceptions to this since partners of SHARE respondents could be younger than 50 at the time of the survey.

1,145 observations in wave 2 and 1,091 observations in wave 4. The panel data set constructed in this fashion is summarised schematically in Figure 2. The common set of individuals observed in all three waves is 916 (437 men and 479 women) and for these individuals two points of observation for the dependent and contemporaneous variables are available for our analysis.

**Figure 2. Structure of the panel sample used in the analysis**
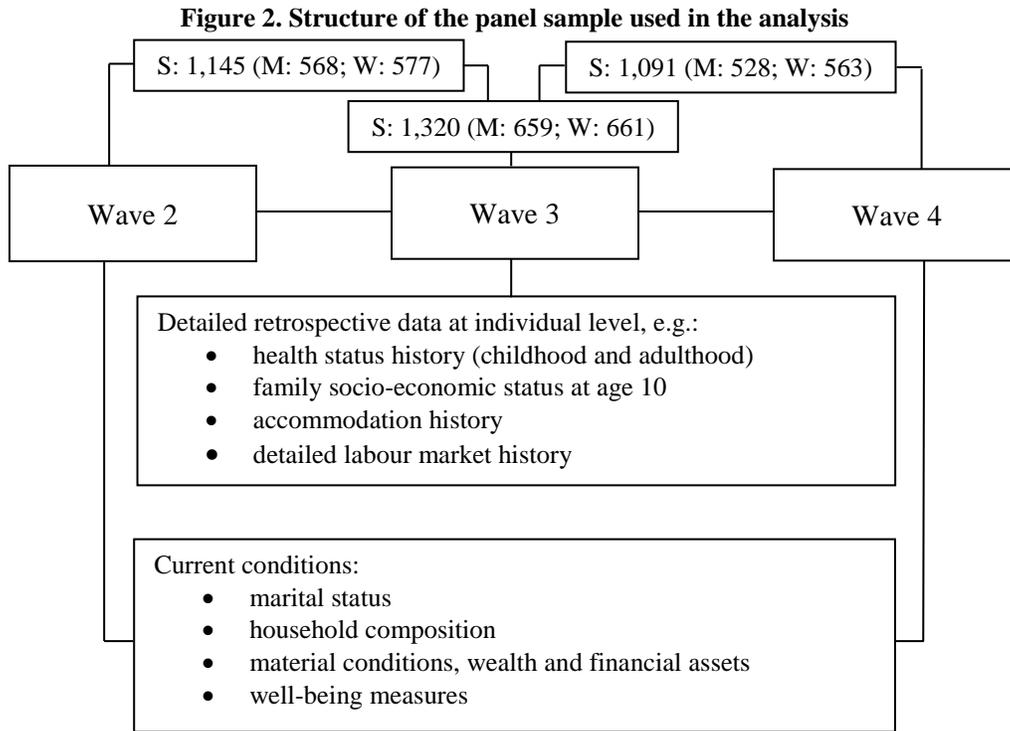


*Notes*: Sample sizes (either in wave 3 or in two consecutive waves, 2–3 or 3–4) refer to the sample used for final analysis: S – total sample (M – men, W – women).

Although the wave 3 SHARELIFE interview was conducted only in households that had earlier participated in wave 2 (the first round of interviews in Poland), there are people who participated in wave 3 and not in wave 2. This is a result of the fact that, as partners of main respondents in the household, they refused to participate in wave 2 but were still eligible for interview in wave 3. It is possible therefore for someone to be in the sample in waves 3 and 4 but not in wave 2. Naturally – due to panel attrition – it is also the case that some individuals who participated in waves 2 and 3 did not take part in wave 4.

*Source*: Authors' compilation using SHARE data waves 2–4.

The basic sample statistics for the analysis sample, which constitutes about 70 percent of the full sample from wave 3, are given in Table 1. In the sample we distinguish three cohorts born respectively before 1938, between 1938 and 1947, and after 1947. Since sample selection is conditional on working in 1988, the average age at the time of wave 3 is only 62 years, with about 51 percent of the respondents born after 1947. The SHARELIFE data we use in the analysis include detailed information on respondents' childhood conditions and life events. For example 2.4 percent of the respondents declared having poor health as children, and 8.3 percent reported multiple hospital stays in childhood. Almost 70 percent declared that their parents or guardians owned their dwelling when

they were 10 years old, but only 4 percent lived in accommodation with at least one room per household member at that age. Although the average number of years of education is about 13, a very high proportion of the sample – about 80 percent – lived in households with only one shelf of books at home or less, an indicator often used in the literature as a proxy for socio-economic background (for example, Brunello *et al*., 2017). Conditions recorded in the data for 1988 – the base year for our unemployment analysis – suggest that about 45 percent lived in rural areas and almost one-third were employed in agriculture. On average, the respondents gained about 22 years of labour market experience up to 1988. Of those working in 1988, 2.9 percent became unemployed between 1989 and 1991 and 3.3 percent experienced unemployment for the first time between 1992 and 1995. Looking at reasons for these job losses, in the first case we find that about 60 percent became unemployed as a result of plant or office closures (1.8 percent of the sample),[6] while in the later period most job losses (2.0 percent of the sample) were for other reasons, such as layoffs and resignation. Overall, respondents spent on average 4.5 percent of the time between 1988 and 2008 (or between 1988 and retirement year if they retired before 2008) in unemployment.[7]

Before turning to analyse the implications of unemployment during the transition for later life outcomes, we first use the SHARELIFE sample to illustrate how the data can be used to construct labour market histories. The average labour market profile is presented for men and women respectively in Figures 3a and 3b.[8] The employment rate for men grows up to about the age of 35, following which there is an increase in the proportion of respondents who become disabled and unemployed, with some moving to retirement as early as at the age of 40. The proportion of Polish male retirees begins to grow rapidly beyond about age 55, reflecting the take-up of early retirement.[9] The highest level of unemployment is found for men in the age bracket between about 45 and 55. For women we find a significant proportion of homemakers, in particular among women aged up to about 35. We also see a rapid increase in the proportion of retired women as early as at the age of about 50.

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[6] Below when we use the term 'plant closures' we refer to the broader phenomenon of plant and office closures on which information is collected in the SHARE data.

[7] The natural concern with regard to panel data is the degree of attrition between consecutive waves of the survey. According to the official release data, sample retention in Poland was relatively high: 70 percent of wave 2 respondents took part in the SHARE interview in wave 3, and 82 percent of wave 3 respondents participated in the survey in wave 4. Overall sample retention statistics, including the so-called end-of -life interviews with relatives of respondents who died between the waves, are slightly higher (respectively 74 percent and 87 percent).

[8] For this descriptive analysis we use the information on the 1,815 individuals for whom we have complete and consistent employment histories across their lifetime. This is about 94 percent of the full Polish sample collected in wave 3.

[9] In the 1980s and 1990s the statutory retirement age in Poland was 60 years for women and 65 years for men.

The proportion of declared unemployment is highest for women in their late 40s. At the age of 70, 82 percent of men and 64 percent of women declare that they are retired.

