

Temporary employment and poverty persistence: the case of UK and Germany

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Abstract

This work aims at providing more insight on the relationship between atypical employment and poverty, with a focus on temporary contract workers. I want to assess to which extent temporary contract workers face higher risk of poverty than standard workers and how factors such as the family structure and the welfare states influence this risk. I study the implication of being under temporary contract on the risk of poverty in a longitudinal perspective in order to investigate further the association between atypical work and poverty not only by contract type and individual characteristics as done in the two previous dynamic analysis (Debels (2008) and Amuedo-Dorantes and Serrano-Padial (2010)) but also considering the households' financial situation, the role of the partners' earnings and benefits, while controlling for feedback effects of contract type and state dependency of poverty as done by Amuedo-Dorantes and Serrano-Padial (2010). In order to do that, we use two large panels for Germany (SOEP) and UK (BHPS-UKHLS). Those panels allow us to cover extended periods as SOEP goes from 1984 to 2017 and for UK from 1991 to 2019.

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1 Introduction

Atypical work or non-standard employment, being temporary jobs, part-time or solo self-employment has been a growing trend since the 1990s in most European countries. In particular, the proportion of permanent part-time employment has increased by 2% between 2002 and 2016 on average in Europe. Temporary jobs increase by 1% in the same period. This process intensified in the aftermath of the Great recession. In 2014, about 14% of the employees had a temporary job, with the rate for women only a little higher than for men. Countries tends to make labour market more flexible in order to fight unemployment after the recent crises, leading to an increase of those flexible contract types which deregulate working time or employment stability such as zero hours contract in UK or mini job in Germany.

This phenomenon could be alongside with a growing in-work poverty in European countries (see Lohmann 2008; Lohmann 2009; Marx et al. 2012; Horemans 2016 among others). It has been already shown that both part-time and temporary employment are associated with higher risk of poverty in Europe (Horemans and Marx, 2013b, Horemans, 2018, Van Lancker, 2013), these authors show also that the relationship between temporary contract employment and poverty is not always straightforward.

Temporary contract individuals work less than full-time full-year workers, this so-called 'hours penalty' would in a fairly obvious way involve higher poverty risk. Also, theoretical literature suggests that temporary jobs would benefit from wage compensation for the lack of employment security even though empirical literature tends to show that temporary jobs suffer from a wage penalty after controlling for job characteristics (see Booth, Francesconi and Frank (2002), Blanchard and Landier (2002), OECD (2002) among other). Still, there are also evidence that some temporary workers benefit from higher wages (OECD 2002).

Even if temporary contract workers tend to suffer from both hours and wage penalty, it is still not obvious that this leads to poverty at the household level, as depending on the household composition and other income in the household, this would leads to different financial situations (Andress and Lohmann (2008)).

Welfare states play also a significant role regarding the link between temporary employment and the risk of poverty as the likelihood of receiving income replacement benefits might play a significant role across country, as we observed recent development of in-work benefits to complement earnings in many countries. Temporary contract workers, in principle, tends to have more access to benefits such as unemployment, in-work benefits or family benefits.

This means that individual earnings of temporary contract workers is not the only factor that we need to study in order to understand the interplay between temporary contract work and poverty at the household level. For all the factors mentioned below, it is not always clear whether the poverty risk is higher for temporary contract workers than for standard workers.

This work aims at providing insight on the relationship between temporary employment and poverty. We want to assess to which extent temporary contract workers face higher risk of poverty than standard workers and how factors such as the family structure and the welfare states influence this risk. Although there exists already some work on this subject that has shown an association between poverty and temporary contracts, only very few studies are conducted in a longitudinal framework (Debels, 2008 for Europe and Amuedo-Dorantes, 2010 for Spain).

