A disadvantaged childhood matters more if local unemployment is high

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Non-technical summary

This paper shows that, after accounting for education and work experience, growing up disadvantaged increases the vulnerability to local labour market conditions. We show that there are only small differences between young adults from different backgrounds in West Germany at times of low local unemployment rates. As the local labour market gets tighter the disadvantaged are more affected in their employment probability and in job quality.

The literature has mainly focused on supply-side factors such as cognitive skills or the quality of social networks in explaining how family background affects labour market outcomes. The impact of these factors depends on employers' hiring decisions. If there is more competition for a job employers are in a position to raise hiring standards. As the disadvantaged may signal lower skills or be less well connected than their more advantaged counterparts, they may be more affected by labour market tightness than similarly qualified peers from a more advantaged background.

In this paper we use the German socio-economic panel study to study how people's early career, in terms of employment, wage and the probability of working on a less secure temporary contract, is affected by conditions in their household when they were growing up. It is shown that background does not always have the same effect and that it depends on the local unemployment rate. As the unemployment rate rises the disadvantaged are more affected.

As scarring literature suggests that early negative experiences can have long-lasting effects, having the bad luck of entering the labour market during bad economic times can cast a long shadow for the disadvantaged. It is therefore crucial to take local labour market conditions into account when studying inequality over generations over time.

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Abstract

Using multilevel models on the German Socio-Economic Panel Study this paper shows that disadvantaged young adults (16-35 years old) are more affected by the business cycle than their similarly educated counterparts from more advantaged backgrounds. We propose that a disadvantaged background lowers desirability on the labour market, which matters more to employers as the labour market tightens. When the local unemployment rate is high, young adults from a disadvantaged background are less likely to be hired for good jobs or hired at all than their more advantaged counterparts. These results are robust to different operationalisations and sibling fixed effects.

Keywords: labour; family and networks; income and poverty

1. Introduction

In a society with equal opportunities family background should not matter on the labour market once education and work experience are taken into account (Jackson, 2007). Inequality does persist however as growing up in a disadvantaged household, with lower economic, social and cultural capital has been shown to affect the skills and resources of children (Bourdieu, 1997). As a result, the disadvantaged could on average be seen as less desirable on the labour market compared to similarly qualified young adults from a more advantaged background (Anger and Heineck, 2010; Bowles et al., 2005; Flap and Völker, 2008; Heineck and Riphahn, 2007). How much their background affects their outcomes depends on employers as well. Employers make their decision based on perceived skills within the context of the labour market (Devereux, 2002; Reder, 1955).

This paper focuses on young adults in West Germany in their early career between 1986 and 2011, showing that growing up in a disadvantaged household is not penalized on the labour market when labour market conditions are good and education is taken into account. On the other hand, as local labour market conditions worsen, those from a disadvantaged background are increasingly unlikely to find well-paying jobs or to find jobs at all, and are crowded out of desirable positions by their counterparts whose childhood was more advantaged. These findings are important as in Germany family background is considered to influence education, but once education is taken into account the stratified and highly regulated labour market is believed to be meritocratic (Heineck and Riphahn, 2007). By showing that family background still matters when young adults have the bad luck of looking for work in a tight labour market this paper suggests this is not the case.

Whether someone growing up in a disadvantaged household faces a more difficult early career than the more advantaged depends partly on luck. This is not trivial as experiencing more unemployment or lower paid employment in the early career can have long-lasting effects through scarring (Gregg and Tominey, 2005; Mavromaras et al., 2013). We can expect the inequality by background to be high among a cohort of young adults who enter during high unemployment and it is likely that this

remains so over their lifecourse.This paper therefore argues that the local labour market at the time of job entry should be taken into account when studying intergenerational socio-economic mobility.

Section 2 discusses the conceptual framework on how family background interacts with the labour market context to influence the early career. In section 3 the business cycle is introduced as a possible explanation of trends in intergenerational persistence and family background effects. To test whether the effect of family background depends on the local unemployment rate multilevel models are estimated on data from the German socio-economic panel study (SOEP). Section 4 elaborates on the methods, data and sample selection and the variables. The results are shown in section 5 and section 6 presents several tests, including sibling fixed effects, showing that the results are robust to different specifications. The paper ends with discussions and conclusions.

2. Conceptual framework

Parental disadvantage is associated with children's lower education which affects their labour market success (Alon, 2009; Lucas, 2001; Smeeding et al., 2011; Triventi, 2013). While education is an important channel through which disadvantage is transmitted over generations, this paper focuses on whether family background still matters afterwards in differentiating between people with similar qualifications. While an important transmission mechanism is not considered, it is also important to study whether family background still differentiates between similar young adults. There are differences in skills and desirability on the labour market within educational groups (Green and McIntosh, 2002). Family background can be expected to influence this ranking within educational groups through two main mechanisms.