**Table 1. Sample statistics: the SHARELIFE sample in Poland**

|  | Mean | SD |
|---|---|---|
| Female | 0.501 | (0.500) |
| Age (years) | 62.32 | (8.161) |
| Cohort 1: born before 1938 | 0.161 | (0.367) |
| Cohort 2: born 1938–47 | 0.329 | (0.470) |
| Cohort 3: born after 1947 | 0.510 | (0.500) |
| Years of education | 12.85 | (3.475) |
| *Childhood circumstances at age 10* | | |
| Poor self-reported health | 0.024 | (0.154) |
| Recurrent hospital stays | 0.083 | (0.275) |
| Few books at home | 0.786 | (0.410) |
| <1 room per person in the household | 0.958 | (0.200) |
| Parents owned the dwelling | 0.691 | (0.462) |
| *Information collected for 1988* | | |
| Lived in rural area | 0.452 | (0.498) |
| Employment sector: agriculture | 0.288 | (0.453) |
| Employment sector: industry | 0.352 | (0.478) |
| Employment sector: services | 0.360 | (0.480) |
| Self-employed | 0.218 | (0.413) |
| Labour market experience up to 1988 (years) | 21.67 | (8.946) |
| Serious disabilities or illnesses up to 1988 | 0.092 | (0.289) |
| *Transition period* | | |
| Unemployed in 1989–91 | 0.029 | (0.167) |
| - because plant/office closed | 0.018 | (0.134) |
| - other reason | 0.011 | (0.102) |
| Unemployed first time in 1992–95 | 0.033 | (0.180) |
| - because plant/office closed | 0.013 | (0.113) |
| - other reason | 0.020 | (0.142) |
| Unemployment ratio 1988–2008/retirement | 0.045 | (0.152) |
| Number of observations | 1,320 | |

*Notes*: Sample restricted to respondents who declared working in 1988 in wave 3 with valid information in wave 2 and/or wave 4. 1,939 individuals took part in wave 3 in Poland; for 1,815 of these we have consistent information on employment status throughout life. Out of the latter, 1,413 individuals declared working in 1988 and 402 declared other labour market statuses. Among those 1,413 working respondents, 1,377 also took part in wave 2 or 4 or both of them and 1,320 had valid information on all outcomes from wave 2 or 4 analysed in this paper.
*Source*: SHARELIFE wave 3 data, release 6.0.0.

**Figure 3. Labour market status and age for men and women**



a) Men  b) Women
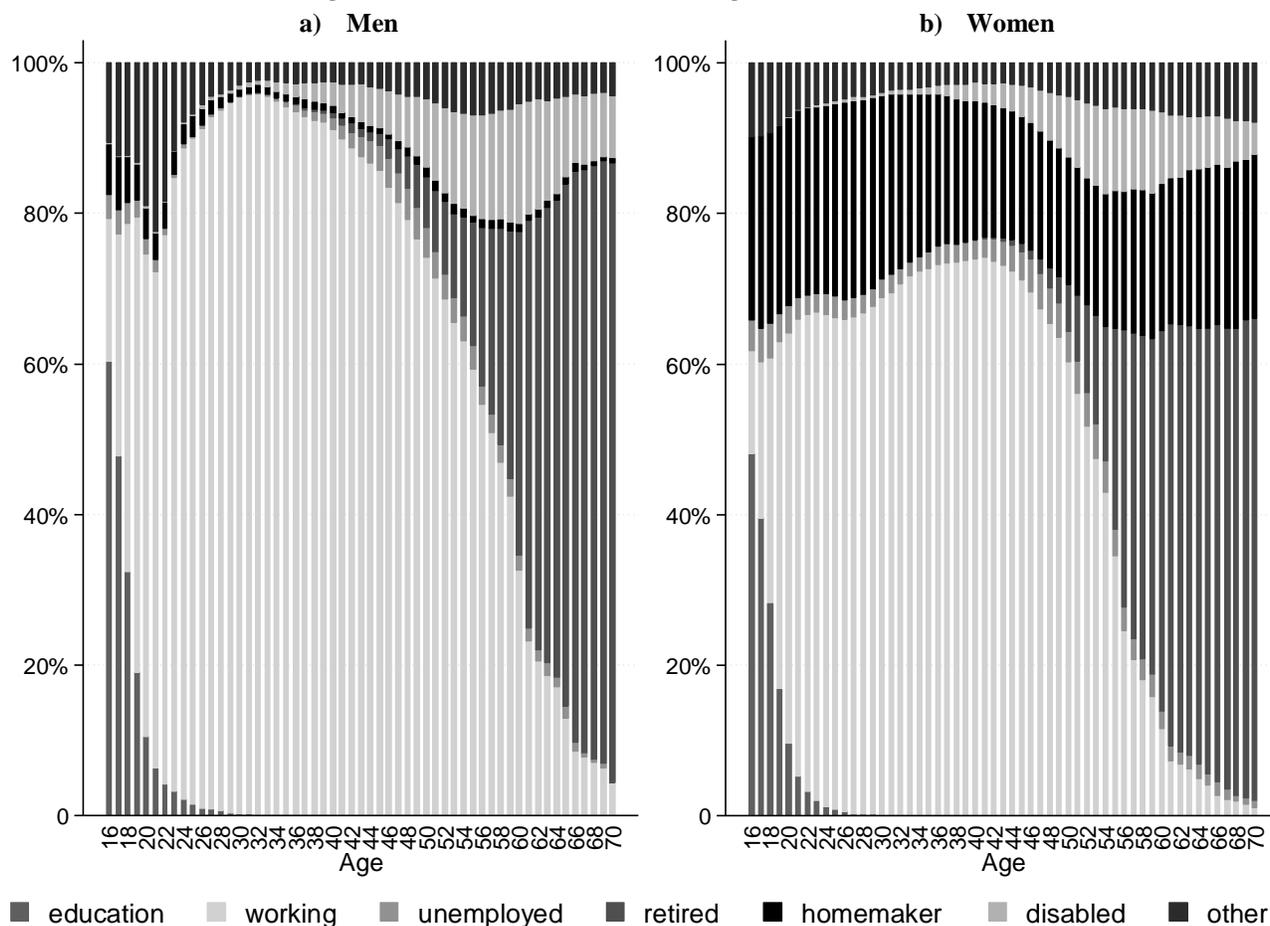
Legend: ■ education  □ working  ■ unemployed  ■ retired  ■ homemaker  ■ disabled  ■ other

*Notes*: Weighted with SHARE wave 3 individual weights. 'Other' includes the following categories: short-term jobs (less than 6 months), leisure, travelling or doing nothing, training, military services (excluding professional army employment), war prisoner or equivalent, managing own assets, voluntary or community work, forced labour or in jail, exiled or banished, labour camp, concentration camp, and other. Sample restricted to individuals with non-missing information on employment status.
*Sample size*: All – 1,815; men – 794; women – 1,021.
*Source*: Authors' calculations based on SHARELIFE wave 3 data, release 6.0.0.

Figures 4 and 5 present labour market profiles for the final estimation sample, using only those who declared being employed in 1988. In these figures we plot the relationship between labour market status and time all the way up to 2008 and separate the graphs by gender and cohort. For men and women in the oldest cohort – those born before 1938 – we find very rapid growth in the proportion of retired respondents after 1988. By 1992 only 51 percent of men and 41 percent of women are still employed from among those working in 1988. Moving to disability is most often observed among those from the middle cohort and this way out of the labour market is especially common among men in the early 2000s. Unemployment, on the other hand, is most visible among the youngest cohort – the proportion of unemployed among those born after 1947 grows rapidly in the early 1990s and then

stabilises at about 6–8 percent for men and 7–10 percent for women all the way up to 2008. The figures thus suggest that those who were at most 42 years old at the time the transition started were affected most strongly by the experience of unemployment after 1988. Older respondents could fall back on other labour market exit options such as retirement or disability. Interestingly, by 2008 employment rates for the youngest cohort look very much like those for the oldest cohort in 1992 – with about 53 percent of men and 41 percent of women still in employment. This is quite striking given that in 2008 individuals from the youngest cohort were at most 60 years old, and it reflects the very high degree of inactivity among older groups of the Polish population in the first two decades following the transition.