We study further the implication of being under temporary or part-time contract on the risk of poverty in a longitudinal perspective in order to investigate further the association between temporary contract work and poverty not only by contract type and individual characteristics as done in the two previous dynamic analysis (Debels (2008) and Amuedo-Dorantes and Serrano-Padial (2010)) but also considering the households' financial situation, the role of the partners earnings and the welfare state as done recently by Horemans and Marx (using cross-sectional analysis), while controlling for feedback effects of contract type and state dependency of poverty as done by Amuedo-Dorantes and Serrano-Padial (2010). In order to do that, we use two large panels for Germany (SOEP) and UK (BHPS-UKHLS). Those panels allow us to cover extended periods as SOEP goes from 1984 to 2019 and for UK from 1991 to 2019. This period enables us to take into account recent crisis contexts which contributed to the exacerbation of flexible work contract. We estimate a correlated dynamic random effects probit model with endogenous initial conditions (Wooldridge, 2005) augmented by the initial period of explanatory variables (Rabe-Hesketh and

Skrondal (2013)) in order to avoid biased estimation regarding the conditional distribution of unobserved effects. This estimation strategy enables us to robustly answer the following questions: Does being on a temporary contract increases the probability of being poor?

2 Temporary employment and poverty: previous findings

Research regarding the poverty risk associated with temporary employment remain scarce (Debels (2008), Amuedo-Dorantes and Serrano-Padial (2010), Van Lancker (2012;2013), Horemans (2016;2018)). As Horemans (2018) shows, the poverty risk of atypical workers, both part-time and temporary jobs, can not be understood without considering earnings from other household members and government transfers. He shows that other household members and benefit compensation plays a significant role to avoid poverty. Using cross-sectional analysis, the paper of Horemans (2018) studied both part-time and temporary contracts and how these contract types lead to poverty using cross-sectional EU-SILC 2012. He applied a decomposition approach using Oaxaca-Blinder decomposition (1973) using a logit model which allows to explain the poverty gaps between temporary contract workers and permanent workers as well as poverty gaps between part-time and full-time worker according to socio-demographic characteristics, household compositions, and hourly wages. He shows that the reason why part-time and temporary contracts are poor is this double penalty (they do not work enough and they face lower wages). However, the profile characteristics of non-standard workers differs across countries and the degree to which low wage or other characteristics leads to poverty differs across countries. More generally, temporary work has been found to be associated with an higher probability of experiencing financial difficulties (Buchler et al. 2009, Scherer 2009, Swami, 2017) and lower levels of financial satisfaction (Buchler and Scherer 2009, Swami, 2017). Regarding temporary employment and household income more generally, Laß and Wooden (2020) showed that casual and temporary agency employment is associated with lower household income using longitudinal data for Australia.

Except for Debels (2008) for EU countries and Amuedo-Dorantes and Serrano-Padial (2010) for Spain, which focus on temporary jobs, no study used longitudinal perspective in order to take

into account unobserved individual heterogeneity.

Debels' work estimated a fixed-effect logit model of poverty conditional of current labour market status, household context and controlling for age and education level. But it seems crucial to not only take into account unobserved heterogeneity as done by Debels's work but also the state dependency of being poor. Debels' work do not take into account the state dependence of poverty status, meaning that the contract type is considered as exogenous in this case. It seems important to consider that contract type is potentially endogenous as past poverty status or past job instability might affect the propensity to be under less stable contract.

This has been only done for Spain by Amuedo-Dorantes and Serrano-Padial's work so far in which they estimated a probit panel data model using the conditional maximum likelihood approach for limited dependent variables (Wooldridge 2000). In their paper, they estimated the risk of poverty according to the contract type (temporary or permanent), the previous work status (to allow for feedback effects), previous poverty status (in order to take directly into account the state dependency of poverty) and control for individual socio-economic characteristics.

This work does not consider the earnings of other household members, the partner's contract type or government benefits received at the household level. However, as shown by the recent work of Horemans and Marx (2013) and Horemans (2018), both partner's earnings and government benefit plays a crucial role.

3 Labour market regulations in UK and Germany

We concentrate on Germany and the UK, as these countries are recently widely studied in policy comparison (Clasen 2005; Seeleib-Kaiser and Fleckenstein 2007; Giesselmann 2014). UK and Germany are both marked by quite flexible labour market while being two different welfare states with institutional differences, one considered as Corporatist and the other as Liberal (Esping-Andersen, 1990, 1999). Regarding labour market regulation, considering the strictness of regulation

of temporary employment developed by the OECD, in 2019¹, the labour market regulation is very low in UK at 0.38, and at 1.38 for Germany. Even though there are differences between the two countries, they are both characterised by low regulation as this indicator is higher than 1.5 for many European countries, going up to 3.75 for Luxembourg.