First, family conditions affect cognitive and non-cognitive skills (Anger, 2012; Cunha and Heckman, 2007; Farkas, 2003; Schoon et al., 2012). Cognitive skills refer to characteristics such as intelligence or problem-solving capabilities, while non-cognitive skills refer to personality and behaviour, as well as attitudes. Valued on the labour market, these skills have been shown to influence employment probabilities and wages when keeping education constant (Cunha and Heckman, 2007).

Second, growing up in a disadvantaged family affects the type of contacts young adults have access to through their social networks (Barbieri et al., 2000; Flap and Völker, 2008). Many young adults rely on their parents' networks while searching for work as their own networks are not yet well developed (Corak and Piraino, 2011; Loury, 2006). Young adults from a more advantaged background will on average be better connected to people with high status via their parents. That means they can rely on more help in getting good jobs than young adults from a disadvantaged background whose parents have a network with fewer high-status workers (Flap and Völker, 2008). Holzer (1988) found that young people in the US mainly relied on friends and networks to find a job. Job offers found this way were also accepted more often and resulted in longer tenure as well. Besides reducing the cost of job search, recommendations through contacts also reduce uncertainty for employers (Holzer, 1988). Young adults from a disadvantaged background may therefore find it harder to get access to good jobs, as their parental network will often not include high-status contacts (Flap and Völker, 2008).

Using several UK birth cohorts, Bukodi and Goldthorpe (2011) find that the effect of family background on attaining high-class jobs after accounting for education differs over time. This suggests that the degree to which family background matters on the labour market depends on some other factors. We propose that the effects of family background on young adults influence their labour market outcomes depending on the context in which they enter employment. Young adults compete for the most desirable jobs and employers make their choices based on the competition for the job and their hiring standards which incorporate all the information they have on the applicant (Devereux, 2002; Thurow, 1975). Reder (1955) proposed that employers react to the business cycle by lowering their hiring standards when demand outstrips supply and by increasing the hiring standards when supply is larger than demand. Pollman-Schult (2005) and Buttner et al. (2010) confirm this for Germany.

During worse economic times employers will attach more importance to skills (Reder, 1955). The disadvantaged will on average seem to be lower skilled than similarly qualified peers from a more advantaged background. This can be through a c.v. with fewer extra-curricular activities or through type and quality of schooling, but it can also come about through perceptions of employers during the hiring process which are taken to be a signal for skills (Humburg et al., 2012). Job-seekers who can rely on their network to find out about positions and to get recommendations will have an added advantage when labour markets are tight as this reduces the uncertainty for employers (Kurz et al., 2005). These two mechanisms combine to bump young adults from a disadvantaged background down or out of the job ladder in favour of the more advantaged as competition for jobs increases.

Macmillan (2014) showed that the intergenerational transmission of unemployment in the UK was stronger if the local unemployment rate was higher which she explains through a shared network with low information on jobs. Among the cohort of 1970, children of fathers who did not work at one point during the child's upbringing are on average 10 percentage points more likely to be unemployed than those whose fathers did work. This rises to 30 percentage points during high local unemployment and almost disappears during low unemployment. This is a crucial finding as it indicates that the effects of disadvantage are linked to the local labour market. We add to this by specifically addressing a crowding-out mechanism and testing this among similarly qualified young adults.

In order to test whether the disadvantaged are also more likely to be bumped down to worse jobs as the labour market tightens we study the type of job contract and the hourly wage attached to the job, besides studying whether someone is employed at all. As jobs become scarcer we expect that disadvantaged young adults with some higher qualifications might not be more at risk of unemployment, but will have to content themselves with less secure and lower-paying jobs than they would have access to during better economic conditions. The lower-qualified from a

disadvantaged background will presumably be affected most and could be crowded out of employment (Humburg et al., 2012; Reder, 1955).

We also aim to explain why the disadvantaged are more vulnerable to the business cycle than their advantaged counterparts. Green and McIntosh (2002) suggest that skill differences are shown in the probability of being overqualified. If the disadvantaged are seen as less skilled, they would be less likely to find a job that matches their qualifications as the labour market tightens, compared to their more advantaged peers. If the disadvantaged have a less useful social network than the more advantaged we expect them to be less likely to find a job at all through networks as the labour market tightens. We also expect the jobs found through this mechanism to be better for the more advantaged than for the least advantaged.

3. Initial evidence on role of local labour markets

Several studies have found differences in the degree of inequality by family background or in the related topic of intergenerational mobility (Bukodi and Goldthorpe, 2011; DiPrete, 2002; Jonsson et al., 2007). Income inequality in a country is thought to be associated with lower social mobility (Björklund and Jäntti, 2009). Institutions such as labour market regulation and educational systems are also mentioned, as are cultural conventions such as 'the American dream' (Erola, 2009; Nolan et al., 2011). Inequality, institutions and culture are definitely important in explaining variation between countries and over time in intergenerational socio-economic mobility, but generally do not change rapidly or between regions within a country. Labour market conditions do vary however and may therefore be a good candidate to explain shorter term differences. This section aims to show that differences in labour market context may help to explain variations among previous studies in the effect of family background on outcomes.