**Figure 4. Labour market status between 1988 and 2008 for men working in 1988, by cohort in Poland**
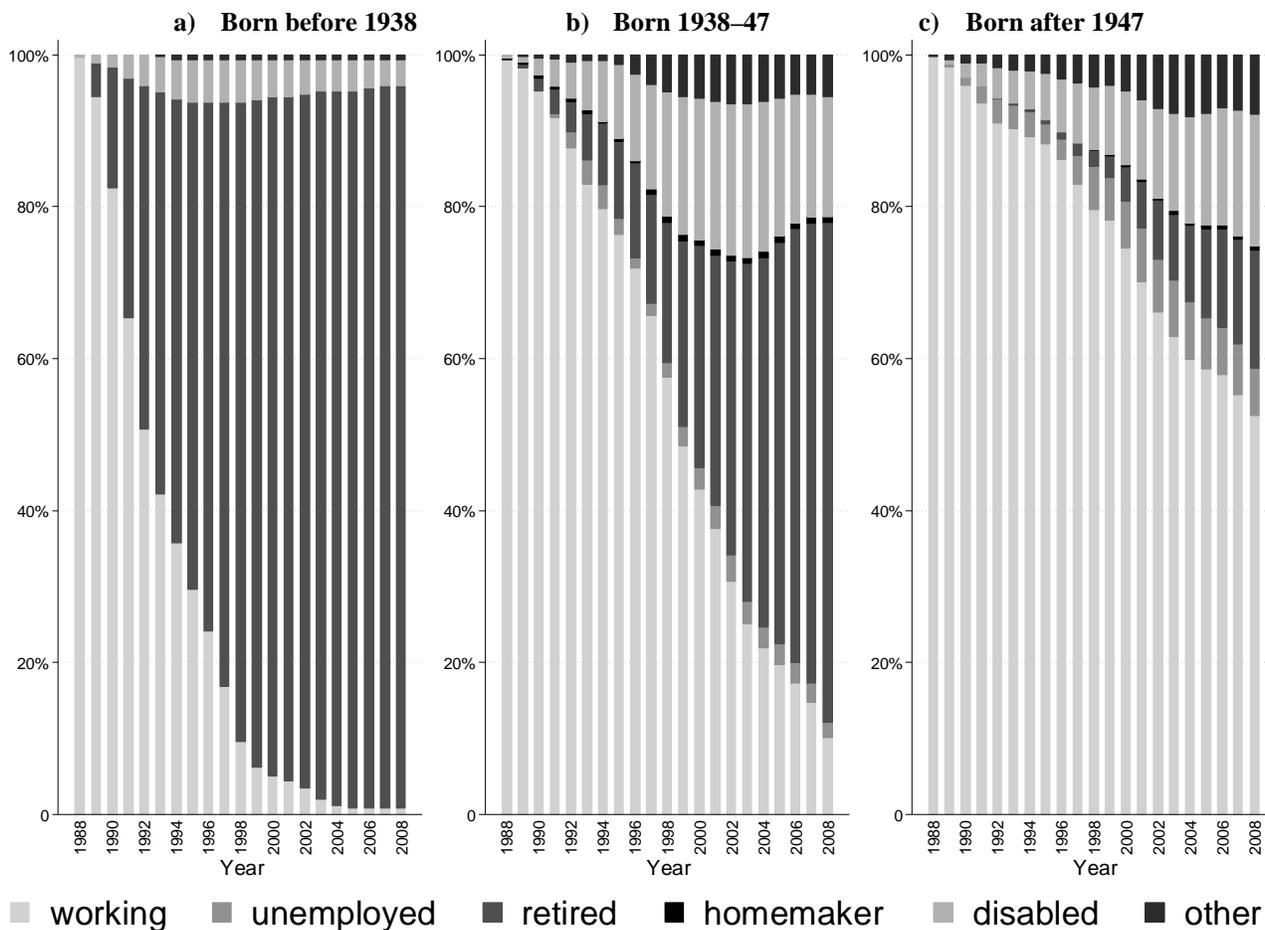


*Notes and source*: See Figure 3. Apart from the categories mentioned in the notes to Figure 3, 'other' here also includes full-time education. Sample restricted to individuals who declared working in 1988 in wave 3 (including those who worked only part of 1988) with valid information in wave 2 and/or wave 4.

*Sample size*: All – 659; born before 1938 – 129; born 1938–47 – 226; born after 1947 – 304.

**Figure 5. Labour market status between 1988 and 2008 for women working in 1988, by cohort in Poland**

| a) Born before 1938 | b) Born 1938–47 | c) Born after 1947 |



working ▪ unemployed ▪ retired ▪ homemaker ▪ disabled ▪ other
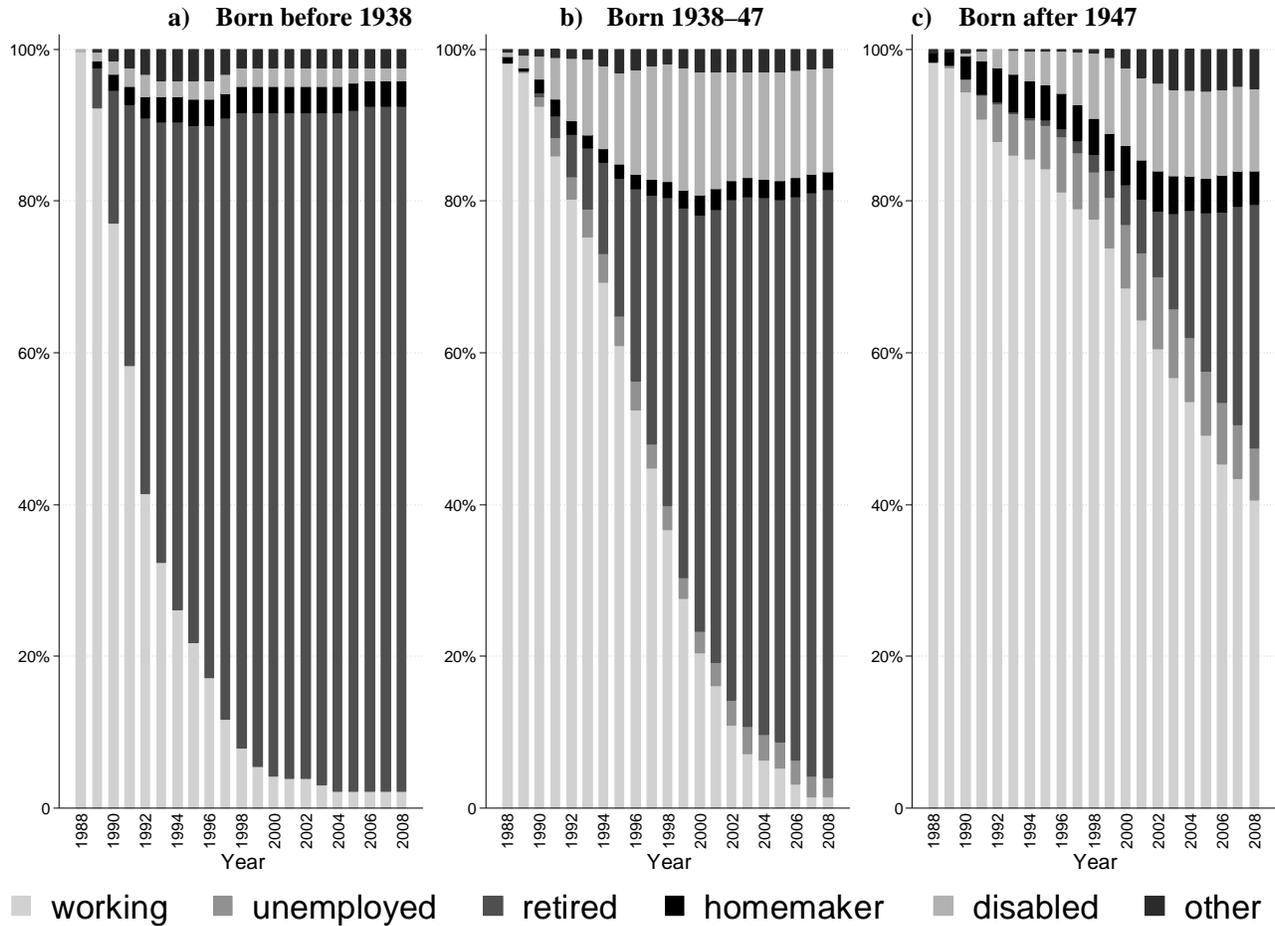
*Notes and source*: See Figure 4.
*Sample size*: All – 661; born before 1938 – 83; born 1938–47 – 208; born after 1947 – 370.