The UK is considered to have one of the most flexible labour markets among developed countries (OECD, 2013, 2020)

The share of part-time employment was at 25.2% in Germany in 2006 and at 26.5% in 2014. In UK, this share in total was at 24.2% in 2006 and at 25.3% in 2014. This share is significantly higher than the average prevalence of PT work in EU(28) which is at 19.6% in 2014. In UK, the share of 'involuntary' part-time tends to increase as it was at 9.5% in 2006 and is currently at 18.8%. For Germany, this share went from 23.1% in 2006 to 14.5% in 2014. While part-time work increased in both country, in Germany it became more and more voluntary as the increase in UK goes with an increase in involuntary part-time work.

4 Data and methodology

4.1 Data and descriptive statistics

Our empirical analyse is based on data from the SOEP for Germany and the BHPS-UKHLS for UK covering an extended period from 1991-2019. The German Socio-Economic Panel (SOEP) provides representative individual longitudinal data for all persons older than 16 years living in German households. The representative panel study started in 1984 and provides subjective as well as objective information about the individual living conditions in Germany (Goebel et al. 2019). We focus here on in work individuals in order to compare the poverty dynamics of workers according to different types of contract. We select individual at the head of the household those individuals who over the entire analysis period worked for at least two years aged from 19 years old

¹This indicator refers to the maximum number of successive fixed-term and temporary work contracts, the maximum cumulated duration of such contracts and other restrictions on atypical employment (OECD 2004)

to 64 years old.

Table 1 shows the distribution by types of contract for three years of survey. This table shows that the share of permanent contract seems to decrease in Germany while the share of temporary contract, in particular very short term contract (fixed-term < 1 year) has increased.

Table 1: Prevalence of contract types

Year	2000	2010	2019
Permanent	91.25	88.53	88.06
Temporary agency	1.52	2.22	2.73
Fixed-term <1 year	3.23	4.11	4.4
Fixed-term 1-2 years	1.46	2.08	2.2
Fixed-term >2 years	2.55	3.05	2.61

Source: SOEP data

Table 2 presents the characteristics of temporary workers which are at the head of the household in our data for Germany. We find a tendency of an increasing share of women among temporary workers. Not surprisingly, the main share of our workers are aged from 30-50 years old but we observe a growing share of workers aged above 50 years old among this type of workers in Germany. This type of employment seemed to be combined with the receipt of unemployment benefits during the year since in 2000, around 14% of workers benefited also from unemployment benefits and this share is only at 6% in 2019. We find the same tendency for recipients of social assistance benefits. We find again here that the increasing tendency of temporary contract workers is mainly driven by the increase of fixed-term contract less than 1 year and temporary agency work. The share of temporary contract workers in the population increased over the years while the share of temporary workers with a duration over 2 years tends to decrease. Temporary contracts tend to be increasingly preponderant and of shorter duration.

Table 2: Characteristics of temporary workers

	2000	2010	2019
Men	55.58	44.01	52.25
Women	44.42	55.99	47.75
Age <30	37.05	27.93	29.50
Age 30-50	51.59	58.37	55.18
Age>50	11.35	13.70	15.32
Married	36.45	62.58	42.30
Mean household's size	2.24	2.66	2.48
Mean worktime per week	39.10	34.04	34.32
Unemployment benefits recipient	14.34	11.46	6.19
Social assistance recipient	6.57	2.5	0.68
Has second job	5.18	4.35	
Contract type			
Temporary agency	17.33	19.37	22.86
Fixed-term <1 year	36.85	35.84	36.82
Fixed-term 1-2 years	16.73	18.18	18.47
Fixed-term >2 years	29.08	26.61	21.85

Figure 1 presents the distribution of the disposable income at the household level for year 2000 and 2019. The gray line represents the income distribution of permanent contract workers and the black line for temporary contract workers. The red line represents the current year poverty line.