Taking the unemployment rate into account could be important when studying societal changes. When using information on cohorts of people it is possible that the different conditions in which these cohorts enter the labour market confound the finding of large-scale trends. In the UK for

instance, people born in 1958 would experience an average unemployment rate of 6.9% between the ages of 16 and 25. For young adults born in 1970 it would be 9.3%[1]. If those entering the labour market at the higher unemployment rate are more affected by their family background, we would expect to find a higher persistence over generations in the 1970 than the 1958 cohort. Blanden and co-authors (2007) have indeed found an increasing association in income between fathers and sons when comparing the 1970 to the 1958 cohort. This finding has been questioned by studies analysing social class rather than income mobility (Erikson and Goldthorpe, 2010).

Harding et al. (2005) study changes in the effects of family background[2] in the USA between 1962 and the 1990s. They find that background had a stronger effect after 1972, while its role seemed to be reducing between 1962 and 1972. The average unemployment rate was 4.65% in 1962-1971 and 6.82% in 1972-1990[3], so that the increase in unemployment coincides with the increased family background effect found by Harding and co-authors (2005).

Wiborg and Hansen (2009) on the other hand find little variation in the correlation of family origin with adult outcomes in Norway for children born between 1955 and 1985 despite disadvantage as a whole declining. A possible reason for this surprising result could be that the unemployment rate in Norway in that period[4] also showed remarkable consistency with an average of 1.56% and a standard deviation of 0.71. This is a very low and stable unemployment rate.

Ozturk (2013) found an decrease in income mobility in west Germany in the five-year window after reunification. While reunification was coupled with a small economic boom in the West, it also brought with it a weaker labour market in the East with higher unemployment, meaning that there would be more competition for jobs (Kurz et al., 2005). The changing labour market conditions could therefore also play a role in explaining the shock effect of reunification on income mobility.

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[1] http://stats.oecd.org/index.aspx?queryid=36324# , accessed on 26/03/2014 at 10:55
[2] They operationalized family background as income, occupation, education, number of siblings and whether the family was broken, racial background and an indicator for being in the South of the US.
[3] http://data.bls.gov/pdq/SurveyOutputServlet, accessed on 26/03/2014 at 10:43
[4] http://stats.oecd.org/index.aspx?queryid=36324#, accessed on 26/03/2014 at 10:55

This short overview indicates the possible explanatory power of the labour market context. The next section presents the data and methods used to study this more rigorously.

4. Data and methods

The analyses are carried out using the German Socio-Economic Panel Study (SOEP) from 1984 to 2011 for West Germany[5]. Every member of a household is followed over time, even after they leave the original household. We observe the household situation while growing up and can link this to later outcomes. The sample consists of 12,871 observations for 2,622 young adults, aged between 16 and 35.

Each person is observed for several years and the correlations between these observations must be taken into account. Random intercept multilevel models are used, estimated through maximum likelihood. These allow for a person-specific residual term to capture time-invariant unobserved individual characteristics that are unrelated to the explanatory variables (Scherer, 2004; Singer and Willett, 2003).

Equation 1 shows the model for person 'i' at time 't', with the outcomes Y depending on a vector of control variables X, family background FB, local unemployment rate UE, a normally distributed person-specific error u and white-noise residual ε. Family background interacts with the local unemployment rate. This is necessary to test the hypothesis that young adults from a disadvantaged background are more sensitive to the business cycle than their more advantaged peers. The next section explains the construction of each set of variables.

$$Y_{i\,t} = \alpha_0 + \beta X_{i\,t} + \gamma_1 * FB_i + \gamma_2 * UE_{i\,t} + \gamma_3 * FB_i * UE_{i\,t} + u_i + \varepsilon_{i\,t} \qquad \text{(Equation 1)}$$

The model is estimated separately for the higher and the lower qualified, as the impact of family background is expected to depend on the type of qualifications.

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[5] Socio-Economic Panel (SOEP), data for years 1984-2011, version 29, SOEP, 2013, doi:10.5684/soep.v29

4.1 Labour market outcomes

Three variables are used to measure labour market outcomes. First whether someone is employed or not. As employment is quite high in Germany some job characteristics must also be included to differentiate between better or worse outcomes (Kurz et al., 2005). Whether the contract is temporary or permanent is used an indicator of security, since temporary jobs have a higher risk of unemployment (Scherer, 2004). Hourly wage is included as a measure of the quality of the job. The first two are measured as indicator variables and estimated using logistic regression, while the natural logarithm of hourly wage is estimated using linear regression.

