

## Secondary Publication



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Date of secondary publication: 19.06.2023

Version of Record (Published Version), Article

Persistent identifier: urn:nbn:de:bvb:473-irb-597807

#### Primary publication

Gebel, Michael; Gundert, Stefanie: Changes in Income Poverty Risks at the Transition from Unemployment to Employment : Comparing the Short-Term and Medium-Term Effects of Fixed-Term and Permanent Jobs. In: Social indicators research. 167 (2023), S. 507–533. DOI: 10.1007/s11205-023-03118-5

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# Changes in Income Poverty Risks at the Transition from Unemployment to Employment: Comparing the Short-Term and Medium-Term Effects of Fixed-Term and Permanent Jobs

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Accepted: 11 April 2023 / Published online: 6 May 2023  
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## Abstract

Unemployment is a major risk factor of poverty and employment is regarded key to overcoming it. The present study examines how the income poverty risk of unemployed individuals changes in the short and medium term, when they take up work, and whether the effects differ according to the type of employment. The focus is on permanent and fixed-term job contracts, as the political promotion of fixed-term employment has often been framed as an effort to reduce long-term unemployment and poverty. Drawing on longitudinal data from the German panel study ‘Labour Market and Social Security’ (PASS) 2010–18, we apply a first difference estimator with asymmetric effects to examine the effect of starting a job out of unemployment on income poverty risks in the subsequent four years. Strikingly, starting in a fixed-term and permanent contract have similarly strong and lasting poverty-reducing effects in the short and medium term. Thus, with regard to risks of income poverty, starting a permanent job does not appear more beneficial than starting a fixed-term job for unemployed persons. We discuss the reasons for this finding and also explore how the poverty-reducing effects of transitions from unemployment to fixed-term versus permanent employment vary by household type, occupation, working time and firm size.

**Keywords** Income poverty · Unemployment · Fixed-term employment · Labour market transitions · First difference estimator

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## 1 Introduction

Unemployment is one of the most important risk factors of income poverty (Fouarge & Layte, 2005; McKernan & Ratcliffe, 2005; Vandecasteele, 2011). As gainful employment contributes substantially to the disposable income of large parts of the working-age population, becoming unemployed significantly decreases household income (Ehlert, 2012) and increases the individual risk of living below the poverty line (Ehlert, 2016; Vandecasteele, 2011). Conversely, quitting unemployment by taking up a job, particularly a stable job, can reduce the individual poverty risk substantially (Fouarge & Layte, 2005; McKernan & Ratcliffe, 2005; Struffolino & van Winkle, 2021). However, whether a transition from unemployment to employment actually decreases an individual's poverty risk hinges on various factors. In addition to individual characteristics and the household context, the quality of the new job is of great importance (Gerlitz, 2018). Low wages and low employment stability are two major risk factors of in-work poverty (Lohmann & Crettaz, 2018). As these factors are more pronounced in some types of employment than in others, different types of employment are likely to differ in their potential to alleviate income poverty at the transition from unemployment to employment.

The present study examines how the risk of poverty changes in the short and medium term for individuals who move from unemployment to employment, and distinguishes two types of employment: fixed-term and permanent jobs. Our key research question is how the poverty-reducing potential of starting a fixed-term job compares to that of starting a permanent job at the transition from unemployment to employment. This question is interesting as the promotion of fixed-term employment in the course of partial labour market deregulation in many countries was associated with the hope of improving the re-employment prospects of jobless people and thus reducing the risk of poverty. We study Germany as one typical case of countries that deregulated the use of fixed-term contracts in the 1990s and 2000s, while keeping the strong protection of permanent jobs rather unchanged (Barbieri, 2009).

As we will outline in detail in our literature review in the next section, the divide between fixed-term and permanent jobs has received only limited attention in income poverty research. This applies particularly to longitudinal studies on individual poverty dynamics. It is an open question how moving from unemployment to a fixed-term and or a permanent job affects poverty risks. Given the dynamics of labour market transition and poverty risks it seems important to consider both the short-term and the medium-term consequences of both transition events. On the one hand, one might suspect that fixed-term jobs are comparatively less effective in reducing the poverty risk of individuals who end unemployment by taking up work, because low-wage work and employment instability are more prevalent in fixed-term than in permanent employment (e.g., Horemans, 2018; van Lancker, 2012). On the other hand, such differences regarding wages and employment stability are not equally pronounced in all labour market segments (e.g., Gash & McGinnity, 2007; Kiersztyn, 2016). Unemployed workers might be able to access mainly permanent jobs in lower labour market segments that resemble the characteristics of temporary jobs. In this case, fixed-term and permanent jobs would not differ in their poverty-reducing effects.

## 2 Literature Review and Research Contribution

The present article builds mainly on two strands of research. One is the literature on poverty dynamics, which highlights that poverty is often a transitory state (e.g., Vandecasteele, 2011), notwithstanding that in many countries a certain share of individuals and households live permanently below the poverty line (see Fouarge & Layte, 2005 for an overview on Europe). Transitions into poverty are frequently the result of critical life events, including unemployment, divorce, severe disease, and retirement (Dewilde, 2008; Vandecasteele, 2011). This illustrates that the risk of poverty is affected by individual and household-related determinants. One of the most important individual factors increasing the risk of poverty is becoming unemployed, while transitioning from unemployment to employment is likely to reduce this risk (Ehlert, 2016; Fouarge & Layte, 2005; McKernan & Ratcliffe, 2005; Struffolino & van Winkle, 2021; Vandecasteele, 2011).

Another strand of literature, research on in-work poverty, examines employment characteristics that increase the risk of being poor despite having a job. Low hourly wages, short working hours and low employment stability are considered as particularly significant in this regard (Halleröd et al., 2015; Lohmann & Crettaz, 2018). While the link between low-wage work and in-work poverty appears quite obvious, low wages are not always the primary reason for being poor. Jobs paying above the low-wage threshold may nevertheless entail poverty, for example, because they are performed only part-time. In addition, the risk of in-work poverty is increased for instable employment trajectories characterised by repeated or longer-lasting periods of non-employment. Against this background, a few cross-sectional studies focused on comparing and explaining the prevalence of in-work poverty in fixed-term and permanent employment. For example, van Lancker (2012) found a higher poverty risk for temporary jobs compared to permanent jobs in a European comparative study, which he mainly explained with the lower wages of temporary workers. In contrast, Horemans (2018) found that in most European countries the higher poverty risk of temporary workers was primarily caused by more frequent employment interruptions followed by lower hourly wages. Evidence based on panel data is even more limited. A notable exception is the study by Amuedo-Dorantes and Serrano-Padial (2010) based on data (1994–2001) from the European Community Household Panel Study (ECHP). They showed that past temporary employment had a lasting impact on individuals' contemporary poverty risk, which they attributed to the instable employment trajectories of temporary workers.

We build on this important research and make the following research contributions. First, we bring together research on poverty dynamics and in-work poverty, by studying how the individual poverty risk changes as unemployed individuals move into fixed-term or permanent jobs, and whether the risk evolves differently over time depending on the initial type of contract. Thus, we assume that becoming employed is a crucial factor in reducing the poverty risk of the unemployed, while at the same time considering possible differences in the effects of the events of taking up a fixed-term or a permanent job. Focusing on individuals who transition from unemployment to employment, our study adopts the perspective of those who have a high poverty risk and for whom the poverty-reducing potential of different types of employment is therefore particularly important.

Second, we use panel data that allow a dynamic perspective. Our empirical analyses are based on the Panel Study 'Labour Market and Social Security' (PASS), which has been specifically designed to study unemployed individuals and their living conditions longitudinally. The PASS provides rich individual-level and household-level data,

including information on employment trajectories, job quality, household composition and household income. Thus, it is well-suited to address our main research question on the short-term and the medium-term consequences of transitioning from unemployment to fixed-term or permanent jobs for poverty risks. Furthermore, panel data have the advantage of allowing the elimination of unobserved time-constant heterogeneity, which biases cross-sectional studies. We apply a first difference estimator for this purpose.

Third, we make use of the comprehensive information on household context and job characteristics reflecting the demand side of the labour market available in PASS. We supplement our main analysis with exploratory moderation analyses to examine whether the effects of starting fixed-term and permanent jobs vary by household type, occupation, working time and firm size.

Fourth, our study refers to Germany as an interesting case of comprehensive labour market deregulation policies in the 1990s and 2000s. Moreover, Germany is among the OECD countries where income poverty has grown over the last three decades (Brülle, 2021; Keeley, 2015; Levanon et al., 2019). The official reporting for Germany shows an increase in the at-risk-of-poverty rate, i.e., the share of persons living in households with a disposable income of less than 60% of the median household income (Deutscher Bundestag, 2017). Between 1995 and 2005 the rate increased from approximately 12–15% and remained relatively stable thereafter. While only 9% of those in employment were at risk of poverty, this applied to about 58% of the unemployed. In comparative perspective, Germany belongs to the top third of industrialized countries with the highest risks of income poverty due to unemployment (Brady et al., 2017). In this specific context, gaining evidence on how the poverty-reducing potential of fixed-term and permanent employment compares is of high political and academic relevance.