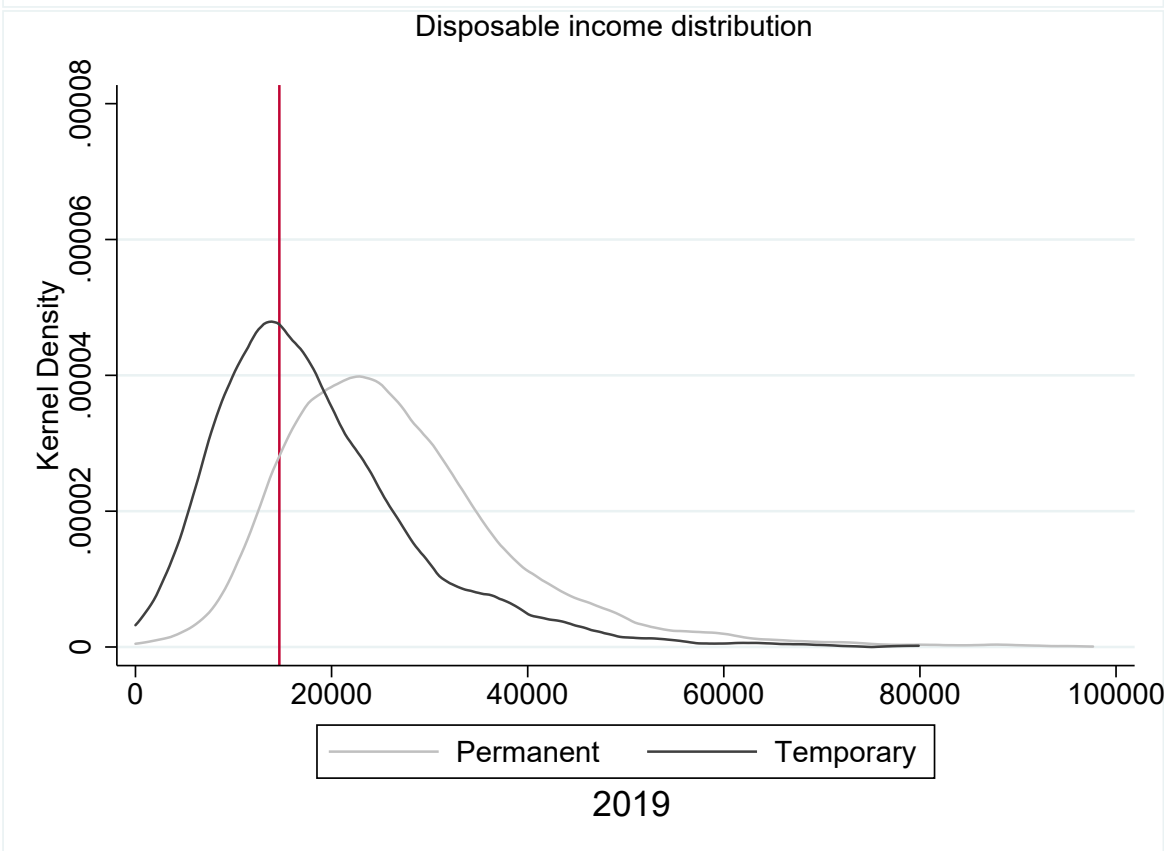
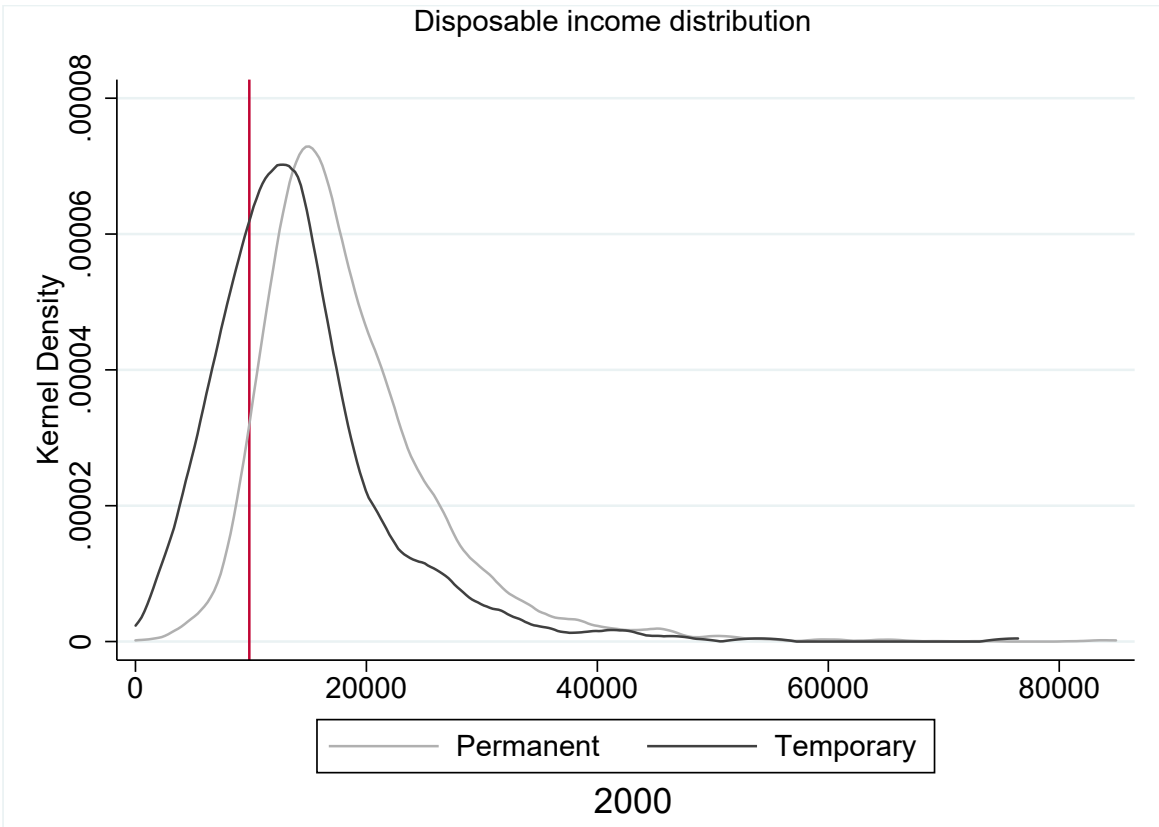