Two possible mechanisms through which family background would affect the disadvantaged more strongly at times of higher unemployment are tested by including a further two outcome variables. Young adults from a disadvantaged background may fall behind their more advantaged peers as they have less access to and information about high-status social networks. If personal contacts become more important during higher unemployment rates, the disadvantaged would be relatively less able to make use of this and therefore lose out on the better jobs (Flap and Völker, 2008; Holzer, 1988; Macmillan, 2014). This is modelled using a dummy variable indicating that the current job is found through friends and relatives rather than through another job search method. This variable is only included from 1998 onwards. We expect that an increasing unemployment rate reduces the probability that a job is found through networks more for the disadvantaged than the advantaged. As growing up in a disadvantaged household will mainly affect the personal networks to good jobs rather than networks in general it is also expected that jobs found through networks are better paid for the more advantaged than for those growing up in a disadvantaged household.

Growing up in a disadvantaged household may also be associated with signals of lower ability or skill in which case the disadvantaged would be less likely to find a job matching their qualifications if the unemployment rate increases (Green and McIntosh, 2002). Whether someone's job matches their

qualifications is measured using a method proposed by Scherer (2004)[6]. Someone is said to be not matched if their occupational prestige, measured through the Treiman scale, is more than one standard deviation below the average for people of similar qualifications. The highest achieved qualification is measured with 9 categories: "no degree", "basic secondary" (8th to 10th grade or secondary abroad), "technical or general secondary" (12th grade or abitur) or "other secondary degree", "apprenticeship or vocational qualification", "technical school", "other vocational", "technical college" or "university degree.

Germany is characterized by a tight coupling of the educational system with the labour market (Heineck and Riphahn, 2007; Müller and Pollak, 2004). The experiences of young adults with at most secondary school qualifications could be very different to those of their counterparts with post-secondary or tertiary qualifications. Employment probability, hourly wage and working on a temporary contract are therefore estimated separately for the low and highly educated, while still controlling for the specific qualifications within these large groups. Whether a job matches qualifications and job search method are estimated controlling for education but with both groups together. This is because education is already part of the outcome variable when studying the appropriateness given qualification and also because of the small sample size when studying the use of contacts in job search. Respondents who are working on an apprenticeship are not included in the analyses.

4.2 Family background

Family background is a multidimensional concept (Bukodi and Goldthorpe, 2013). Three aspects of the socio-economic conditions of a household when the child was aged between 5 and 14 are measured in order to identify the position of the household within a social hierarchical system (Caro

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[6] Another approach using the combination of formal job requirements and official qualifications, on a 4-point scale, was taken but is not shown here (Longhi and Brynin, 2007). It provides less differentiation as only 4 categories can be used and those with low education cannot be overqualified, although they can work in a job that is of a lower than average status level. No statistically significant effects are found when using this specification.

and Cortés, 2012). Parent's education[7] is strongly linked to the child's cultural capital and education (Anger, 2012; Heineck and Riphahn, 2007). Occupational status[8] has a closer link to social networks and values in the household (Flap and Völker, 2008; Jonsson et al., 2011). Finally, household income[9] accounts for the financial means of the family while growing up. These variables capture different aspects of the childhood experience, which is why the choice is made to study them in combination.

These three aspects are combined into one average scale after standardisation. A principal component analysis shows that they can be reduced to one concept. The Cronbach's alpha of this scale is 0.79 with an average inter-item correlation higher than 0.5. In order to account for relative status the resulting scale is split in the lowest 20%, seen as disadvantaged, the highest 20% who are advantaged and the middle 60%[10]. A similar method has been used to construct a socio-economic status measure by Caro and Cortés (2012). They combine parental education, occupational status, home possessions and subjective evaluation of whether the family copes financially into an SES scale, showing its' validity in explaining reading comprehension and high reliability.

To describe these groups table 1 presents the averages and standard deviations of parental education, occupational status and household income. Growing up in a disadvantaged household means the parents had low education, the household income was on average quite low and the parents worked in low-status jobs.

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[7] The average of the highest years of education of parents is taken over the period when the child was aged between 5 and 14.

[8] Measured using the Treiman prestige scores, the average of the highest status of parents is taken over all observed years in which the child was aged between 5 and 14.

[9] Equivalised and in 2011 Euros, the average when the child was between 5 and 14 is taken.

[10] This division is done both before those who are still in education, who are disproportionally from an advantaged background, are dropped from the sample and after. Only the latter is shown here, but the conclusions were the same for both operationalisations. In the robustness analyses the scale is divided in three equal parts with no changes to the conclusions. The analyses are also repeated using a disadvantage scale based on each combination of two of the three aspects, showing strong similarities. As the sample comprises a large time series the scale is re-calculated separately by year of birth of the child. This scale leads to the same conclusions and is not shown here.