### 3.3 Current material conditions and well-being of individuals

Our analysis focuses on two groups of outcomes measured at the time of waves 2 and 4. On the one hand we examine several objective dimensions of material conditions, and on the other we look at a set of general, subjective indicators of well-being. The first group of variables includes (with names of variables used in the tables given in inverted commas):

- total current household income ('HH income');
- an indicator of house ownership ('House ownership');
- total value of household real assets ('HH real assets').

In each of the two waves of SHARE (2 and 4) the respondents were asked whether they owned their place of residence and additionally a series of questions with regard to the value of their real assets.

The interview also covered questions on household incomes, including a question on the total overall income of the household.[10]

For subjective well-being measures, we use the data to construct four binary indicators:

- having great difficulties in making ends meet ('Great difficulties in MEM');
- high level of quality of life ('Quality of life');
- high level of life satisfaction ('Life satisfaction');
- symptoms of depression ('Depression').

The subjective indicator of poor material conditions uses the lowest category of the question on the ability of the household 'to make ends meet' (easily, fairly easily, with some difficulty, or with great difficulty). The binary indicator is coded as 1 if people make ends meet (MEM) with great difficulty and 0 otherwise.

The indicator for high quality of life is based on the CASP scale, which is composed of 12 questions focusing on four areas of well-being (Control, Autonomy, Self-realisation and Pleasure), with answers coded from 1 to 4 (see Appendix A for details). The individual result is calculated as a simple sum-score for each question; thus the scale ranges between 12 and 48 points. Following von dem Knesebeck *et al.* (2005), we choose a cut-off point for our binary variable at 35, with lower scores indicating low quality of life.

Overall life satisfaction is measured in SHARE on a scale of 0–10. In deciding on a cut-off point for the binary indicator in this case, we follow the distribution of the sample obtained with the CASP-based quality-of-life indicator, which divides the sample into roughly 60:40 proportions. Using this approach, the indicator of high life satisfaction takes the value 1 for values of overall life satisfaction higher than 6 and zero otherwise.[11]

The last indicator of general well-being is a measure reflecting symptoms of depression assessed with the EURO-D scale. The scale records answers to 12 questions on symptoms of depression such as 'Have you had trouble sleeping recently?' or 'In the last month, have you cried at all?' (see Appendix

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[10] In the case of the two monetary variables (household real assets and income) item non-response has been addressed through variable imputations that are provided in the SHARE data (De Luca, 2017). Estimates for these two outcome variables use multiple imputations and take advantage of multiple imputations routines for STATA (StataCorp, 2013). Monetary values from wave 2 were indexed to 2012 by CPI (20.51 percent).

[11] For discussion on the implications of different cut-off points, see van Beuningen *et al.* (2014), where results using 5- and 11-point scales to measure life satisfaction and different cut-off points are compared.

B for details), with the usual cut-off for identification of depression at 4 out of the 12 items (Prince *et al*., 1999; Castro-Costa *et al*., 2007). Using this cut-off, we create a binary variable to indicate those suffering from depressive symptoms.

Summary statistics for all the outcome variables for waves 2 and 4 are provided in Table 2. Nearly 80 percent and 90 percent of the respondents respectively in waves 2 and 4 own their dwelling, and we see significant improvements in their material situation between the two waves with both real incomes and the value of total real assets significantly higher in the latter wave. We also find a positive pattern with regard to the subjective measures of welfare. The proportion of respondents reporting great difficulties in making ends meet fell from 27 percent to 19 percent, while the proportion rating their life satisfaction as 7 or more on the 0–10 scale grew from 56 percent to over 70 percent. There is also a noticeable drop in the level of depression as measured by the EURO-D scale, with the proportion of respondents with four or more symptoms of depression falling from 44 percent to 38 percent. Quality of life as measured by CASP, on the other hand, went up only slightly – with the proportion qualifying as having a high quality of life growing from 57 percent to 59 percent. Overall therefore the picture in terms of changes in the analysed outcomes between the two waves is positive both with regard to the objective material conditions and as concerns the subjective measures, with the latter to some extent probably driven by the first.

**Table 2. Sample statistics: material conditions and well-being outcomes in waves 2 and 4 in Poland**

|  | Wave 2 (2006–07) | | Wave 4 (2012) | |
| --- | --- | --- | --- | --- |
|  | **Mean** | **SD** | **Mean** | **SD** |
| *Objective material conditions* | | | | |
| HH income (annual, PLN, 2012 value) | 43,896 | (60,562) | 65,718 | (94,317) |
| House ownership | 0.787 | (0.410) | 0.900 | (0.300) |
| HH real assets (PLN, 2012 value) | 160,000 | (228,000) | 182,000 | (211,000) |
| *Subjective well-being measures* | | | | |
| Great difficulties in MEM | 0.266 | (0.442) | 0.189 | (0.392) |
| Quality of life (35+ CASP) | 0.565 | (0.496) | 0.594 | (0.491) |
| Life satisfaction (7+) | 0.555 | (0.497) | 0.721 | (0.449) |
| Depression (4+ on EURO-D) | 0.444 | (0.497) | 0.377 | (0.485) |
| Number of observations | 1,145 | | 1,091 | |

**Notes:** Sample restricted to respondents who declared working in 1988 in wave 3 with valid information in waves 2 and/or 4.
**Source:** SHARE wave 2 and wave 4 data, release 6.0.0.