Figure 1: Equivalent income distribution 2000, 2019

4.2 Empirical methodology

We analyse poverty persistence implication of temporary workers with the objective of identifying the state dependency of poverty, which needs to be disentangled from unobserved individual characteristics that might affect also poverty. State dependence relates to the serial persistence commonly found when experiencing an event in the past increases the probability of experiencing the same event in the present. In other words, the fact that individuals who experience poverty today are more likely to be in poverty tomorrow does not demonstrate the presence of state dependence. This phenomenon can be observed if certain individuals' characteristics increase their chance to be poor (bad health for example), yet the experience of poverty itself does not affect the probability of future poverty. In this case, the persistence of poverty is due to factors driving poverty (such as bad health), which is called the 'spurious' state dependency. We need to separate what is called the 'genuine' state dependence of poverty (how experiencing poverty itself affect future poverty) from the impact of job type and household characteristics on future poverty (i.e. the 'spurious' state dependence). State dependency of poverty can be explained by the fact that an individual who experienced poverty in the past might behave differently from individual who did not experience poverty, for example, they might tend to accept more precarious jobs. This means that the experience of poverty itself increase the likelihood of being poor, as shown by Jenkins (2011, 2013). The 'genuine' dependence is captured by the impact of the lagged dependent variables, here the poverty status. The 'spurious' state dependence is caused by the time invariant unobserved heterogeneity. We estimated here a correlated random effect probit model with endogenous initial conditions, based on Wooldridge (2005).

Poverty persistence can be explained also by the individual and household observed and unobserved heterogeneity rather than by the genuine state dependence. We control for unobserved heterogeneity by introducing a household specific random effect that is assumed to be normally distributed and independent of other covariates. We relaxed the independence assumption following Mundlak's specification (Mundlak 1978) with unobserved heterogeneity which is decomposed with one correlated with time-varying explanatory variables and one uncorrelated. We treat the initial condition problem, the fact that there is endogeneity between the initial poverty status observed in

the data and the unobservable variables that might affect the initial poverty status and the distribution of poverty as shown by Heckman (1981). We follow the approach based on Wooldridge’s (2005) “simple solution to the initial condition problem”. By conditioning the outcome variable by the initial observation (poverty status at the first period here), Wooldridge includes the values of the time-varying explanatory variables at each period in the model. We use the Wooldridge’s method using an alternative Conditional Maximum Likelihood estimator that considers the distribution conditional on the initial value of the poverty status here. We control for the poverty status at the first period observed. This allow us to estimate a correlated random effect probit model with endogenous initial conditions.