### 3 Theoretical Considerations

#### 3.1 The Effect of Taking up a Job on Poverty Risks

Our study is built on the basic assumption that *the individual risk of living below the poverty line decreases as individuals move from unemployment to employment (Hypothesis 1)*. Contrary to first glance, this assumption is far from trivial for several reasons, of which we give a detailed discussion below.

First, one cannot equate unemployment with poverty and employment with non-poverty. This is mainly because poverty is measured at the household level and, therefore, the household context must be considered when theorizing about the effect of taking up a job<sup>1</sup> on individual poverty risks (Gerlitz, 2018; Laß & Wooden, 2020). A household's welfare derives from its financial resources, including labour earnings of household members, welfare benefits and social transfers, and its financial needs, which depend on the size and composition of a household (Lohmann & Crettaz, 2018). Thus, there is no equivalence between individual unemployment and poverty, i.e., an unemployed person can live in a non-poor household. Likewise, an employed person can live in a poor household, as reflected in the concept of in-work poverty.

<sup>1</sup> Where we briefly use "taking up a job", "re-employment", or similar terms hereafter, we always refer to transitions from unemployment to (fixed-term or permanent) employment, in line with our research question.

Second, the income gained in the new job does not automatically lift a poor household above the poverty line, as the original household income may be particularly low and/or the income gain too small. Any income gain must be seen in relation to the financial needs of a household, which depend largely on the type of household. The same individual income gain has different implications, for example, in a single and a multi-person household. Thus, our hypothesis that re-employment decreases the individual poverty risk on average is not meant to suggest the effect is the same across individuals and households. We just argue in a probabilistic way that the individual income gain has the potential to reduce poverty risks of the household. This is because, *ceteris paribus*, a new labour income increases the financial resources of people's households.

Third, transitioning from unemployment to employment leads to a loss of unemployment-related social transfers and welfare benefits, which reduces, *ceteris paribus*, a households' welfare. However, based on a rational choice perspective, we argue that income gains from re-employment exceed the transfer and benefits loss associated with ending unemployment. According to this, it can be argued that unemployed individuals decide to enter a job only if the expected advantages outweigh the disadvantages. While non-monetary motives of work (Jahoda, 1981) may compensate for financial losses, it seems very unlikely that an unemployed person takes up a job that creates a net financial loss. As better non-monetary aspects of job quality often coincide with better pay (Kalleberg, 2011; Munoz de Bustillo et al., 2011), such compensatory effects are unlikely.

Finally, individual income gains are expected to be the main, but not the only, mechanism by which taking up work can affect the risk of poverty. Adaptive changes in the household context may occur (Moen & Wethington, 1992). First, other household members may decrease their labour force participation because of changes in the allocation of housework and care work within the household (Verbakel & De Graaf, 2009). However, when labour force participation is again viewed through the lens of rational choice theory and the related principle of household income maximization, it seems unlikely that other household members reduce their work to such an extent that the loss of earned income leads to an overall decline of household income. Hence, this mechanism may mitigate the effect of the main mechanism but is unlikely to offset it completely. Second, transitioning from unemployment to employment may cause changes in household size if other persons enter (e.g. partner, childbirth) or leave (e.g. partner) or if the person of interest changes household (e.g. leaving parental home). However, studies for Germany find no clear evidence in this respect (Jacob & Kleinert, 2008; Özcan et al., 2010) and the implications on changes in poverty status are unclear. Thus, in the specific context of Germany, this mechanism is not expected to exert a systematic impact on household income and can therefore be disregarded. Third, other household members may increase their labour force participation in response to the individual person's taking up the new job inducing a multiplier effect on household income. This might be because of increased work incentives due to benefit loss, encouragement effects or support in the job search process based on the newly gained economic and social network resources (Jacob & Kleinert, 2014; McGinnity, 2002; Verbakel & De Graaf, 2009). This mechanism affects the household income in the same direction as the main mechanism, i.e., individual income gains of the person of interest and, hence supports our argumentation in favour of Hypothesis 1.

### 3.2 Differences by Type of Contract

While Hypothesis 1 posits a negative effect of re-employment on poverty, the strength and the persistence of this effect are likely to differ between fixed-term and permanent jobs.

On average, fixed-term jobs involve a higher in-work poverty risk than permanent jobs due to differences in terms of wages and employment stability (Amuedo-Dorantes & Serrano-Padial, 2010; Horemans, 2018; van Lancker, 2012). However, wages and employment prospects provided by fixed-term jobs vary according to their functions in different labour market segments (Gash & McGinnity, 2007; Giesecke & Groß, 2003; Kiersztyn, 2021). Therefore, different theoretical expectations can be formulated about whether and to what extent starting a fixed-term job out of unemployment has an overall poverty-reducing effect in the short term, how this effect develops in the medium term and how the effect compares to the short-term and medium-term effects of starting a permanent job. In the following, we theoretically derive and formulate three different scenarios as hypotheses.

In the first scenario, fixed-term contracts are primarily used to maximise employers' flexibility and, thus, unlikely to provide long-term employment perspectives. Promotions to permanent positions rarely occur, and workers face a comparatively high risk of becoming unemployed as their contracts end, which has detrimental effects on their income. Such contracts are likely to occur in segments that unemployed workers usually enter, where workers are highly replaceable and where low-wage work is widespread. As a consequence, for unemployed individuals taking up a fixed-term job might have only modest positive income effects. The income effect of permanent jobs is expected to be greater due the higher employment stability after entering a permanent contract and due to higher bargaining power in wage negotiations (Mertens & McGinnity, 2004). This implies that fixed-term contracts are less likely to have a poverty-reducing effect than permanent contracts at the transition from unemployment to employment. Moreover, given the higher risk of subsequent unemployment, positive income effects from starting a fixed-term job are likely to be more short-lived than those of starting a permanent job. In summary, according to this first scenario, *we expect to find that in the short term, moving from unemployment to a fixed-term job leads to a smaller decrease in poverty risk than moving from unemployment to a permanent job. In the medium term, we expect that the effect of entering a fixed-term job declines more over time than the effect of entering a permanent job* (Hypothesis 2a).

In a second scenario, the assumption of the first scenario on the main character of fixed-term contracts as flexibility measures with low career prospects is maintained. The decisive difference is the assumption on the prospects of those who start in permanent jobs. For the specific group of previously unemployed people it is now alternatively argued that unemployed individuals are offered comparatively low wages regardless of the type of contract. This is because most of them can only access lower-level jobs, where individual and collective bargaining power and career chances are limited (Kiersztyn, 2016). Following this argument, *we expect to find that in the short term, moving from unemployment to a fixed-term job leads to a decrease in poverty risk comparable in magnitude to moving from unemployment to a permanent job. In the medium term, we expect that the effect of entering a fixed-term job declines in the same way as the effect of entering a permanent job* (Hypothesis 2b).

In a third scenario, fixed-term contracts are predominately used as "screening contracts" to test the skills and ability of newly recruited workers as a prolonged probationary period (Wang & Weiss, 1998). The screening costs are expected to be transferred, as a form of insurance against poor matching quality, from the employer to the fixed-term worker by paying lower wages at the beginning of the job. If the employer's expectations are fulfilled, the employment relationship will be maintained or converted into a permanent contract. In addition, employers are likely to invest in workers' training, thereby inducing compensating wage growth over time (Mertens & McGinnity, 2004; Wang & Weiss, 1998). Consequently,



differences between workers who started a fixed-term or permanent job in terms of wages and employment stability are likely to become smaller in the longer run. Therefore, in this third scenario, *we expect that in the short term, moving from unemployment to a fixed-term job leads to a smaller decrease in poverty risk than moving from unemployment to a permanent job. In the medium term, we expect that the effect of entering a fixed-term job converges to the effect of entering a permanent job* (Hypothesis 2c).

## 4 Data and Method

### 4.1 Data, Sample and Main Variables

We used data on nine waves (2010–18) from the Panel Study ‘Labour Market and Social Security’ (PASS), a large-scale yearly panel survey designed for research into the labour market and poverty in Germany (Trappmann et al., 2019). We imposed an age limit of 18 to 60 years to our sample in order to focus on the life course period after attaining full age and before reaching legal retirement age.<sup>2</sup>

Our sample is defined based on individual transition events. Whenever a person is unemployed at a yearly interview (defined as time  $t$ ) and employed on a fixed-term or permanent contract at the interview in the following year (defined as time  $t+1$ ), this event defines the beginning of an observation period with  $t$  as the pre-treatment period and  $t+1$  as the first post-treatment period.<sup>3</sup> Thus, we distinguished two kinds of transitions of interest, so-called “treatments”<sup>4</sup>: transitions from unemployment at  $t$  to a fixed-term job at  $t+1$  and transitions from unemployment at  $t$  to a permanent job at  $t+1$  (see Table 1, for an illustration). Whenever a person remains unemployed for two consecutive panel waves  $t$  and  $t+1$ , this defines a control group observation. We excluded persons who were unemployed at  $t$  and inactive or self-employed at  $t+1$ , because these transitions are not in the focus of our study. Given our focus on transition events defined by comparing two consecutive panel waves, one person may enter our analysis with several treatment and control events.