## 4. Analysing long-term consequences of economic shocks

There is a growing body of literature showing the significance of major events experienced by individuals in the past for their current socio-economic outcomes in different historical contexts (for example: Cavapozzi *et al.*, 2011; Deindl, 2012; Attanasio *et al.*, 2014; Kesternich *et al.*, 2014). In Section 3 we showed how SHARELIFE data can be used to examine the dynamics of the labour market in Poland at the time of the economic transition. Below we use this information to examine the relationship between the experience of unemployment in the early 1990s and the outcomes discussed above which were observed about two decades later. Our analysis builds on a linear model in which an outcome of individual $i$ at the time of wave $w$, as expressed in $y_{i,w}$, is the following function of current and past characteristics:

$$y_{i,w} = \beta_1' X_{i,w} + \beta_2' Z_i + \beta_3 w + \gamma' u_i + \varepsilon_{i,w} + \mu_i. \tag{1}$$

In equation (1) $X_{i,w}$ are characteristics of individual $i$ at the time of wave $w$ (such as age or marital status), $Z_i$ are individual characteristics that are time invariant from the point of view of wave $w$, such as education, childhood conditions and parental background, and $u_i$ is the individual-level indicator (or a vector of indicators) of the experience of unemployment at the time of the transition.[12] $\varepsilon_{i,w}$ is an individual, wave-specific random term, while $\mu_i$ is the individual unobserved fixed effect. As we noted earlier, the analysis is conducted on a sample of individuals who were employed in 1988, before the transition started.

From the point of view of unemployment controls, we estimate several specifications. The baseline approach uses a general unemployment dummy for the experience of unemployment between 1989 and 1991 or two separate indicators for the periods 1989–91 and 1992–95. Under the assumptions that $\varepsilon_{i,w}$ is a random iid term and $\mu_i$ is uncorrelated with unemployment at the time of transition $u_i$ (conditional on $X_{i,w}$ and $Z_i$), this would result in unbiased estimates of the coefficients of interest, $\gamma'$, reflecting the causal effect of unemployment on the analysed outcome $y_{i,w}$. The interpretation of these coefficients will crucially depend on the degree of (conditional) exogeneity of the unemployment measures and thus on the independence of job separations with respect to unobservable characteristics. We need to note, though, that the role of the latter may be limited if we can control for a substantial set of relevant fixed effects through $Z_i$, which could guarantee conditional exogeneity. Given the nature of the Polish transition in the early 1990s, one could argue that in the

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[12] The extended list of conditioning variables used in the regressions is presented in Appendix C.

case of exits from employment in the first years of the transition $u_i$ can be assumed to be exogenous. Unemployment was driven initially to a large extent by changes in monetary policy and trade reorientation and resulted from demand shocks which affected entire enterprises and sectors, with mass layoffs common. On the other hand, since firing poor-quality employees was impossible under the old regime, it might be argued that once labour market legislation was liberalised, employers would take the opportunity and immediately lay off the least-productive workers whom they had long wished to fire. In such a case the layoff would coincide with the transition but could hardly be argued as being independent of employees' individual characteristics. As mentioned above, some of these individual fixed effects can be controlled in SHARE through a complex set of background variables from SHARELIFE data such as respondents' childhood conditions and parental background as well as health and labour market experience prior to 1988. By the standards of common labour market analysis, this is a very extensive set of characteristics and should control for a significant part of the usually unobservable individual fixed effect. As we demonstrate in the analysis, though, for most of our results, and in particular for all of the subjective measures, conditional exogeneity of the general unemployment measure cannot be guaranteed.

This feature is illustrated by the second, more detailed approach to controlling for unemployment, where we disaggregate the general measure of job separations by the reasons behind them into two categories: plant/office closures and others. As in the baseline approach, for each of the outcomes we again estimate two specifications to control for becoming unemployed between 1989 and 1991 and in the two periods 1989–91 and 1992–95. As we can see from Table 1, over 60 percent of job separations in the first period and 40 percent in the second resulted from plant/office closures. In this case it seems reasonable to assume the exogenous nature of $u_i$, which allows us to draw causal inferences for the relationship between the experience of unemployment and the analysed outcomes.

Since for the outcomes and some conditioning variables we use data from two waves of SHARE, the models are estimated using panel estimation methods. For continuous dependent variables, namely income and assets, we apply the random effects model, while for all other outcomes, which are binary, we use the random effects logit model.

**5. Results: unemployment in the 1990s and outcomes two decades later**

*5.1 Unemployment experience and objective measures of material conditions*

In Table 3 we present results of regressions for the three objective measures of material conditions measured in waves 2 and 4 of SHARE: income, house ownership and value of real assets. In the first and last case the estimations have been conducted using the linear random effects panel specification, while in the case of house ownership we use the random effects logit model.[13] Each of the outcomes is regressed on the general measure of unemployment experienced either in the first three years of the transition (1989–91; columns 1, 3 and 5) or in the initial years and between 1992 and 1995 (columns 2, 4 and 6). In both specifications the unemployment dummies take value 1 only in the case when the unemployment experience in the given period was the first unemployment experience since 1988. Thus, for example, those who lost their jobs in 1990 and were continuously unemployed throughout until 1995 will have the dummy variable for 1992–95 coded as 0. The unemployment dummies therefore reflect the first time that respondents experienced unemployment after the start of the transition. All other forms of non-employment have been classified in a single category ('Other non-employed') and are defined in a corresponding fashion. This means that the reference category for our coefficients of interest is the group of individuals continuously employed from 1988 through to 1995.

Additionally we control for an extended list of variables listed in the table notes, with more details given in Appendix C. In Table 3 we provide the estimates of marginal effects on cohorts, years of education, labour market experience up to 1988 and the wave 4 dummy.[14] The estimates show that the number of years of education has a positive, though relatively small, effect on all three measures of material conditions and that there is a noticeable improvement in material well-being between 2007 and 2012 as reflected by the wave 4 dummy. An extra year of schooling increases the household income by about 2 percentage points and the probability of house ownership by about 1 percentage point. What is somewhat surprising is that none of the measures is correlated with the number of years of labour market experience prior to 1988. This may be because under the centrally planned

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[13] The income and assets equations use the multiple imputations (MI) specification of the random effects model. The linear version of the probability model in the case of house ownership results in nearly identical estimates.

[14] Full results tables are available from the authors on request.

economy there was little variation in labour market experience between individuals, especially once we control for time and education.