Table 1: mean (standard deviation) of component measures of background scale

Family background	Parental years of education	Household income	Parental social status
Disadvantaged	8.78 (1.39)	€13891.62 (3839.59)	27.84 (6.57)
Middle 60%	11.16 (1.31)	€21029.38 (6183.11)	42.04 (7.78)
Advantaged	16.16 (2.33)	€37312.92 (14159.82)	59.53 (8.39)

4.3 Local unemployment rate

As the theoretical framework is concerned with the hiring behaviour of employers the unemployment rate at the moment of job entry is used (Devereux, 2002; Reder, 1955). The "local labour market" is not clearly defined geographically and its size depends on how willing to move or commute someone is. There are indications that higher educated young adults are more geographically mobile than lower educated (Bauernschuster et al., 2012; Longhi and Brynin, 2007).

The unemployment rate is available at three distinct geographical levels. The largest level is that of the 11 West German states, including Berlin ('Bundesland'). This information is available from the federal agency of labour (Bundesagentur fur Arbeit). Information is also available at the smaller travel-to-work area ("Raumordnungsregion": ROR)[11]. There are 75 of these in Western Germany and they consist of an economic centre and the surrounding area, taking commuting streams into account (Brueckner et al., 2002; Knies and Spiess, 2007). The lowest level is that of the 'community' ("Kreis").

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[11] The unemployment rate at the level of the policy region is the average, weighted by population, of the communities making up the policy region. Only from 1995 is the unemployment rate by policy region publicly available. In these years the calculated unemployment rate and the public figure have a correlation of 0.99

The models are run separately for those with some form of post-secondary education and the lower educated. In each of these groups the three different geographical levels were used and the best fitting model selected using information criteria. The unemployment rate at the state level is most important for the higher educated group, while the travel-to-work area is more important for the lower educated group, following expectations (Bauernschuster et al., 2012).

4.4 Control variables

West Germany consists of eleven states with autonomy in education and certain labour market institutions. To account for important differences besides the unemployment rate years and states are controlled for as fixed effects.

The German labour market is traditionally based on the male breadwinner model and the welfare system is still geared towards incentivising women to be responsible for child care. It is therefore important to control for gender, marital status and the presence of children. As a robustness test the analyses are also estimated separately by gender. Health has been shown to correlate with having a disadvantaged background and can affect labour market outcomes (Palloni, 2006). The respondent's satisfaction with health is used as a proxy for health status, on a 10-point scale from "completely dissatisfied" to "completely satisfied". Whether the young adult is a migrant is included, as are age and age squared. To control for differences in human capital besides education two variables capture the time the respondent has spent in full-time and part-time employment up until then (Christopoulou and Ryan, 2009). This is a generated variable in the SOEP. As this paper focuses on the effect of childhood disadvantage it is important to control for later outcomes such as previous work experience and education, even though they are influenced by these early conditions. The respondents should be as similar as possible in their human capital to assess whether any residual difference remains.

To account for parental characteristics during the child's job search the highest observed social class of parents is included as a set of dummies according to the five-group Erickson-Goldthorpe class

scheme[12]. The total amount of time parents have spent in work is also included to account for their work experience. The age of father and mother is included. A dummy variable indicating that the child spent less than half of the time until age 16 living with both biological parents is used to account for closeness to parents. A set of dummies controls for the sample group which have different selection probabilities in the survey design. In a robustness test, weights are used to account for any remaining differences in response and attrition, showing little impact.

Part- and full-time work experience, children being present in the household, age and health satisfaction are split up in the person-specific average and the deviations from that average in order to limit the risk of endogeneity that these variables entail (Bell and Jones, 2014). The model is also estimated without these controls and the conclusions remain similar which indicates potential bias to be small. Descriptive statistics of all important variables, separated by education and parental background, are found in table A1 in the appendix.

4.5 Description of the data

Table 2 presents the proportion of young adults who are working as well as their type of contract and wages when working, by background and education. In terms of employment and wage the most disadvantaged are on average worse off than the most advantaged and, with the exception of wage for the lower qualified, the middle group. Those from more advantaged backgrounds seem to be more likely to work on temporary contracts however. A possible explanation is that these jobs serve as stepping stones to a better career (Scherer, 2004).

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[12] These groups are: white-collar workers, petty bourgeoisie, farm and self-employed, skilled workers, unskilled workers and the residual category of people who never worked.

Table 2: mean (standard deviation) and sample size of outcomes by education and background

	Low qualifications			High qualifications		
	Employed	Temp. job	Hourly wage	Employed	Temp. job	Hourly wage
Disadvantaged (bottom 20%)	81.91% (38.51)	18.50% (38.85)	€6.20 (3.07)	91.30% (28.20)	16.00% (36.67)	€7.11 (3.24)
N	*1216*	*892*	*936*	*1356*	*1144*	*1172*
Middle group (middle 60%)	84.15% (36.53)	22.12% (41.52)	€5.91 (3.59)	94.05% (23.65)	19.08% (39.30)	€7.32 (3.84)
N	*2334*	*1537*	*1629*	*5382*	*4660*	*4753*
Advantaged (top 20%)	92.75% (25.96)	20.53% (40.46)	€7.61 (7.84)	97.32% (16.18)	29.11% (45.44)	€7.89 (4.52)
N	*648*	*302*	*363*	*1935*	*1632*	*1688*

Table 3 presents differences in the proportion of those in employment, the proportion of those working on temporary jobs and the hourly wage between the disadvantaged and all others. This difference is divided by quartile of local unemployment rate and by level of education. There are strong fluctuations depending on the local labour market context.