Following Allison’s (1994) conception, we study the effect of the two treatment events on two outcome variables (poverty and household income) at the yearly interviews after the transition occurred, which is defined as a so called “impact function” (Ludwig/Brüderl 2021). We investigate the effects at  $t+1$ , which we define as “short-term effect” and at the following three panel waves  $t+2$ ,  $t+3$  and  $t+4$ , which we define as “medium-term effects” (see Table 1). Outcomes of each of these post-treatment periods  $t+1$ ,  $t+2$ ,  $t+3$  and  $t+4$

<sup>2</sup> The PASS surveys respondents at yearly intervals where possible. Due to temporary non-participation or panel attrition, not all individuals are observed over the whole period. Hence, the size and composition of our sample changes over time. A sensitivity analysis holding samples constant shows that this does not bias our main results (see Sect. 6).

<sup>3</sup>  $t$  and  $t+1$  must be two consecutive panel waves, i.e., the time difference is always one panel wave. As the PASS is an annual panel survey, the average length between  $t$  and  $t+1$  is one year. The calendar time of an event may vary, e.g., a person may register a transition from unemployment in 2010 to fixed-term employment in 2011 or from unemployment in 2015 to fixed-term employment in 2016, etc.

<sup>4</sup> The quotation marks underline that we are dealing with non-experimental data. We borrow “treatment” as a concise term for our key independent variable, which must be distinguished from other independent variables acting as control variables. It is also helpful as a reference point in time to distinguish the periods before and after the “treatment”.



**Table 1** Illustration of dynamic definitions of treatment and outcome variables

	t	t+1	t+2	t+3	t+4
Definition of "treatment" variables					
"Treatment" groups	U	FTC	No restrictions		
	U	PC	No restrictions		
"Control" group	U	U	No restrictions		
Definition of outcome variables					
Short-term					
1-year impact	$Y_{i,t}$	$Y_{i,t+1}$			
Medium-term					
2-year impact	$Y_{i,t}$		$Y_{i,t+2}$		
3-year impact	$Y_{i,t}$			$Y_{i,t+3}$	
4-year impact	$Y_{i,t}$				$Y_{i,t+4}$

Own illustration. U=Unemployed, FTC=Fixed-Term Contract, PC=Permanent Contract. Y=poverty/equivalised household income. i=individual, t=time

are compared to the pre-treatment period  $t$ .<sup>5</sup> To avoid post-treatment bias (Elwert & Winship, 2014) our treatment and control group definitions do not imply any further restrictions regarding employment status and contract type in later periods  $t+2$ ,  $t+3$  and  $t+4$ , i.e., individuals might change their employment status and contract status after  $t+1$  (see Table 1). Such changes are part of the causal mechanisms as described in the theoretical Sect. 3.

Fixed-term contracts were defined as work contracts with a pre-determined duration and permanent contracts as work contracts with unlimited duration.<sup>6</sup> We assess unemployment according to the yearly self-reported activity status. In the PASS, respondents can report parallel activities, such as simultaneously being employed and in training or being unemployed and having a side job. To address this when assessing individuals' main employment status, we defined a status hierarchy that gives priority to employment over any other state and priority to unemployment over any other state except employment. Note that in Germany, persons registered as unemployed are allowed to have side jobs but this reduces benefit eligibility. Unemployed persons who wish to supplement their income often seek marginal part-time employment, so-called "mini-jobs" with up to 450 Euro/month. Because our research interest is not in the effect of taking up a job whose income is per definition too low to earn a living, we counted registered unemployed persons holding a mini-job as being unemployed and those with side jobs paying more than 450 Euro/month as being employed. We performed supplementary analyses on the specific topic of mini-jobs (see Sect. 6).

Our main outcome, the risk of poverty, is a binary variable indicating whether individuals and their households live below the poverty line, which was defined as 60% of the median equivalised household income in each year (Statistische Ämter des Bundes und der Länder, 2023). While analysing changes in poverty risks offers important insights into whether people move across the relative poverty threshold, it does not reveal exact income gains. We therefore conducted a supplementary analysis and examined changes

<sup>5</sup> The difference between  $t$  and  $t+1$  is always one panel wave, which is on average one year; the difference between  $t$  and  $t+2$  is always two waves, which is on average two years, etc.

<sup>6</sup> Transitions to apprenticeship training, which is also fixed-term, were not considered because apprenticeship training is part of the education career in Germany. Temporary agency work was defined either as fixed-term or permanent depending on the type of contract with the agency.

in equivalised household income as another outcome variable. To obtain equivalised net household incomes, we applied the OECD scale that assigns a weight of 1 to the household head, of 0.5 to each additional adult member and of 0.3 to each child (OECD, 2013).

The analysis involves four pairwise comparisons, as the value of the outcome variable at the pre-treatment interview at  $t$  is compared to its values at post-treatment interviews at  $t+1$ ,  $t+2$ ,  $t+3$ , and  $t+4$ . Each pairwise comparison is defined as one sample, where a “case” refers to one respondent being observed at the two panel waves of comparison. We discarded around 1–2% of each sample due to missing values on any variables (see Sect. 4.2), yielding an analytical sample of 13,395 cases for the 1-year sample, 9,221 cases for the 2-year sample, 6,868 cases for the 3-year sample and 4,946 cases for the 4-year sample (see Table 2 for descriptive statistics).

## 4.2 Method

As it is common in panel data analysis, we begin with the error decomposition model as the underlying structural model (Allison, 2019; Brüderl & Ludwig, 2015; Wooldridge, 2010):

$$Y_{i,t} = \beta es_{i,t} + \gamma' X_{i,t} + c_i + u_{i,t} \quad (1)$$

where the subscript  $i$  stands for individuals and  $t$  represents time.  $Y_{i,t}$  is the outcome variable (i.e., poverty risk or income),  $es_{i,t}$  is the time-varying employment status (i.e., unemployment, fixed-term job or permanent job),  $X_{i,t}$  is a set of time-varying confounding variables,  $c_i$  reflects time-constant individual heterogeneity and  $u_{i,t}$  unobserved time-varying individual heterogeneity. We do not use Pooled Ordinary Least Square (POLS) or Random Effect (RE) estimators, because for unbiasedness, these rest on the problematic exogeneity assumption  $E(c_i | es_{i,t}, X_{i,t}) = 0$  for all  $t$ , i.e., that there are no observed or unobserved time-constant confounders (such as gender, social origin, migration background, or fixed psychological traits). Fixed Effect (FE) and First Difference (FD) estimators get rid of this problematic assumption by data transformations that eliminate time-constant individual heterogeneity  $c_i$  (Brüderl & Ludwig, 2015). In case of the FD estimator, which we apply to our data, this is done by taking the first difference of (1) at two time points (Wooldridge, 2010). For the *short-term effect* this is the comparison of  $t$  and  $t+1$ , yielding the following estimation equation<sup>7</sup>:

$$(Y_{i,t+1} - Y_{i,t}) = \beta(es_{i,t+1} - es_{i,t}) + \gamma'(X_{i,t+1} - X_{i,t}) + (u_{i,t+1} - u_{i,t}) \quad (2)$$

Following Allison (2019), we weaken the usual strict symmetric-effect assumption that imposes identical effects of transitions to and out of unemployment. To test our hypotheses, we focus on one direction of transitions by restricting the sample to persons who were unemployed at  $t$  and in a fixed-term job at  $t+1$  (dummy variable  $D_{U \rightarrow FTC}$ ), or in a permanent job at  $t+1$  (dummy variable  $D_{U \rightarrow PC}$ ), or in unemployment at  $t+1$  (dummy variable  $D_{U \rightarrow U}$ , left out as a reference group):

$$(Y_{i,t+1} - Y_{i,t}) = \beta_1 D_{U \rightarrow FTC} + \beta_2 D_{U \rightarrow PC} + \gamma'(X_{i,t+1} - X_{i,t}) + (u_{i,t} - u_{i,t+1}) \quad (3)$$

<sup>7</sup> Effect interpretations come from the structural model (1) and not the estimation equations. Thus, effects are to be interpreted with respect to the binary poverty and the continuous income variable (An & Winship 2017; Wooldridge 2010).