**Table 3. Unemployment and objective material conditions in later life**

| Dependent variable: | Log HH income | | House ownership | | HH real assets (PLN) | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Unemployed in 1989–91 | –0.291*** | –0.297*** | –0.097** | –0.102*** | –63,756.80** | –69,496.47** |
| | (0.107) | (0.107) | (0.038) | (0.038) | (32,271.08) | (32,303.46) |
| Unemployed in 1992–95 | | 0.036 | | –0.104*** | | –62,305.45** |
| | | (0.100) | | (0.036) | | (29,142.43) |
| Other non-employed[a] in 1989–91 | –0.001 | –0.045 | 0.019 | 0.016 | –1,379.42 | –14,777.87 |
| | (0.064) | (0.067) | (0.030) | (0.031) | (20,300.61) | (21,783.68) |
| Other non-employed[a] in 1992–95 | | –0.113** | | 0.003 | | –30,079.59* |
| | | (0.054) | | (0.025) | | (18,257.14) |
| Cohort 2: born 1938–47[b] | –0.107 | –0.121 | –0.067** | –0.065* | –11,905.21 | –15,892.39 |
| | (0.095) | (0.095) | (0.033) | (0.034) | (27,364.37) | (27,377.99) |
| Cohort 3: born after 1947[b] | –0.041 | –0.057 | –0.087* | –0.081 | 736.37 | –2,955.19 |
| | (0.139) | (0.139) | (0.050) | (0.050) | (38,916.15) | (38,969.10) |
| Years of education | 0.015** | 0.014** | 0.008*** | 0.008*** | 4,616.84** | 4,324.87* |
| | (0.006) | (0.006) | (0.003) | (0.003) | (2,187.00) | (2,235.14) |
| Wave 4 | 0.302*** | 0.296*** | 0.109*** | 0.110*** | 22,172.21 | 21,293.97 |
| | (0.055) | (0.055) | (0.019) | (0.019) | (13,622.23) | (13,619.03) |
| Labour market experience up to 1988 (years) | 0.003 | 0.004 | –0.001 | –0.001 | 223.43 | 294.00 |
| | (0.004) | (0.004) | (0.002) | (0.002) | (1,109.29) | (1,103.60) |
| Estimation method | MI RE | MI RE | RE-logit | RE-logit | MI RE | MI RE |
| Mean value of outcome variable | 10.44 (log PLN) | | 0.842 | | 171,000 (PLN) | |

[a] 'Other non-employed' captures all states of inactivity on the labour market other than unemployment, such as retirement, disability and homemaking.

[b] Reference cohort: born before 1938.

*Notes*: Results presented as marginal effects, with standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Age controlled through a polynomial of power 3. Additional controls: gender, regional dummies, industry in 1988, severe disabilities or illnesses up to 1988, living in rural area in 1988, childhood health and family socio-economic situation at age10, household size, partner in household, household respondent and month of interview (see Appendix C for details). Estimation methods: MI RE – multiple imputations random effects estimation; RE-logit – random effects logit estimation. Information on material situation was collected at household level from the household respondent and used for his/her partner in the case of couples.

*Sample size*: 2,236 observations, 1,320 individuals.

*Source*: Authors' calculations based on SHARELIFE wave 3 and SHARE waves 2 and 4, release 6.0.0.

Compared with the effects of education, the estimated coefficients on the experience of unemployment are quite substantial. Experiencing unemployment between 1989 and 1991 is associated with a reduction in the level of household income of almost 30 percent (Table 3, columns 1 and 2) and a reduced probability of house ownership of about 10 percentage points (columns 3 and 4). The total value of real assets among those who experienced unemployment in the first years of the transition is also substantially lower (columns 5 and 6). The relationship with house ownership

and assets is also reflected in the estimates for unemployment in the later period of the transition (1992–95; columns 4 and 6). However, we find essentially no association between unemployment in the years 1992–95 and income (column 2), which is interesting given the highly negative coefficients on job losses experienced in the initial years of the transition.

Under the assumption of conditional exogeneity of job losses, the estimated coefficients on unemployment as reported in Table 3 could be given a causal interpretation. However, even though unemployment resulted from a socio-political change which can be treated as exogenous from the point of view of the employees, and despite the fact that we control for a significant number of individual characteristics, conditional exogeneity of unemployment is a relatively strong assumption and it may not be fully justified. Thus to examine the relationship in more detail we distinguish between plant/office closures and other reasons for job separations, and estimate the relationship between material conditions and unemployment separately for these two. The results of these estimations are presented in Table 4. Reported results are limited to the estimated coefficients (or marginal effects) on the unemployment dummies, as other results remain essentially unaffected.

**Table 4. Reason for unemployment and objective material conditions in later life**

| Dependent variable: | Log HH income | | House ownership | | HH real assets (PLN) | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Unemployed in 1989–91: plant/office closure | –0.292** (0.136) | –0.301** (0.136) | –0.102** (0.048) | –0.108** (0.048) | –39,259.90 (39,553.68) | –45,776.03 (39,526.31) |
| Unemployed in 1989–91: other reason | –0.288 (0.176) | –0.290* (0.176) | –0.089 (0.062) | –0.093 (0.061) | –106,664.95** (53,096.16) | –111,116.65** (53,060.83) |
| Unemployed in 1992–95: plant/office closure | | 0.050 (0.162) | | –0.182*** (0.056) | | –71,701.18 (47,523.36) |
| Unemployed in 1992–95: other reason | | 0.029 (0.122) | | –0.052 (0.048) | | –56,773.88 (35,847.49) |
| Estimation method | MI RE | MI RE | RE-logit | RE-logit | MI RE | MI RE |
| Mean value of outcome variable | 10.44 (log PLN) | | 0.842 | | 171,000 (PLN) | |

*Notes and sample size*: See Table 3. Unemployment category 'other reason' captures those who resigned, were laid off, left the job by mutual agreement, completed a temporary job or left the job for another reason.
*Source*: See Table 3.

When we compare the estimates on unemployment due to plant closures and other reasons, we can see that, in the case of incomes and house ownership (Table 4, columns 1–4), the relationship with the two forms of job separations experienced between 1989 and 1991 is almost identical. Current incomes two decades after the start of the transition are approximately 30 percent lower for those who experienced unemployment, and their likelihood of owning a house is about 10 percentage points lower. Results are more supportive of the endogeneity of unemployment with regard to the total value of real assets. Looking still at unemployment experienced between 1989 and 1991, the estimated

coefficients on job losses due to plant closures are statistically insignificant and are less than half the magnitude of those on unemployment for other reasons. The combination of results for house ownership and the value of real assets suggests that while the experience of unemployment in the first years of the transition has had similar negative effects for the likelihood of owning the place of residence, the respondents who separated from their jobs for reasons other than plant closures own property of substantially lower value. The important conclusion from results presented in columns 5 and 6 of Table 4 is that this difference in value might be related to factors other than the experience of unemployment.

One important result worth noting with regard to the relationship between income and the experience of unemployment is the very substantial difference in the magnitude of estimates for unemployment experienced in 1989–91 and in the following four years. Both when we take a general measure of unemployment (Table 3, column 2) and when we separate it by reason of job separations (Table 4, column 2), the estimates are about a tenth the magnitude in the case of unemployment experienced in the latter period and they are statistically insignificant. This suggests that job separations in the initial period of the socio-economic transition – from the point of view of long-term consequences on incomes – were unique. While it is difficult to give a definitive reason for this difference, one explanation might be that job separations in the early years of the transformation reflected, to a much greater extent, a skills mismatch between the employees who lost their jobs and the demand in the new labour market reality.

## 5.2 Unemployment experience and measures of well-being

In this section we present the estimates of the relationship between the experience of unemployment in the early years of the socio-economic transition and four measures of well-being recorded about two decades later. As in Section 5.1, we present the results separately for a general measure of unemployment (Table 5) and for specifications where we separately estimate the effects of plant closures and other reasons for job separations (Table 6).

As in the case of material conditions, we once again observe the positive effects of education, which, while small, are in all cases statistically significant. An extra year of education reduces the probability of declaring great difficulties in making ends meet by about 2 percentage points (Table 5, columns 1 and 2) and the likelihood of having symptoms of depression by about 1 percentage point (columns 7 and 8). Moreover, respondents with more education were more likely to have a high quality of life

(columns 3 and 4) and declare higher levels of life satisfaction (columns 5 and 6).[15] A similar, consistent pattern of results is found for respondents from the youngest cohort, who declare higher quality of life and life satisfaction and are significantly less likely to experience great difficulties in making ends meet.