Among the lower qualified young adults the difference in employment probability is most clearly affected by the labour market conditions. At times of low unemployment the disadvantaged are not significantly less likely to be employed than the advantaged, but at times of high unemployment they are almost 15 percentage points less likely to be unemployed. There is no clear pattern in the difference in hourly wage although the difference does change depending on the local labour market conditions. As the local unemployment rate increases the disadvantaged become more at risk of working on a temporary contract compared to their more advantaged counterparts. Among the higher qualified growing up in a disadvantaged household affects the probability of being employed

more strongly as the unemployment rate rises. There is only a statistically significant difference between the disadvantaged and the others in their wage when the unemployment rate is in the highest quartile. The disadvantaged become increasingly unlikely to work on a permanent contract compared to their more advantaged counterparts.

These analyses do not take differences in socio-demographic characteristics into account. The next section presents the results from multilevel models which allow for a better estimation of any differences by background.

Table 3: the difference (s.e.) in average outcomes between the least advantaged young adults and the others at quartiles of regional unemployment

Low qualifications			
Unemployment rate (ROR)	Proportion employed	Log hourly wage	Proportion on temporary job
2.4% - 6.2%	-1.6 p.p. (1.9)	€0.56 (0.32)*	9.8 p.p. (2.9)**
6.2% - 8.1%	2.5 p.p. (2.4)	€0.33 (0.33)	2.2 p.p. (3.1)
8.1% - 10.2%	5.9 p.p. (2.6)**	-€1.08 (0.28)**	5.8 p.p. (3.5)*
10.2% - 21.7%	14.8 p.p. (2.6)**	€0.31 (0.39)	-6.0 p.p. (3.6)*

High qualifications			
Unemployment rate (state)	Proportion employed	Log hourly wage	Proportion on temporary job
3.7% - 6.9%	0.7 p.p. (1.1)	€0.30 (0.22)	1.9 p.p. (2.4)
7% - 8.6%	2.6 p.p. (1.1)**	-€0.08 (0.21)	4.4 p.p. (2.2)**
8.7% - 10.5%	4.7 p.p. (1.6)**	-€0.16 (0.32)	6.3 p.p. (3.1)**
10.6% - 21.8%	6.8 p.p. (1.4)**	€0.58 (0.21)**	8.5 p.p. (2.3)**

The difference is outcome advantaged – outcome disadvantaged and tested with an unpaired t-test, separate t-tests are carried out in the quartiles of unemployment rate.

*: p<0.1; **: p<0.05

5. Results

This section presents the estimates of the multilevel models for the different labour market outcomes. The estimates for employment probability and temporary employment are shown in odds ratios. Only the coefficients for family background, local unemployment rate and their interaction are shown in table 4. The full regression models can be found in table A2 in the appendix. To interpret the results further the predicted outcomes, calculated at the grand margin, are presented graphically by background and unemployment rates.

Table 4: coefficients and standard error of family background interacting with local unemployment rate on employment, hourly wage and temporary employment probability

Low qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Middle (vs disadv.)	0.60 (0.35)	-0.01 (0.09)	4.80 (3.47)**
Adv. (vs disadv.)	3.84 (4.08)	0.18 (0.15)	0.87 (1.10)
Unemployment rate (ROR)	0.79 (0.48)**	0.004 (0.009)	1.24 (0.09)**
Middle * Unemployment	1.15 (0.07)**	0.005 (0.010)	0.84 (0.07)**
Highest * Unemployment	1.02 (0.11)	-0.016 (0.017)	0.95 (0.14)
Rho	*0.48*	*0.59*	*0.59*
N persons	*1370*	*959*	*817*
N observations	*4198*	*3093*	*2731*

High qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Middle (vs disadv.)	0.95 (0.61)	-0.04 (0.07)	0.35 (0.22)*
Adv. (vs disadv.)	0.59 (0.67)	-0.12 (0.09)	0.59 (0.44)
Unemployment rate (state)	0.92 (0.07)	-0.017 (0.008)**	0.82 (0.06)**
Middle * Unemployment	1.05 (0.07)	0.011 (0.008)	1.12 (0.08)*
Highest * Unemployment	1.15 (0.11)	0.015 (0.009)*	1.10 (0.09)
Rho	*0.57*	*0.53*	*0.55*
N persons	*1843*	*1696*	*1618*
N observations	*8673*	*7881*	*7436*

*: p<0.1, **: p<0.05, controlled for year (dummies), state (dummies), sample (dummies), school (dummies), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