**Table 2** Descriptive statistics

Sample	1-year (at $t+1$ )		2-year (at $t+2$ )		3-year (at $t+3$ )		4-year (at $t+4$ )	
	Main	Full	Main	Full	Main	Full	Main	Full
Variables	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
	(SD)	(SD)	(SD)	(SD)	(SD)	(SD)	(SD)	(SD)
Equiv. household income	822.79	822.80	872.63	872.20	910.43	910.12	952.96	953.01
	(445.63)	(447.10)	(409.52)	(409.95)	(587.60)	(590.14)	(663.71)	(667.62)
Poor	0.73	0.73	0.68	0.68	0.66	0.66	0.64	0.64
Employment transitions between $t$ and $t+1$								
U→PC	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
U→FTC	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
U→U	0.85	0.85	0.85	0.85	0.85	0.85	0.84	0.84
Age	44.10	44.17	45.23	45.31	45.83	45.90	46.54	46.60
	(11.10)	(11.08)	(10.64)	(10.63)	(10.26)	(10.25)	(9.88)	(9.87)
Period								
Wave 5 (2011)	0.14	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Wave 6 (2012)	0.16	0.16	0.15	0.15	0.00	0.00	0.00	0.00
Wave 7 (2013)	0.14	0.14	0.18	0.18	0.18	0.18	0.00	0.00
Wave 8 (2014)	0.13	0.13	0.16	0.16	0.19	0.19	0.20	0.20
Wave 9 (2015)	0.12	0.12	0.15	0.15	0.18	0.18	0.23	0.23
Wave 10 (2016)	0.11	0.11	0.13	0.13	0.17	0.17	0.22	0.21
Wave 11 (2017)	0.10	0.10	0.12	0.12	0.14	0.14	0.19	0.19
Wave 12 (2018)	0.10	0.10	0.11	0.11	0.13	0.13	0.17	0.17
East Germany	0.35	0.35	0.37	0.37	0.38	0.38	0.39	0.39
Regional unempl. rate	7.50	7.49	7.43	7.42	7.28	7.28	7.10	7.10
	(2.40)	(2.39)	(2.28)	(2.27)	(2.16)	(2.16)	(2.01)	(2.01)
Years of education	11.19	11.20	11.19	11.20	11.19	11.19	11.22	11.22
	(2.53)	(2.53)	(2.43)	(2.43)	(2.36)	(2.36)	(2.34)	(2.34)
Subjective health								
Very good	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.06
Good	0.26	0.26	0.25	0.25	0.24	0.24	0.24	0.24
Satisfactory	0.32	0.32	0.33	0.33	0.33	0.33	0.34	0.34
Fair	0.23	0.23	0.24	0.24	0.24	0.24	0.24	0.24
Poor	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Household size		2.23		2.17		2.14		2.12
		(1.42)		(1.37)		(1.33)		(1.32)
# children 0–6y		0.22		0.19		0.17		0.15
		(0.57)		(0.53)		(0.51)		(0.48)
# children 7–18y		0.41		0.40		0.39		0.39
		(0.82)		(0.80)		(0.78)		(0.79)
Household (HH) type								
Singles		0.40		0.41		0.42		0.43
Couples w/o ch		0.14		0.15		0.15		0.15
Single parents		0.20		0.20		0.20		0.19

**Table 2** (continued)

Sample	1-year (at $t+1$ )		2-year (at $t+2$ )		3-year (at $t+3$ )		4-year (at $t+4$ )	
	Main	Full	Main	Full	Main	Full	Main	Full
Variables	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
	(SD)	(SD)	(SD)	(SD)	(SD)	(SD)	(SD)	(SD)
Couples w ch		0.23		0.21		0.21		0.21
Other HH types		0.03		0.03		0.03		0.03
# empl. others in HH		0.18		0.20		0.21		0.23
		(0.43)		(0.44)		(0.46)		(0.47)
# unempl. others in HH		0.21		0.19		0.18		0.17
		(0.47)		(0.46)		(0.44)		(0.43)
# inactive others in HH		0.44		0.42		0.41		0.40
		(0.73)		(0.71)		(0.70)		(0.70)
<i>N</i>	13,395	13,195	9,221	9,089	6,868	6,763	4,946	4,863

PASS 2010–2018. Own calculations. Means for all variables, which can be interpreted as proportions in case of categorical variables. Standard deviation (SD) in parenthesis only for continuous variables. Descriptive statistics are calculated for  $t+1$  for the 1-year sample,  $t+2$  for the 2-year sample,  $t+3$  for the 3-year sample, and  $t+4$  for the 4-year sample. The variable „employment transitions“ defines the type of transition that occurred at  $t+1$ . Descriptive statistics of this variable for later periods indicate the relative proportion of observations with the respective type of transition (at  $t+1$ ) that are included in the 2-year, 3-year and 4-year samples. The “main” set of control variables consist of age, period, East Germany, regional unemployment rate, years of education and health. The “full” set of control variables adds to the main set household size, the number of children, household type and employment characteristics of other household members

For estimating *medium-term effects*, we repeat this differencing for further “post-treatment” periods  $t+2$ ,  $t+3$  and  $t+4$ . Each of them is compared to the “pre-treatment” period  $t$ , yielding the estimation equations:

$$\begin{aligned}
 Y_{i,t+s} - Y_{i,t} = & \beta_1 D_{U \rightarrow FTC} + \beta_2 D_{U \rightarrow PC} \\
 & + \gamma' (X_{i,t+s} - X_{i,t}) + (u_{i,t+s} - u_{i,t}) \forall s = 2, \dots, 4
 \end{aligned}
 \tag{4}$$

Irrespective of the post-treatment period considered, the transition dummy indicators  $D_{U \rightarrow FTC}$  and  $D_{U \rightarrow PC}$  always refer to transitions between  $t$  and  $t+1$ , whereas the outcome and control variables refer to the comparison of the respective post-treatment period to the pre-treatment period. The use of a control group ( $D_{U \rightarrow U}$ ) in our FD estimator resembles the idea of implementing a panel difference-in-differences estimators.

As time-constant individual heterogeneity  $c_i$  has been eliminated, for unbiasedness, the FD estimator only rests on the exogeneity assumption with regard to  $u_{i,t}$ , i.e., that there are no unobserved time-varying confounders (Brüderl & Ludwig, 2015). To make this assumption more plausible, we controlled for a set of first-differenced time-varying variables ( $X_{i,t+s} - X_{i,t}$ ) that are expected to act as confounders, i.e., variables assumed to affect both employment transitions and changes in outcomes. This includes changes in the age of the respondent to account for general aging and life course effects as well as first-differenced

period dummies accounting for general period effects.<sup>8</sup> We also accounted for changes in years of education and changes in subjective health, measured on an ordinal scale with five categories (very good, good, satisfactory, fair, poor). At the regional level, we took changes in living in East vs. West Germany and changes in the regional unemployment rate into account. Both the treatment-event and control-event observations contribute to the estimation of the control variables. In this regard, the effects of time-varying control variables capture the common baseline trend in the outcomes, i.e., how the outcomes would have changed in the absence of the treatment.

We did not control for variables that might be consequences of a labor market transition because this could lead to overcontrol or endogenous selection bias, as our interest is in the total effect (Cinelli et al., 2022; Elwert & Winship, 2014; Lundberg et al., 2021). Yet, some of the included control variables, such as changes in education and health as well as residential changes, may have a double character as confounder and mediator, since they might be affected by labor market transitions. We checked the robustness of our findings with respect to the exclusion of these potentially endogenous control variables in Sect. 6. We also conducted sensitivity analyses on the inclusion of further potentially endogenous control variables such as changes in household size, household type, number of children and employment in Sect. 6.

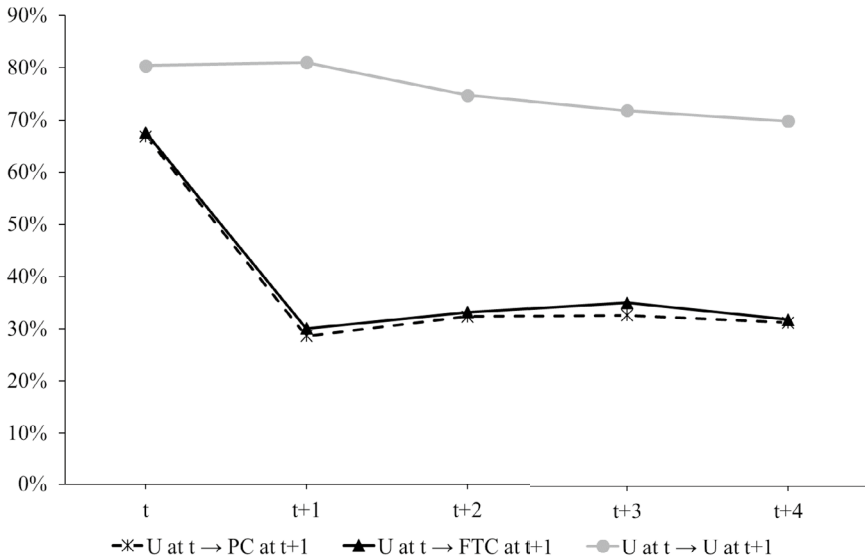
The FD estimator is implemented by applying a linear POLS estimator to (3) and (4) with panel-robust standard errors to account for potential heteroscedasticity and serial correlation in first-differenced error terms (Brüderl & Ludwig, 2015). Estimating a linear model is the obvious choice for continuous income measures. Recent methodological research has also highlighted the advantages of using linear models for a binary dependent variables as in case of binary poverty measures (Breen et al., 2018). This is because unlike logit coefficients, coefficients in linear probability models are not subject to bias due to uncorrelated unobserved heterogeneity in model comparisons and interaction analyses (Mood, 2010).