Although the use of within-unit averages has the benefit of parsimony and does not require a balanced panel, this specification of the model tends to provide biased estimates. The reason for this is that the conditional distribution of unobserved effects depends more on the value of the initial period than on the values of the other periods of the explanatory variables and basing the within-means on all available periods for incomplete panels has not been justified in the literature (Rabe-Hesketh and Skrondal, 2013; see also Skrondal and Rabe-Hesketh (2014)). We use the solution proposed by Rabe-Hesketh and Skrondal (2013) by augmenting the model specification with the initial values of the explanatory variables to reduce the finite sample bias. They showed that this method performs as well as Wooldridge’s one and allows for a more flexible model.

The model specification can be written as:

$$y_{it} = \gamma Z_{it} + \rho y_{it-1} + c_i + u_{it} \quad (1)$$

The outcome variable y_{it} can be interpreted as the chances of experiencing a particular status, household-level poverty in this case, for unit i , at time t as a function of a set of time-varying explanatory variables, Z_{it} . The explanatory variables are considered as strictly exogenous, conditional on the unit-specific unobserved effects c_i . y_{it-1} captures ‘genuine’ state dependence and u_{it}

is an idiosyncratic error term. y_{it} is defined as:

$$y_{it} = \begin{cases} 1 & \text{if } y_{it}^* \geq 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

The dependant variable, y_{it} takes the value of one if the households i is the poverty status at time t and takes the value 0 if the household is not in situation of poverty. The unit-specific unobserved c_i can be written as:

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \bar{Z}_i \alpha_2 + Z_{i0} \alpha_3 + a_i \quad (3)$$

The intial value of the explained variables is represented by y_{i0} and the initial value of explanatory variables by Z_{i0} . \bar{Z}_i represent the within-unit average for the explanatory variables averaged for all periods. a_i is a unit-specific time-constant error term, which is normally distributed. As mentioned in Rabe-Hesketh and Skrondal (2013), unobserved heterogeneity is captured by α_1 , y_{i0} (the initial period of the response variable), $Z_{i0} \alpha_3$ (the initial period of the time-varying explanatory variables) and $Z_i \alpha_2$ (the within-unit averages of the time-varying explanatory variables).

5 Results

We analyze here how the link between poverty and temporary employment. We also study how many factors such as the household characteristics, level of benefits such as unemployment benefits and social assistance affect this risk. We are able also to examine the initial conditions and the 'true' states dependence in relation to poverty. Table 3 presents the estimates of the correlated random effect dynamic probit model with initial conditions endogeneity on the risk of poverty. We also present the average partial effects (APE) which allow us to quantify the extent to which the type of contract impacts on the risk of poverty.

Regarding the state dependency of initial conditions, we find a strong endogeneity of initial conditions as being at risk of poverty at the first period of analysis increases by 9.1% the poverty risk of the household. We also find that being employed at temporary agency at initial conditions significantly decreases the poverty risk. Being married, age of the household's head, receiving

unemployment benefits and social assistance at initial condition increase the poverty risk also.

We also find a strong and statistically significant coefficient associated with $AROP_{t-1}$, meaning that being exposed to poverty in the previous year increases the poverty risk in the current year. This coefficient can be considered as the causal effect of previous poverty status on the current poverty status, which is the poverty persistence. Looking at the APE, we find that being at risk of poverty in the previous year increase the probability of future poverty status by 11.3%. We find that the poverty risk increases with the number of children and the household size. On contrary, the poverty risk tends to decrease with age, also if the head of the household is a women (see on the literature why?) and with being married. Now if we focus on the implication of the contract type, we find that being on temporary contract increase the poverty risk in comparison to being on permanent contract (which is the reference variable here). More specifically, we find a particularly high risk of poverty associated with being on temporary agency contract and on fixed-term contract whose duration is less than one year (the poverty risks increases by almost 3%). Being on fixed-term contract between 1 and 2 years seems to be associated with a much lower risk of poverty. For individuals on contracts of more than two years, this risk seems to be rising again and is in the same order of magnitude as very short-term contracts (risk of poverty increases by 2.3%). Being currently married and a women at the head of the household decreases the poverty risk by 35% and 12.8% respectively. We can see the effect of access to social assistance on the risk of poverty as it decrease this risk by 1%. Having a second job strongly decrease the risk of poverty of individual (reduction by 12.7%).