**Table 5. Unemployment and subjective measures of well-being in later life**

| Dependent variable: | Great difficulties in MEM | | Quality of life (35+ CASP) | | Life satisfaction (7+) | | Depression (4+ on EURO-D) | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Unemployed in 1989–91 | 0.142*** | 0.155*** | –0.149** | –0.161*** | –0.097* | –0.106* | 0.112* | 0.123* |
| | (0.052) | (0.051) | (0.063) | (0.063) | (0.059) | (0.059) | (0.064) | (0.064) |
| Unemployed in 1992–95 | | 0.131*** | | –0.123** | | –0.076 | | 0.085 |
| | | (0.048) | | (0.057) | | (0.055) | | (0.058) |
| Other non-employed in 1989–91 | 0.025 | 0.060* | –0.015 | –0.050 | 0.047 | 0.021 | 0.034 | 0.072* |
| | (0.033) | (0.034) | (0.038) | (0.040) | (0.036) | (0.038) | (0.038) | (0.040) |
| Other non-employed in 1992–95 | | 0.078*** | | –0.079** | | –0.059* | | 0.092*** |
| | | (0.028) | | (0.032) | | (0.031) | | (0.033) |
| Cohort 2: born 1938–47[a] | –0.088 | –0.073 | 0.105* | 0.095* | 0.104* | 0.097* | –0.088 | –0.077 |
| | (0.058) | (0.057) | (0.057) | (0.057) | (0.056) | (0.056) | (0.058) | (0.058) |
| Cohort 3: born after 1947[a] | –0.171** | –0.158** | 0.183** | 0.175** | 0.200*** | 0.194** | –0.119 | –0.108 |
| | (0.077) | (0.076) | (0.082) | (0.082) | (0.078) | (0.078) | (0.082) | (0.082) |
| Years of education | –0.018*** | –0.017*** | 0.021*** | 0.020*** | 0.021*** | 0.021*** | –0.008** | –0.008** |
| | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| Wave 4 | –0.041* | –0.039 | 0.019 | 0.016 | 0.122*** | 0.120*** | –0.059** | –0.055** |
| | (0.024) | (0.024) | (0.027) | (0.027) | (0.027) | (0.027) | (0.028) | (0.028) |
| Labour market experience up to 1988 (years) | –0.001 | –0.001 | –0.000 | –0.000 | 0.000 | 0.000 | –0.000 | –0.000 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Estimation method | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit |
| Mean value of outcome variable | 0.229 | | 0.579 | | 0.636 | | 0.411 | |

*Notes, sample size and source*: See Table 3.

The association of the general measure of unemployment with the four measures of well-being also presents a very clear and consistent pattern in particular when we look at the experience of unemployment between 1989 and 1991. The likelihood of reporting great difficulties in making ends meet for individuals who experienced unemployment in the first three years of the transition is 14 percentage points higher (Table 5, column 1), while the probability of being classified as having a high quality of life and high life satisfaction is respectively 15 percentage points and 10 percentage points lower (columns 3 and 5). Unemployment in the initial years of the transition is also associated with a higher likelihood of depression (11 percentage points).

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[15] It should be noted that while the level of education is usually treated in the literature as exogenous from the point of view of economic outcomes such as incomes or assets, the assumption of exogeneity of education with respect to subjective outcomes is less clear. We do not dwell on this in detail here as this issue is not central to the subject of this paper.

Although this pattern of results is very clear and presents a rather consistent story of negative long-term effects of unemployment, the assumption of exogeneity of the general measure of unemployment with respect to these four outcomes, and thus the causal implications of unemployment, may be called into question. In fact, endogeneity of unemployment seems to be confirmed in the results presented in Table 6. As we can see, we find no evidence for causal long-term effects of unemployment resulting from plant closures on any of the four subjective outcomes, and the detailed results confirm that the estimates presented in Table 5 are primarily driven by the association of outcomes with the experience of unemployment for reasons other than plant closures. While the coefficients on plant closures have the expected signs, none of them is statistically significant and they substantially differ in magnitude from those estimated for the experience of unemployment for another reason. In the latter case the unemployed are substantially more likely to declare great difficulties in making ends meet (25 percentage points; Table 6, column 1) and less likely to qualify as having a high quality of life (30 percentage points; column 3) and high life satisfaction (20 percentage points; column 5). These respondents are also more likely to suffer from depressive symptoms as reflected in the EURO-D scale (21 percentage points; column 7). The large difference between the estimates of coefficients on unemployment due to plant closures and for other reasons suggests that the latter association suffers from a high degree of endogeneity and thus cannot be given a causal interpretation. It seems therefore that while there is a strong relationship between unemployment in the early years of the transition and well-being two decades later, the worse outcomes cannot be treated as direct consequences of the experience of unemployment.

**Table 6. Reason for unemployment and subjective measures of well-being in later life**

| Dependent variable: | Great difficulties in MEM | | Quality of life (35+ CASP) | | Life satisfaction (7+) | | Depression (4+ on EURO-D) | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Unemployed in 1989–91: plant/office closure | 0.074 | 0.089 | –0.065 | –0.079 | –0.036 | –0.046 | 0.059 | 0.074 |
| | (0.067) | (0.066) | (0.079) | (0.078) | (0.075) | (0.075) | (0.080) | (0.079) |
| Unemployed in 1989–91: other reason | 0.253*** | 0.260*** | –0.303*** | –0.309*** | –0.200** | –0.205** | 0.207* | 0.212** |
| | (0.084) | (0.083) | (0.110) | (0.109) | (0.097) | (0.097) | (0.108) | (0.107) |
| Unemployed in 1992–95: plant/office closure | | 0.058 | | –0.028 | | –0.079 | | 0.092 |
| | | (0.084) | | (0.096) | | (0.089) | | (0.095) |
| Unemployed in 1992–95: other reason | | 0.166*** | | –0.171** | | –0.073 | | 0.080 |
| | | (0.057) | | (0.070) | | (0.068) | | (0.073) |
| Estimation method | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit | RE-logit |
| Mean value of outcome variable | 0.229 | | 0.579 | | 0.636 | | 0.411 | |

*Notes, sample size and source*: See Table 4.

## 6. Conclusions

Better understanding of the processes that the countries of Central and Eastern Europe have gone through since the fall of the communist regimes, and detailed examination of the relationship between individual experiences and quality of life of the respective populations, are essential for drawing meaningful lessons from these unique historical developments. Such lessons can be of interest in countries still undergoing or embarking on major economic reforms and can also provide arguments in discussion about the potential long-term implications of the continued economic slowdown in many developed economies.

There is little doubt that on the whole the Polish socio-economic transition of the late 1980s and early 1990s has proved to be a success story, in particular relative to many other countries of the region. Having said that, it needs to be stressed that large groups of the population experienced economic hardship during the initial years of the transition process, and since 1989 some groups have gained much more than others. The transition cannot be lived through again and we will therefore never know what would have happened had Poland taken a different route of reforms, or indeed if the reform process had been stopped by the communist regime.