## 5 Results

### 5.1 Descriptive Results on Short-Term and Medium-Term Effects

Figure 1 displays the levels of poverty risks (for the periods  $t$  to  $t+4$ ) for persons transitioning from unemployment at  $t$  to a fixed-term or a permanent job at  $t+1$ , and the reference group of persons who were unemployed both at  $t$  and  $t+1$ . Due to the focus on initially unemployed individuals, the overall poverty risks are rather high at  $t$ , ranging between 67 and 80%. Comparing the change in poverty risks between the groups also illustrates the basic logic of the within-comparison underlying the FD estimator used later. Unemployed persons who take up a fixed-term job at  $t+1$  experience a substantial decline in the risk of poverty in the short term, i.e., from 68% at  $t$  to 30% at  $t+1$ , but also in the medium term, as poverty risks remain at 32–35% in the subsequent periods  $t+2$  to  $t+4$ . The decline is of a similar extent for unemployed persons who start a permanent job (from 67 to 29% in the short term and 31–33% in the medium term). In contrast, for those who are unemployed at

<sup>8</sup> Following Ludwig and Brüderl (2021), we tested the robustness of our findings to including age dummies instead of a linear age variable (see Sect. 6).



Notes: PASS 2010–2018. Own calculations. U=Unemployed, FTC=Fixed-Term Contract, PC=Permanent Contract. Estimates of poverty risks as unadjusted means at  $t$  and  $t+1$  based on 1-year sample, at  $t+2$  based on 2-year sample, at  $t+3$  based on 3-year sample, at  $t+4$  based on 4-year sample.

**Fig. 1** Poverty risks at  $t$  to  $t+4$ , by treatment and control groups, unadjusted mean comparison

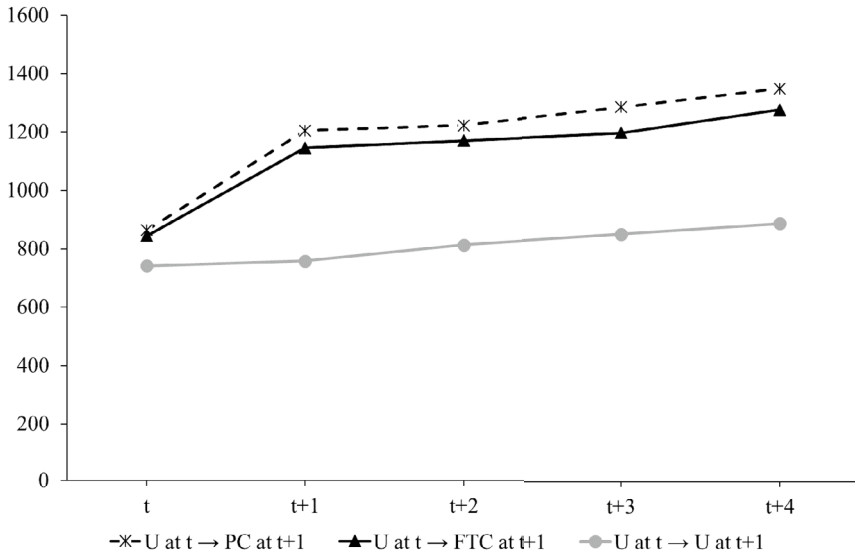
both times the level of poverty increases marginally from 80 to 81% in the short term and declines only slightly afterwards to 70–75%.

Figure 2 shows the impact of taking up work on net equivalent household income. Among unemployed persons who transit to a fixed-term job at  $t+1$  net equivalent household income increases from 845 Euro to 1,146 Euro at  $t+1$  and it continues to increase slightly in the medium term up to 1,276 Euro at  $t+4$ . A similar increase can be observed for those who start a permanent job (from 864 Euro to 1,205 Euro at  $t+1$  and 1,349 Euro at  $t+4$ ). In contrast, those who were unemployed at  $t$  and  $t+1$  register only a marginal income increase (from 742 to 758 Euro at  $t+1$  and 886 Euro at  $t+4$ ).

## 5.2 Results from FD Estimator

Next, we move to the multivariate regression framework and examine both the short-term and medium-term effects described in the previous section. Table 3 shows the results of the FD estimator using the main set of control variables. Compared to the reference group of persons being unemployed at  $t$  and  $t+1$ , there is a very strong reduction of poverty risks by 38 percentage points ( $p < 0.001$ ) for unemployed persons who start a fixed-term job, a finding which is compatible with Hypothesis 1. Individuals who start a permanent job at  $t+1$  experience a risk reduction by 39 percentage points ( $p < 0.001$ ), which is again in line with Hypothesis 1. Hence, fixed-term and permanent jobs have short-term poverty-reducing effects of comparable magnitude.

The remaining columns of Table 3 show estimates of the effects on poverty risks at  $t+2$ ,  $t+3$  and  $t+4$  for the event of transitioning from unemployment at  $t$  to employment



Notes: PASS 2010–2018. Own calculations. U=Unemployed, FTC=Fixed-Term Contract, PC=Permanent Contract. Estimates of income as unadjusted means at  $t$  and  $t+1$  based on 1-year sample, at  $t+2$  based on 2-year sample, at  $t+3$  based on 3-year sample, at  $t+4$  based on 4-year sample.

**Fig. 2** Net equivalent household income at  $t$  to  $t+4$ , by treatment and control groups, unadjusted mean comparison

at  $t+1$  compared to the reference group of persons being unemployed at  $t$  and  $t+1$ . Even at later observation points, the risk of poverty is still reduced for those who have started a fixed-term job at  $t+1$  compared to those who remain unemployed at least until  $t+1$ . However, while this result shows that starting a fixed-term job at  $t+1$  has a lasting effect, the effect slightly weakens over time. This means that individuals who moved from unemployment to a fixed-term job at  $t+1$  still have a lower poverty risk than the control group at later periods, but the difference becomes then less pronounced. There can be various reasons for this. Persons who took up a fixed-term job may lose their employment again or unemployed persons from the control group may find a job at a later date.<sup>9</sup> The poverty reduction effect is -29 percentage points ( $p < 0.001$ ) at  $t+2$  and further declines to -26 percentage points ( $p < 0.001$ ) at  $t+3$  and -24 percentage points ( $p < 0.001$ ) at  $t+4$ .

A similar result is obtained for unemployed individuals who got a permanent contract. Differences between the two groups are statistically not significant. The poverty-reducing effect drops to -29 percentage points ( $p < 0.001$ ) at  $t+2$ , -26 percentage points ( $p < 0.001$ ) at  $t+3$ , and -24 percentage points ( $p < 0.001$ ) at  $t+4$ , which are still relative large effects.

<sup>9</sup> This is illustrated by a descriptive analysis of activity status at  $t+2$ ,  $t+3$  and  $t+4$  by type of employment transition at  $t+1$  (see Table A1 in the Online Appendix). For example, more than a fourth of individuals who had moved from unemployment to a fixed-term job by  $t+1$  had a permanent job at  $t+2$ , and roughly half had a permanent job at  $t+4$ . In turn, one fifth of those who initially transitioned to a permanent job were unemployed at  $t+4$ . Of those who were unemployed both at  $t$  and  $t+1$ , approximately 13% held a permanent job and nearly 7% a fixed-term job at  $t+4$ .



Overall, it is shown that for unemployed people who take up a fixed-term job the risk of living below the poverty threshold is reduced in the short and medium run. The poverty-reducing effect upon re-employment is very similar to that of starting a permanent job. Moreover, the short-term effects of both types of employment attenuate in a comparable way over time. Taken together, the results are compatible with Hypothesis 2b and lead us to reject Hypotheses 2a and 2c.

Table 4 provides information on the gain in equivalent household income associated with transitions to employment. Again, as in the case of poverty risks, there is a very similar impact function for the two “treatment” groups. At  $t+1$ , starting a fixed-term job increases net equivalent household income by 285 Euro ( $p < 0.001$ ) and starting a permanent job by 327 Euro ( $p < 0.001$ ). For both groups, we observe a decline in effects at  $t+2$  and a stabilisation by  $t+4$ . While the pattern of results is not exactly the same, it is important to note that differences in the effects of starting a fixed-term or permanent job are neither substantial nor statistically significant at any time point.