5.1 Employment probability over time

The second column in table 4 presents the coefficients of background interacted with the local unemployment rate on the probability of employment. The top panel shows that among the lower qualified an increase in the unemployment rate of 1 percentage point reduces the odds of being employed by 0.79 times for the least advantaged. The middle group is less affected as their odds of employment are reduced by 0.91 times (0.79*1.15). The most advantaged experience a similar effect on the odds of employment for an increase in the unemployment rate as the least advantaged (0.81=0.79*1.02), but as their odds of employment are almost 4 times as high as those of the least advantaged when the unemployment rate is 0 their estimated probabilities are quite different.
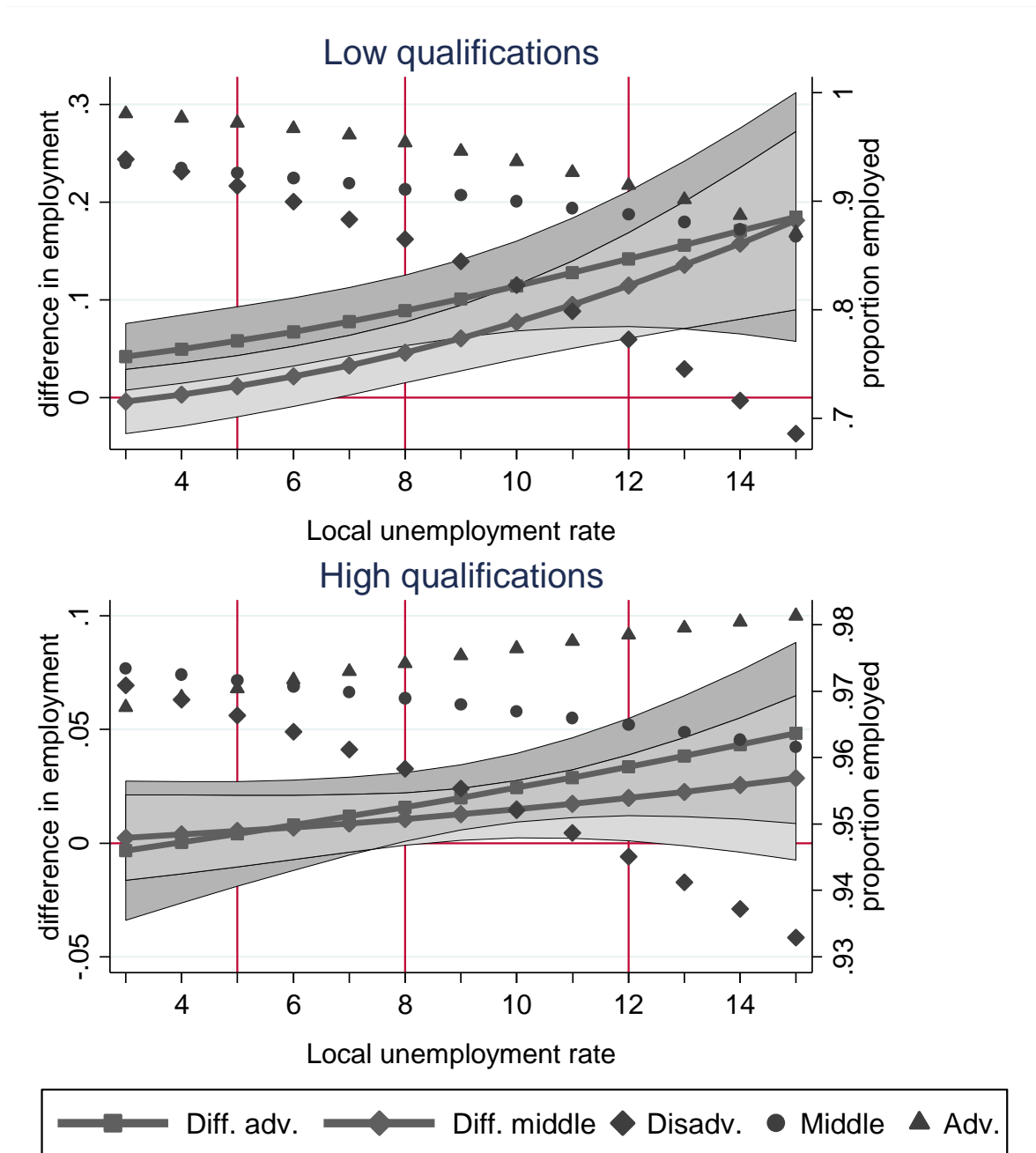
Figure 1 presents the predicted probabilities for average values of the control variables by background and local unemployment rate. The vertical lines indicate the 1st, 5th, and 9th deciles of the unemployment rate. The figure also shows the difference between the disadvantaged and the middle group, and the difference between the disadvantaged and the advantaged. These are accompanied by the 90% confidence intervals. If the interval does not include 0, indicated by the vertical red line, it indicates a statistically significant difference in employment probabilities between the two groups.