We find a strong time-averaged effect of being on temporary agency contract and fixed-term contract under 1 year (it increases the risk of poverty from 6% and 3.2% respectively). Being under fixed-term contract over 1 year seems to have no significant effect on the risk of poverty. As previously, we find a significant effect of being married, the age and the hours of work per week on poverty risk reduction. Receiving unemployment benefits and social assistance is on average associated with a higher risk of poverty of the households.

Table 3: Correlated random effects probit model with endogenous initial conditions

	Germany	
	AROP	
	Coeff	APE
AROP t-1	1.028*** (0.02)	0.113
Temporary agency contract	0.356*** (0.06)	0.029
Fixed term < 1 year	0.355*** (0.04)	0.029
Fixed term 1-2 years	0.113** (0.05)	0.009
Fixed term > 2 years	0.299*** (0.05)	0.023
Women	-0.243*** (0.03)	-0.128
Age	-0.0161*** (0.00)	-0.001
Married	-0.486*** (0.04)	-0.350
Number of children	0.055*** (0.01)	0.004
Household size	0.047** (0.02)	0.003
Work time per week	-0.017*** (0.00)	-0.001
Unemployment benefits	-0.019 (0.00)	0.001
Social assistance	-0.148*** (0.00)	-0.010
Second job	-0.185*** (0.05)	-0.127
Health	-0.013* (0.01)	-0.001
West Germany	0.271*** (0.03)	0.019

(continuation)

	Germany	
	AROP	
	Coeff	APE
Initial values of the control variables		
1.AROP__0	0.958*** (0.03)	0.091
Temporary agency contract__0	-0.150** (0.06)	-0.010
Fixed term < 1 year__0	-0.053 (0.04)	0.004
Fixed term 1-2 year__0	0.049 (0.07)	0.003
Fixed term > 2 years__0	0.080 (0.06)	0.006
Married__0	0.285*** (0.05)	0.020
Age__0	0.039*** (0.00)	0.003
Number of children__0	0.005 (0.01)	-0.003
Household size__0	0.011 (0.02)	0.001
Work time__0	0.001 (0.00)	0.000
Unemployment benefits__0	0.020* (0.00)	0.002
Social assistance__0	0.054** (0.00)	0.004
Second job__0	-0.115 (0.02)	0.005
Health__0	-0.019** (0.01)	-0.001

(continuation)

Germany		
	AROP	
	Coeff	APE
Time average		
m__Temporary agency contract	0.876*** (0.15)	0.060
m__Fixed term < 1 year	0.464*** (0.12)	0.032
m__Fixed term 1-2 year	0.312 (0.17)	0.021
m__Fixed term > 2 years	-0.143 (0.13)	-0.010
m__Married	-0.299*** (0.07)	-0.020
m__age	-0.028*** (0.00)	-0.002
m__Number of children	-0.015 (0.02)	0.001
m__Household size	0.039 (0.03)	0.003
m__Work time per week	-0.015*** (0.00)	-0.001
m__Unemployment benefits	0.124*** (0.00)	0.009
m__Social assistance	0.198*** (0.00)	0.014
m__sc_job	0.133 (0.12)	0.009
m__Health	0.034 (0.02)	0.002
_cons	-1.028*** (0.10)	
var(_cons[pid])		
_cons	0.587*** (0.03)	
N	121136	
Log lik.	-21777.2	
Chi-squared	11438.4	
LR test	1699.62[0.0000]	

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4 shows the probability of entering into poverty, exiting poverty and the mean duration of the poverty status across different contract types. We find that the probability of entering (exiting) poverty are higher (lower) for both household in which the head of the household works at Fixed-term contract lower than one year and between one and two years duration. The risk of poverty (both entering and staying at poverty) is lower for temporary agency in comparison to other temporary contract.