### 5.3 Moderation Analyses

The results presented so far demonstrate that, for the unemployed, taking up a fixed-term job can be as beneficial as starting a permanent job in terms of poverty reduction. Given the general importance of the household context for individual poverty risks, it can be assumed that whether starting a job results in a lower poverty risk depends on household composition. In an explorative analysis, we therefore examine whether the poverty-reducing effects of taking up work are moderated by household composition. Furthermore, to explore the role of labour market demand-side factors, we analyse how the effects of starting in different types of contract vary by occupation, working time and firm size.

The number of potential earners and dependents affect a household’s earnings capabilities and financial needs and thus its poverty risk. Compared to childless couples, singles and single-parent households are more vulnerable to poverty and face more difficulties in overcoming it (Fouarge & Layte, 2005; Vandecasteele, 2011). This has been attributed to the higher earnings potential and lower financial needs of childless couples as well as to the struggles of single parents in reconciling employment and childcare (Maldonado & Nieuwenhuis, 2015). To address variations by household type in the effects of starting fixed-term and permanent jobs, Table 5 displays the results of an additional analysis on poverty, including interaction terms of employment transitions and household type. The latter variable was measured at  $t+1$  and distinguishes singles, single parents, couples with and without children and other household types.

Importantly, the pattern of results by household type roughly mirrors the main findings, i.e., moving from unemployment to a fixed-term or permanent job reduces the risk of poverty, and the effect tends to get smaller over time. With the exception of single parents and “other household types”, the magnitude of poverty reduction by fixed-term and permanent jobs is again comparable.

Notable differences by household type are found in particular when comparing single parents with couples or singles. The fixed-term employment effect at  $t+1$  is smaller for single parents than for couple households or singles, suggesting that single parents’ poverty risk is reduced less than that of couples and singles by starting a fixed-term job. However, in the case of taking up permanent work the short-term poverty-reducing effect is roughly the same for single parents and couples. Thus, single parent households

are the only group whose poverty risk is reduced to a lesser extent by starting a fixed-term job than by starting a permanent job. This holds in the short term and in subsequent observation periods. The relative disadvantage of having initially started a fixed-term job as compared to a permanent job only vanishes after four years.

More generally, a plausible pattern of results emerges that underlines the high relevance of household composition for poverty dynamics. Overall, poverty is reduced more strongly for singles than for any other household type. The fact that single households have fewer financial needs than multi-person households presumably enhances their chances of escaping poverty by taking up work.

Tables 6, 7, 8 show to what extent the effects of moving from unemployment to fixed-term or permanent work vary by job characteristics. They display interactions of employment transitions with occupation, working time, and firm size – each measured at the time of transition.

Occupation is measured by two variables of which the first one refers to ISCO-88 major groups 1–3 (higher-level occupations) and the second one to ISCO-88 major groups 4–9 (medium-level and lower-level occupations). For medium to lower-level occupations the basic pattern of results mirrors those of the main analysis, i.e., we find that starting a fixed-term or permanent job has poverty-reducing effects of comparable size in the short and medium term (Table 6). Again, effect sizes decline over time. Interestingly, within the category of higher-level occupations, transitions to fixed-term jobs appear to have somewhat stronger effects than transitions to permanent jobs, in particular in later periods. This presumably reflects qualitative differences in terms of task types and skill requirements in jobs at different occupational levels. That re-employment leads to a more pronounced reduction in poverty risks when entering higher level as compared to lower-level occupations, regardless of contract type, is an expectable finding and most likely due to wage differentials between occupational categories.

Interactions by working time and firm size yield similar findings and will therefore be reported briefly. Table 7 differentiates employment transitions to part-time jobs (less than 35 h per week) and full-time jobs (35 h or more). While expectedly, poverty reduction is generally stronger when starting a full-time job compared to a part-time job, the decisive finding is that regardless of working time, the short-term and medium-term effects of fixed-term and permanent jobs are comparable in size. This pattern is also replicated in an analysis with interactions by firm size, distinguishing jobs taken in firms with less than 50 employees and jobs taken in larger firms (Table 8).

In summary, the moderation analyses largely support our interpretations from the main analysis. Regarding its effects on poverty risks, in most cases moving from unemployment to a fixed-term job is no less beneficial than starting a permanent job.

## 6 Sensitivity analyses

This section presents results from several sensitivity analyses. The first set tests the robustness of our findings with regard to alternative specifications and choices of control variables. Tables A2a and A2b (see Online Appendix) show that our findings from Tables 3 and 4 are robust to using first-differenced age dummies instead of a

**Table 3** Transitions from unemployment to fixed-term or permanent jobs: changes in poverty risks; FD estimator

	1-year $Y_{t+1} - Y_t$ b (se)	2-year $Y_{t+2} - Y_t$ b (se)	3-year $Y_{t+3} - Y_t$ b (se)	4-year $Y_{t+4} - Y_t$ b (se)
Employment transitions between $t$ and $t + 1$ (Ref. U→U)				
U→PC	- 0.39*** (0.02)	- 0.29*** (0.02)	- 0.26*** (0.03)	- 0.24*** (0.03)
U→FTC	- 0.38*** (0.02)	- 0.29*** (0.02)	- 0.24*** (0.03)	- 0.28*** (0.03)
First-differenced time-varying controls				
Age	$X_{t+1} - X_t$ - 0.02* (0.01)	$X_{t+2} - X_t$ - 0.01 (0.01)	$X_{t+3} - X_t$ - 0.02 (0.01)	$X_{t+4} - X_t$ - 0.02 (0.02)
Period				
Wave 4 (2010)	Ref			
Wave 5 (2011)	0.04** (0.02)	Ref		
Wave 6 (2012)	0.03 (0.02)	- 0.03 (0.02)	Ref	
Wave 7 (2013)	0.05 (0.03)	- 0.04** (0.02)	- 0.02 (0.04)	Ref
Wave 8 (2014)	0.08** (0.04)	- 0.03 (0.04)	- 0.03 (0.04)	0.04 (0.07)
Wave 9 (2015)	0.09* (0.05)	- 0.07* (0.04)	- 0.01 (0.04)	0.02 (0.06)
Wave 10 (2016)	0.11** (0.06)	- 0.04 (0.06)	- 0.02 (0.07)	0.03 (0.07)
Wave 11 (2017)	0.12* (0.07)	- 0.11* (0.06)	- 0.04 (0.07)	0.03 (0.07)
Wave 12 (2018)	0.17** (0.08)	- 0.04 (0.08)	- 0.00 (0.07)	0.08 (0.13)
East Germany	0.08 (0.07)	- 0.01 (0.08)	- 0.02 (0.09)	- 0.07 (0.10)
Regional unempl. rate	- 0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02** (0.01)
Years of education	- 0.00 (0.01)	- 0.01 (0.02)	- 0.06** (0.02)	- 0.04 (0.02)
Subjective health (Ref. Poor)				
Very good	- 0.01 (0.02)	- 0.01 (0.02)	- 0.01 (0.03)	- 0.04 (0.03)
Good	- 0.01 (0.01)	- 0.02 (0.02)	- 0.02 (0.02)	- 0.05** (0.02)
Satisfactory	- 0.02 (0.01)	- 0.02 (0.01)	- 0.02 (0.02)	- 0.03* (0.02)
Fair	- 0.00 (0.01)	- 0.00 (0.01)	0.02 (0.02)	- 0.00 (0.02)
$N$	13,395	9,221	6,868	4,946

**Table 3** (continued)

PASS 2010–2018. Own calculations. *b*=coefficient; *se*=standard error. \**p*<0.10 \*\**p*<0.05 \*\*\**p*<0.01. All time-varying controls are measured as first-differenced variables

first-differenced linear age specification. Thus, even if we control for changes in age in the most flexible way our central findings remain unchanged. Tables A3a and A3b present in the left column results when only using the truly exogeneous controls for age and period dummies. We excluded place of living, education and health, as these variables may be a consequence of employment transition and thus, there might be a risk of overcontrol or endogeneous selection bias. However, comparing the results to those of the main specification (see Tables 3 and 4) shows that effects of the employment transition indicators are almost unchanged.

Our findings are also robust to adding household-level controls to our set of main controls. We did not control for these variables in the main specification because they represent mechanisms according to our theoretical argument. At the household level, we accounted for changes in household size, the number of younger (0–6 years) and older (7–18 years) children, household type as well as the number of other household members who were employed, unemployed or inactive. Information on other household members' employment status was provided by one representative person of the household and is only available for waves 4–12, which was the reason to restrict the sample to the years 2010–2018 (see Table 2 for descriptive statistics on the full set of controls).

In the main analysis, there is a varying sample size in the four years ( $t+1$ ,  $t+2$ ,  $t+3$ , or  $t+4$ ) of observing the outcomes after the employment transitions. We conducted another sensitivity analysis, including only persons observed in all four years without missing values on the treatment and outcome variables. Tables A4a and A4b (see Online Appendix) show that results are similar to the main results (see Tables 3 and 4). Thus, the decline in effect sizes over time is not driven by changing sample size and composition.