The overall package of the transition reforms has been an example of a large-scale 'natural experiment' and it offers a unique chance to shed light on more general socio-economic relationships. In our analysis, based on the combination of contemporary and retrospective data from the SHARE survey, we focus on a narrow element of the reform process, and examine the associations between the experience of unemployment in the initial years of the transition in Poland and a number of outcomes measured about two decades later. Those who experienced unemployment in the initial period of the transition, and especially those who became unemployed in the first years of the process, have significantly lower incomes and assets and are less likely to own their house. Moreover, they show a higher likelihood of depressive symptoms and score lower on measures of quality of life and life satisfaction. By using plant (and office) closures to reflect the exogenous nature of job separations, we show that the relationship between unemployment between 1989 and 1991 and income or house ownership can be treated as causal. The long-term income effect of losing a job in the initial years of the transition is as high as 30 percent, and the affected individuals are 10 percentage points less likely to own their place of residence. In these more detailed specifications, however, we also find that the associations between a general measure of unemployment and the subjective measures of well-being such as life satisfaction or depression are most likely reflections of the

endogenous nature of job separations. The most likely reason for this endogeneity is the policy of full employment and the resulting process of labour hoarding under central planning. In practice this meant that there were no incentives to fire employees and even the least productive continued to be employed. Yet once the labour market became liberalised, it is likely that it was these individuals who were laid off first.

Both the identified causal effects of unemployment and the strong, though most likely endogenous, associations between job separations and well-being measures are important results from the point of view of understanding the transition and the way its aftermath has been perceived. The negative implications of unemployment in the initial years of the transition (1989–91) for objective material conditions are most likely reflections of a major skills mismatch on the labour market following the collapse of central planning. This is especially clear in the effects on income, for which there is no evidence in relation to unemployment experienced in the years 1992–95. This suggests that the key adjustments on the labour market took place at the very start of the transition. This interpretation would suggest that the causal results we find for the objective measures of material conditions are very specific to Poland and to the context of its socio-economic transition. It is worth noting, though, that the magnitude of the income effect of plant closures that we find in this context corresponds to other results of the effects of displacement found in the literature based on US data (for example: Jacobson *et al.*, 1993; Farber, 2011).

While the negative associations between unemployment and subjective measures of well-being cannot be interpreted as causal, they may be important in understanding how the economic transition is perceived by a large proportion of the Polish population. Our results suggest that some job separations that we see in the data reflect unobservable individual characteristics and, in this sense, are endogenous with respect to the analysed outcomes. At the same time, however, they are a direct consequence of the socio-political change that started in 1989, at least in the sense that these individuals would have probably kept their jobs had the transition not taken place. Those who lost their jobs for reasons other than plant closures could have been the least-productive employees and thus the first to lay off when it became legally possible to do so. In these cases unemployment was a result of individual characteristics but it certainly coincided with the transition. It is therefore possible that, in the perception of those who were directly affected, the reform process and the specific policy decisions that were made at the time may take the full blame for the negative implications that unemployment brought with it both in the short and in the long term. Our results clearly show that

those who became unemployed in the early 1990s for reasons other than plant closures are significantly worse off on a number of measures of well-being, and to our knowledge it is the first set of results to show such associations at the individual level. Although it is impossible to say how these individuals' circumstances would have looked had the transition not taken place, in our view the results can help in understanding the sources of dissatisfaction with the reform process which still continue to fuel the current socio-political developments.

## Appendix A. SHARE questions used in the analysis: quality of life

**CASP items (for more details, see von dem Knesebeck *et al*., 2005):**

Items with response categories coded as 1. often, 2. sometimes, 3. rarely, 4. never:

1) How often do you think your age prevents you from doing the things you would like to do?
2) How often do you feel that what happens to you is out of your control?
3) How often do you feel left out of things?
4) How often do you think that family responsibilities prevent you from doing what you want to do?
5) How often do you think that shortage of money stops you from doing the things you want to do?

Items with response categories reverse coded as 4. often, 3. sometimes, 2. rarely, 1. never:

6) How often do you think that you can do the things that you want to do?
7) How often do you look forward to each day?
8) How often do you feel that your life has a meaning?
9) How often, on balance, do you look back on your life with a sense of happiness?
10) How often do you feel full of energy these days?
11) How often do you feel that life is full of opportunities?
12) How often do you feel that the future looks good for you?

**Appendix B. SHARE questions used in the analysis: symptoms of depression**

**EURO-D items where response coded as 1 means having specific symptom; 0 otherwise (for more details, see Prince *et al*., 1999):**

1) What are your hopes for the future?
      0. Any hopes mentioned
      1. No hopes mentioned
2) In the last month, have you felt that you would rather be dead?
      1. Any mention of suicidal feelings or wishing to be dead
      0. No such feelings
3) Do you tend to blame yourself or feel guilty about anything?
      1. Obvious excessive guilt or self-blame
      0. No such feelings
4) Have you had trouble sleeping recently?
      1. Trouble with sleep or recent change in pattern
      0. No trouble sleeping
5) In the last month, what is your interest in things?
      1. Less interest than usual mentioned
      0. No mention of loss of interest
6) Have you been irritable recently?
      1. Yes
      0. No
7) What has your appetite been like?
      1. Diminution in desire for food
      0. No diminution in desire for food
8) In the last month, have you had too little energy to do the things you wanted to do?
      1. Yes
      0. No
9) How is your concentration? For example, can you concentrate on a television programme, film or radio programme?
      1. Difficulty in concentrating on entertainment
      0. No such difficulty mentioned
10) Can you concentrate on something you read?
      1. Difficulty in concentrating on reading
      0. No such difficulty mentioned
11) What have you enjoyed doing recently?
      1. Fails to mention any enjoyable activity
      0. Mentions ANY enjoyment from activity
12) In the last month, have you cried at all?
      1. Yes
      0. No

# Appendix C. Full list of control variables in the outcomes regressions in Tables 3, 4, 5 and 6

Table C1. Sample statistics: controls in regressions in Section 5

|  | Mean | SD |
|---|---|---|
| *Controls derived from wave 3 information* |  |  |
| Childhood circumstances: |  |  |
| - poor self-reported health at age 10 | 0.024 | (0.154) |
| - more than three times in hospital within a 12-month period until age 15 | 0.083 | (0.275) |
| - one shelf of books or less at home at age 10 | 0.786 | (0.410) |
| - less than 1 room per household member at home at age 10 | 0.958 | (0.200) |
| - parents or guardians owned the dwelling at age 10 | 0.691 | (0.462) |
| - lived in collective accommodation at age 10 | 0.027 | (0.161) |
| - accommodation features at home at age 10: |  |  |
| • fixed bath | 0.141 | (0.348) |
| • cold running water | 0.252 | (0.434) |
| • hot running water | 0.078 | (0.268) |
| • inside toilet | 0.173 | (0.378) |
| • central heating | 0.061 | (0.239) |
| Lived in rural area in 1988 | 0.452 | (0.498) |
| Serious disabilities or illnesses up to 1988 | 0.092 | (0.289) |
| Type of industry in 1988 (13) | included | |
| *Controls derived from wave 2 and wave 4 information* |  |  |
| Household size | 3.085 | (1.673) |
| Partner in household | 0.804 | (0.397) |
| Household respondent | 0.640 | (0.480) |
| Region of residence (16) | included | |
| Month of interview (12) | included | |
| Number of observations | 1,320 | |

*Notes*: Sample restricted to respondents who declared working in 1988 in wave 3 with valid information in wave 2 and/or wave 4.

*Source*: SHARELIFE wave 3 and SHARE waves 2 & 4 data, release 6.0.0.

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