Table 4: Estimates of transition probabilities according to contract types

	Temporary agency	Fixed term <1 year	Fixed term 1-2 years	Fixed term >2 years
Entry probability $P(1 0)$	0.0324	0.0571	0.0572	0.0402
Exit probability $P(0 1)$	0.8578	0.7855	0.7852	0.8336
Mean duration	1.1658	1.273	1.2735	1.1997

Figure 2 represents the impact of the genuine dependence state of poverty across households reporting different initial conditions. This figure allows for study the heterogeneous state dependency of poverty as it is distinguish across five quantiles of unobserved heterogeneity (i.e. different quantiles of the distribution of the time-varying explanatory variables). On the left-side of the graphic, we find the probabilities for household who are not in situation of poverty in the initial conditions and right-side for the households being poor as initial condition. The black dots represents the probability of remaining poor if the household is under poverty the previous year ($AROP_{t-1} = 1$) and the white dots the entry probability into poverty when being not poor the previous year ($AROP_{t-1} = 0$). The difference between the black and white lines represents the marginal effects of the genuine state dependency of poverty at each level of unobserved heterogeneity.

This Figure then shows that first, households being at poverty as initial condition (the first observation) have higher probability of being poor in comparison to households not poor as initial condition, regardless of the unobserved heterogeneity distribution. Across the unobserved heterogeneity distribution, the poverty risk increases, indicating the relevance of unobserved heterogeneity in shaping poverty risk. Regarding the marginal effect of genuine state dependency, we show that the state dependency tends to be higher for individual already poor as initial conditions, as the gap between the white and black lines are much higher for households already poor in initial

condition.

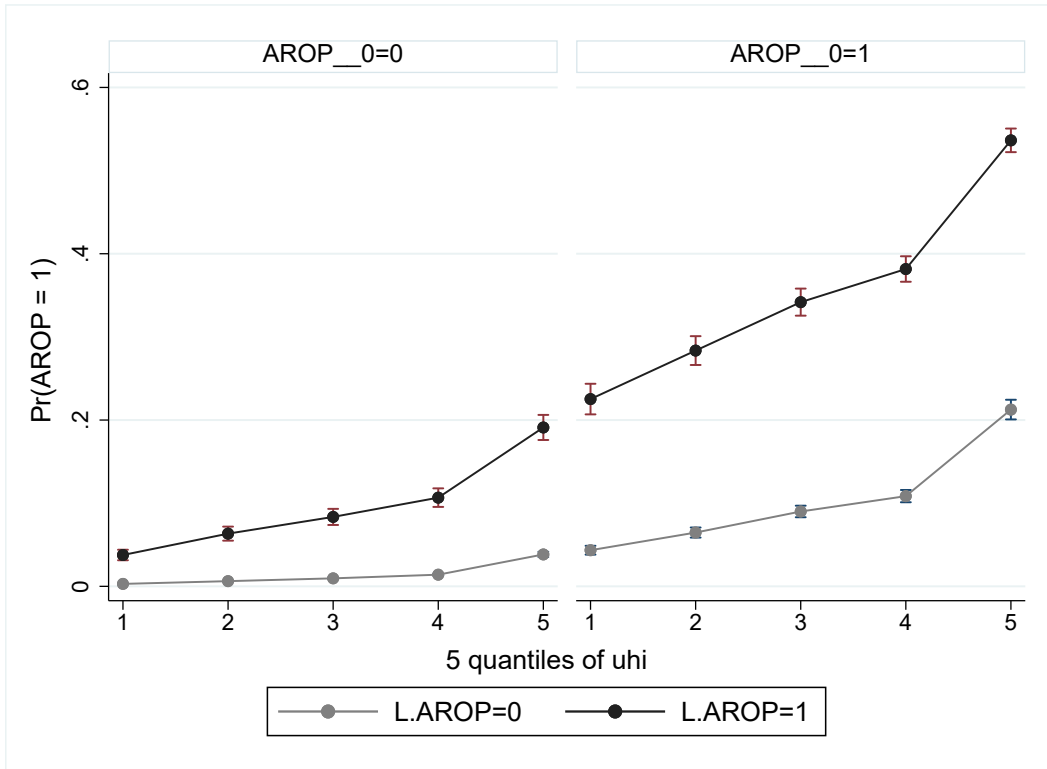


Figure 2: Predicted probability of being At risk of poverty (AROP)

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