In the main analysis, we included unemployed workers having a mini job (paying up to 450 Euro/month) into the status of being unemployed. Tables A5a and A5b report results of sensitivity analyses, in which we further distinguish the status of being unemployed and having a mini job from the status of being unemployed without a mini-job. Compared to the main results (Tables 3 and 4) effects become slightly larger, as the reference state of unemployment now excludes workers in mini jobs. Interestingly, transitions from unemployment without a mini job at  $t$  to unemployment with a mini job at  $t+1$  has a small poverty-reducing effect and there are some small income gains in the medium run.

## 7 Conclusion

Research on poverty dynamics has shown that unemployment is a major risk factor of poverty and that employment is key to overcoming it (Ehlert, 2016; Fouarge & Layte, 2005; McKernan & Ratcliffe, 2005; Vandecasteele, 2011). This is particularly true for Germany, which is among the countries where the link between unemployment and income poverty is especially pronounced (Brady et al., 2017). The legal promotion of fixed-term employment has often been framed as an attempt to improve the re-employment chances of the jobless

**Table 4** Transitions from unemployment to fixed-term or permanent jobs: changes in net equivalent household income; FD estimator

	1-year $Y_{t+1} - Y_t$ b (se)	2-year $Y_{t+2} - Y_t$ b (se)	3-year $Y_{t+3} - Y_t$ b (se)	4-year $Y_{t+4} - Y_t$ b (se)
Employment transitions between $t$ and $t + 1$ : (Ref. U→U)				
U→PC	326.64*** (29.52)	282.36*** (22.90)	322.46*** (65.87)	337.64*** (85.72)
U→FTC	284.68*** (13.51)	257.51*** (17.76)	256.06*** (20.92)	318.85*** (39.47)
First-differenced time-varying controls	$X_{t+1} - X_t$	$X_{t+2} - X_t$	$X_{t+3} - X_t$	$X_{t+4} - X_t$
Age	- 3.71 (7.23)	0.63 (6.06)	10.95 (8.37)	13.75 (11.54)
Period				
Wave 4 (2010)	Ref			
Wave 5 (2011)	23.45 (18.17)	Ref		
Wave 6 (2012)	58.69*** (22.31)	78.43*** (17.60)	Ref	
Wave 7 (2013)	70.25*** (26.65)	75.75*** (14.53)	100.06*** (34.79)	Ref
Wave 8 (2014)	90.98*** (33.10)	123.24*** (29.10)	79.20*** (26.77)	94.02* (51.21)
Wave 9 (2015)	124.59*** (41.93)	140.82*** (27.09)	44.38 (27.71)	79.25 (49.59)
Wave 10 (2016)	163.05*** (47.37)	201.59*** (41.70)	190.58*** (54.62)	80.28* (47.73)
Wave 11 (2017)	190.05*** (54.69)	220.93*** (41.78)	169.48*** (53.19)	96.96** (48.55)
Wave 12 (2018)	208.87*** (62.29)	258.56*** (55.39)	144.19*** (55.38)	220.44** (92.75)
East Germany	- 123.04** (54.32)	- 97.40 (67.03)	- 274.63*** (93.34)	- 241.81** (120.26)
Regional unempl. rate	18.64** (7.54)	- 3.06 (7.28)	3.35 (6.79)	- 5.04 (7.48)
Years of education	1.56 (8.70)	29.65 (23.35)	70.45** (33.64)	73.46** (37.30)
Subjective health (Ref. Poor)				
Very good	10.20 (11.73)	17.43 (15.52)	16.43 (19.16)	5.90 (32.18)
Good	7.52 (8.46)	25.98** (10.47)	29.24** (13.00)	30.89* (17.06)
Satisfactory	8.66 (7.11)	9.61 (9.50)	18.74 (11.53)	17.66 (14.26)
Fair	7.43 (6.52)	13.73 (8.77)	- 2.32 (10.49)	- 7.04 (13.40)
<i>N</i>	13,395	9,221	6,868	4,946

**Table 4** (continued)

PASS 2010–2018. Own calculations. b=coefficient; se=standard error. \*p<0.10 \*\*p<0.05 \*\*\*p<0.01. All time-varying controls are measured as first-differenced variables

**Table 5** Transitions from unemployment to fixed-term or permanent jobs and changes in poverty risks by household context; FD estimator

	1-year $Y_{t+1} - Y_t$ b (se)	2-year $Y_{t+2} - Y_t$ b (se)	3-year $Y_{t+3} - Y_t$ b (se)	4-year $Y_{t+4} - Y_t$ b (se)
Employment transitions between $t$ and $t+1$ : U→PC				
Singles	-0.57*** (0.03)	-0.45*** (0.04)	-0.37*** (0.04)	-0.38*** (0.05)
Couples w/o ch	-0.31*** (0.04)	-0.21*** (0.05)	-0.19*** (0.06)	-0.12** (0.06)
Single parents	-0.30*** (0.04)	-0.20*** (0.05)	-0.16** (0.07)	-0.19*** (0.07)
Couples w ch	-0.29*** (0.03)	-0.25*** (0.04)	-0.27*** (0.04)	-0.21*** (0.05)
Other hh types	-0.32*** (0.10)	-0.18 (0.12)	-0.13 (0.12)	-0.08 (0.16)
Employment transitions between $t$ and $t+1$ : U→FTC				
Singles	-0.58*** (0.03)	-0.43*** (0.04)	-0.32*** (0.04)	-0.29*** (0.06)
Couples w/o ch	-0.33*** (0.04)	-0.29*** (0.05)	-0.20*** (0.06)	-0.22*** (0.07)
Single parents	-0.20*** (0.04)	-0.14*** (0.05)	-0.11* (0.06)	-0.22*** (0.07)
Couples w ch	-0.31*** (0.03)	-0.26*** (0.04)	-0.26*** (0.05)	-0.36*** (0.06)
Other hh types	-0.21*** (0.08)	-0.14 (0.14)	-0.27* (0.15)	-0.02 (0.20)
First-differenced time-varying controls	YES	YES	YES	YES
<i>N</i>	13,308	9,167	6,831	4,920

PASS 2010–2018. Own calculations. b=coefficient; se=standard error. \*p<0.10 \*\*p<0.05 \*\*\*p<0.01. Models include the same set of first-differenced time-varying controls as the models in Tables 3 and 4

in order to combat poverty. According to previous, mostly cross-sectional studies, however, workers with fixed-term jobs have a higher overall poverty risk than those in permanent jobs (e.g., Horemans, 2018; van Lancker, 2012). While this suggests that fixed-term jobs might be less effective in reducing the risk of poverty at the transition from unemployment to employment, this question is largely under-researched in a longitudinal setting and was therefore addressed by the present study.

Drawing on longitudinal data from Germany covering the years 2010 to 2018 and adopting a dynamic perspective, we analysed how ending unemployment by taking up

**Table 6** Transitions from unemployment to fixed-term or permanent jobs and changes in poverty risks by occupational level; FD estimator

	1-year $Y_{t+1} - Y_t$ b (se)	2-year $Y_{t+2} - Y_t$ b (se)	3-year $Y_{t+3} - Y_t$ b (se)	4-year $Y_{t+4} - Y_t$ b (se)
Employment transitions between $t$ and $t + 1$				
U→PC				
ISCO1-3	- 0.41*** (0.03)	- 0.34*** (0.05)	- 0.26*** (0.06)	- 0.23*** (0.06)
ISCO4- 9	- 0.38*** (0.02)	- 0.28*** (0.02)	- 0.27*** (0.03)	- 0.24*** (0.03)
Employment transitions between $t$ and $t + 1$				
U→FTC				
ISCO1-3	- 0.45*** (0.04)	- 0.32*** (0.04)	- 0.30*** (0.05)	- 0.34*** (0.06)
ISCO4-9	- 0.36*** (0.02)	- 0.29*** (0.03)	- 0.23*** (0.03)	- 0.26*** (0.04)
First-differenced time-varying controls	YES	YES	YES	YES
<i>N</i>	13,372	9,204	6,858	4,937

PASS 2010–2018. Own calculations. b=coefficient; se=standard error. \* $p < 0.10$  \*\* $p < 0.05$  \*\*\* $p < 0.01$ . Models include the same set of first-differenced time-varying controls as the models in Tables 3 and 4. ISCO-88 level 1 to 3 refers to (1) managers, (2) professionals, (3) technicians and associate professions. ISCO-88 levels 4 to 9 refer to (4) clerical support workers, (5) service/sales workers, (6) skilled agricultural, forestry and fishery workers, (7) craft and related trades workers, (8) plant and machine operators, (9) elementary occupations

**Table 7** Transitions from unemployment to fixed-term or permanent jobs and changes in poverty risks by working time; FD estimator

	1-year $Y_{t+1} - Y_t$ b (se)	2-year $Y_{t+2} - Y_t$ b (se)	3-year $Y_{t+3} - Y_t$ b (se)	4-year $Y_{t+4} - Y_t$ b (se)
Employment transitions between $t$ and $t + 1$ : U→PC				
Full-time	- 0.47*** (0.02)	- 0.33*** (0.03)	- 0.32*** (0.03)	- 0.29*** (0.04)
Part-time	- 0.26*** (0.03)	- 0.22*** (0.04)	- 0.17*** (0.04)	- 0.17*** (0.05)
Employment transitions between $t$ and $t + 1$ : U→FTC				
Full-time	- 0.48*** (0.03)	- 0.41*** (0.03)	- 0.34*** (0.04)	- 0.34*** (0.05)
Part-time	- 0.27*** (0.03)	- 0.18*** (0.03)	- 0.14*** (0.04)	- 0.22*** (0.04)
First-differenced time-varying controls	YES	YES	YES	YES
<i>N</i>	13,370	9,203	6,853	4,937

PASS 2010–2018. Own calculations. b=coefficient; se=standard error. \* $p < 0.10$  \*\* $p < 0.05$  \*\*\* $p < 0.01$ . Models include the same set of first-differenced time-varying controls as the models in Tables 3 and 4. Part-time status is defined as contractual working hours being less than 35 h/week



**Table 8** Transitions from unemployment to fixed-term or permanent jobs and changes in poverty risks by firm size; FD estimator

	1-year $Y_{t+1} - Y_t$ b (se)	2-year $Y_{t+2} - Y_t$ b (se)	3-year $Y_{t+3} - Y_t$ b (se)	4-year $Y_{t+4} - Y_t$ b (se)
Employment transitions between $t$ and $t+1$ : U→PC				
Firm size $\geq 50$	- 0.38*** (0.03)	- 0.31*** (0.04)	- 0.34*** (0.05)	- 0.30*** (0.06)
Firm size $< 50$	- 0.39*** (0.02)	- 0.29*** (0.03)	- 0.24*** (0.03)	- 0.23*** (0.04)
Employment transitions between $t$ and $t+1$ : U→FTC				
Firm size $\geq 50$	- 0.39*** (0.03)	- 0.36*** (0.04)	- 0.29*** (0.04)	- 0.32*** (0.05)
Firm size $< 50$	- 0.37*** (0.03)	- 0.23*** (0.03)	- 0.21*** (0.04)	- 0.23*** (0.04)
First-differenced time-varying controls	YES	YES	YES	YES
$N$	13,226	9,111	6,785	4,889

PASS 2010–2018. Own calculations. b=coefficient; se=standard error. \* $p < 0.10$  \*\* $p < 0.05$  \*\*\* $p < 0.01$ . Models include the same set of first-differenced time-varying controls as the models in Tables 3 and 4

work affects individual poverty risks over a period of four years. Our study adds to previous research on poverty dynamics by focusing on the effectiveness of different types of employment, i.e., fixed-term and permanent jobs.

As theoretically expected, the results suggest that taking up employment improves the household income and reduces the income poverty risks of previously unemployed persons in the short and medium run. Remarkably, the short- and medium-term effects of fixed-term jobs are comparable to those of permanent jobs. Both types of employment reduce the risk of living below the poverty threshold substantially throughout the four-year observation period, although the effects are diminishing over time.

It is noteworthy that individual income gains are actually strong enough to translate into a substantial decline in income poverty risks at the household level. Apparently, gains in earned income are not entirely diluted by sharing them with other household members or by adaptive processes in the household context, including changes in other household members' labour force participation.

Nonetheless, the size and composition of a household do have an impact on the effectiveness of individual employment transitions in reducing poverty risks. Our additional moderation analyses illustrate how the effect of re-employment varies by household type. It is beyond the scope of the present study to identify the reasons for this variation. However, the pattern of results is in keeping with explanations from previous studies, suggesting that the strength and persistence of poverty-reducing effects hinges on the financial needs and number of potential earners of a household (e.g., Fouarge & Layte, 2005; Maldonado & Nieuwenhuis, 2015; Vandecasteele, 2011). While the main pattern of results is similar across household types, single parents stand out as the only group to benefit less from fixed-term jobs compared to permanent jobs and also in relation to other groups. Future

studies could examine whether and how this relates to the quality of their jobs including payment and working time.

The main conclusion of our study is that for individuals moving from unemployment to employment, fixed-term and permanent jobs have poverty-reducing effects of comparable size, both right at re-employment and in the longer term. Thus, with regard to the risk of income poverty, entering a fixed-term job does not appear less beneficial than entering a permanent job for unemployed persons – at least not within our four-year observation period after re-employment. This conclusion is also supported by additional moderation analyses that acknowledge the possibility that the effects of moving from unemployment to fixed-term and permanent jobs also vary according to labour demand-side factors such as occupation, working-time and firm size.

While the main conclusion of our study may appear astonishing at first glance, it does not contradict, but rather complements, a large body of research that found fixed-term jobs to be disadvantageous with regard to a number of work-related outcomes, including wages and employment stability (Gash & McGinnity, 2007; Giesecke & Groß, 2003; Mooi-Reci & Dekker, 2015). Findings on wages are not directly transferable to household income and poverty effects because the household context intervenes (Laß & Wooden, 2020). Moreover, unlike studies that compare the socioeconomic effects of fixed-term and permanent jobs in general, the present study has a specific focus on initially unemployed individuals taking up either a fixed-term or permanent job. As argued in one of the scenarios in the theory part, given their unemployment experience, this group is likely to be very homogeneous in terms of their employment opportunities. For example, it can be assumed that unemployed individuals are offered comparatively modest wages regardless of the type of contract. Thus, the finding that the poverty risk of unemployed individuals reduces in a similar way when starting a fixed-term or permanent job also reflects that, in this context, permanent jobs do not offer clear wage advantages (Kiersztyn, 2016). Similarly, there are reasons to suspect that for previously unemployed individuals, employment stability is limited even in the case of entering formally permanent jobs. For example, this may be because the available jobs are typically concentrated in labour market segments with high fluctuation in demand, or because of individual characteristics that make stable employment difficult, such as health conditions or lack of work experience.

In sum, the kind of work contract did not turn out as a relevant differentiation when it comes to the positive effects of re-employment on the individual poverty risk. Finding a job matters but not whether the new job is temporary or permanent. This may help to direct the attention of future research on poverty dynamics towards other aspects of job quality that might be more relevant such as working hours.

Overall, our study illustrates the ambiguous character of fixed-term employment. It can be associated with socio-economic and occupational disadvantages (Gash & McGinnity, 2007; Giesecke & Groß, 2003; Mooi-Reci & Dekker, 2015) that particularly affect vulnerable groups in the labour market such as low-wage workers (e.g., Mertens & McGinnity, 2005). At the same time, fixed-term employment can be an opportunity of re-employment for unemployed individuals and reduce their risk of poverty as effectively as permanent employment. The latter has important policy implications regarding the assessment of labour market reforms targeted at a better reintegration of the unemployed into the labour market via fixed-term jobs.

Our study has various limitations as well as potential for extensions in future studies. First, we restricted our analysis to objective indicators of income poverty and household income. Future studies could add subjective poverty indicators to capture also perceptions of individual economic conditions (Filandri et al., 2020; Scherer, 2009). Second, we

focused on the short-term and medium-term effects of having started a fixed-term or permanent job at a particular point in time without imposing any restrictions on the further employment career. Thus, later changes in employment and contract status represent part of the mechanisms of the total effect of interest that we investigated. We only provided some descriptive statistics on later changes in employment and contract status of workers who started in a temporary versus permanent job. Future research could dig deeper into these mechanisms by performing mediation analyses. Alternatively, one may move from defining transitions as treatments to studying the implications of different (temporary) employment sequences for poverty and income trajectories (Mattijssen & Pavlopoulos, 2019). Third, we focused on the effect of *individual* employment transitions on household income poverty. Previous research has highlighted the need of considering non-standard work in a household setting, as risks accumulate in households (Grotti & Scherer, 2014; Horemans, 2016). Fourth, although we motivated our study on Germany as an interesting case of increasing income poverty and deregulation of the use of temporary contracts, future studies are needed that provide a cross-country comparative perspective. Drawing on previous comparative studies on the topics of poverty dynamics (Fouarge & Layte, 2005) and fixed-term employment (Barbieri, 2009), it can be expected that results may differ depending on the institutional and structural macro-context.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s11205-023-03118-5>.

**Acknowledgements** Michael Gebel acknowledges funding from the European Research Council (ERC) under the Horizon 2020 research and innovation program (grant agreement No 758491).

**Funding** Open Access funding enabled and organized by Projekt DEAL.

## Declarations

**Conflict of interest** There is no conflict of interest.

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