The top panel of figure 1 shows that the differences between young adults without post-secondary qualifications are quite small when the unemployment rate is low. As the unemployment rate rises it affects mainly the disadvantaged as the middle and most advantaged groups converge. The most advantaged have a probability of being employed of 97% when the unemployment rate is 5% and 91% when local unemployment rises to 12%. For the disadvantaged an increase in the unemployment rate of 7 percentage points means a reduction of 15 percentage points in the probability of employment however, supporting the hypothesis that they are more affected by the business cycle.

Among those with higher qualifications an increase in the unemployment rate at the state level reduces the odds of employment by 0.92 times for those from a disadvantaged background, as can be seen in the lower panel of the second column in table 4. The estimated odds ratios are 0.97 (0.92*1.05) for the middle group and 1.06 (0.97*1.15) for the most advantaged. These differences in slope are not statistically significant however. The lower panel in Figure 1 presents the predicted probabilities. Young adults with high qualifications are very likely to be employed (Kurz et al., 2005). Even in this group there is heterogeneity by background however and as the unemployment rate rises a gap opens up between the three groups. At a local unemployment rate of 5% the least advantaged are 0.5 p.p. and 0.4 percentage points less likely to be employed than respectively the middle and the most advantaged group. When the local unemployment rate is 12% these differences have increased to 2 p.p. and 3.3 p.p., with the latter statistically significantly different from 0.

Growing up in a disadvantaged household does increase the vulnerability to the business cycle. While the effect is clearly larger for the lower educated who are the most vulnerable, the disadvantaged young adults with a degree are more at risk of unemployment than their similarly qualified counterparts from an advantaged background.

Figure 1: Marginal predicted employment probability by unemployment rate and background for young adults, by education level

The graph presents the predicted probabilities at the grand margin for young adults from a disadvantaged background, middle 60% or the most advantaged. The vertical lines indicate the lowest decile, the median and the highest decile of the local unemployment rate. The difference between the lowest and highest quintile and the 90% confidence interval around it are shown, as is the difference between the middle group and the disadvantaged with its 90% confidence interval.

5.2 Hourly wage

The crowding-out hypothesis states that the disadvantaged would not only be less likely to be employed, but also be bumped down to less good jobs compared to their more advantaged peers as the unemployment rate increase. Wage is an important aspect of job quality. Disadvantaged young adults are expected to obtain lower wages than their similarly qualified peers from an advantaged background and this difference would increase with the unemployment rate. The estimates for family background and local unemployment rate can be found in the 3rd column of table 4.

Family background does not differentiate significantly between young adults and the local business cycle also does not influence wage strongly for the lower qualified. The most advantaged are estimated to earn a higher hourly wage than the disadvantaged and those from the middle group. Their wage would also go down as the unemployment rate increases. None of these differences are statistically significant however. Figure 2 presents the predicted hourly wage by background and unemployment rate and the top panel shows this for those with lower qualifications. The difference by background is never significant, and only the advantaged seem to be affected by the business cycle as their wages go down with increasing unemployment. This lack of responsiveness may partially be due to wage protection in the lower paid jobs. The lower qualified may be earning close to an occupationally decided upon minimum wage. The advantaged may be the only ones to access the better jobs at better economic times and find themselves in the lower-paid jobs as the unemployment rate increases. The disadvantaged do not see their wages diminish much, but as their employment probabilities decline fastest this may indicate a floor effect of wage.

The estimates on wage for those with higher qualifications are presented in the lower panel of the 3rd column of table 4. As the unemployment rate increases the wages of the disadvantaged decrease much faster than those in the middle or most advantaged groups, but only the difference with the most advantaged group is statistically significant (at p<0.1). An increase of one percentage point in the local unemployment rate at job entry corresponds to approximately a 1.7% decline in the wages

of the least advantaged, but only 0.6% (-0.017+0.011) for the middle group and almost none for the most advantaged groups (-0.017+0.015). The lower panel of figure 2 presents the predicted hourly wages for average people with high qualifications by background. Those growing up in the most advantaged households start out at a slightly lower hourly wage than the disadvantaged and the middle group, but as the unemployment rate increases they are hardly affected. The middle group remains the best-paid across all levels of unemployment while the disadvantaged are most sensitive to changes in the business cycle. When the local unemployment rate is only 3% the disadvantaged are estimated to earn €0.14 less than those from the middle group and about €0.30 more than the most advantaged. At a high unemployment rate of 12% these differences increased to €0.62 less and €0.37 less respectively.

The crowding-out hypothesis is partly confirmed then, in that the disadvantaged with higher qualifications are more affected in their wage than their more advantaged counterparts. As the unemployment rate increases the disadvantaged are less likely to access well-paying jobs. There is no real evidence among the lower qualified however.

Figure 2: Marginal predicted hourly wage by unemployment rate and background, by education level
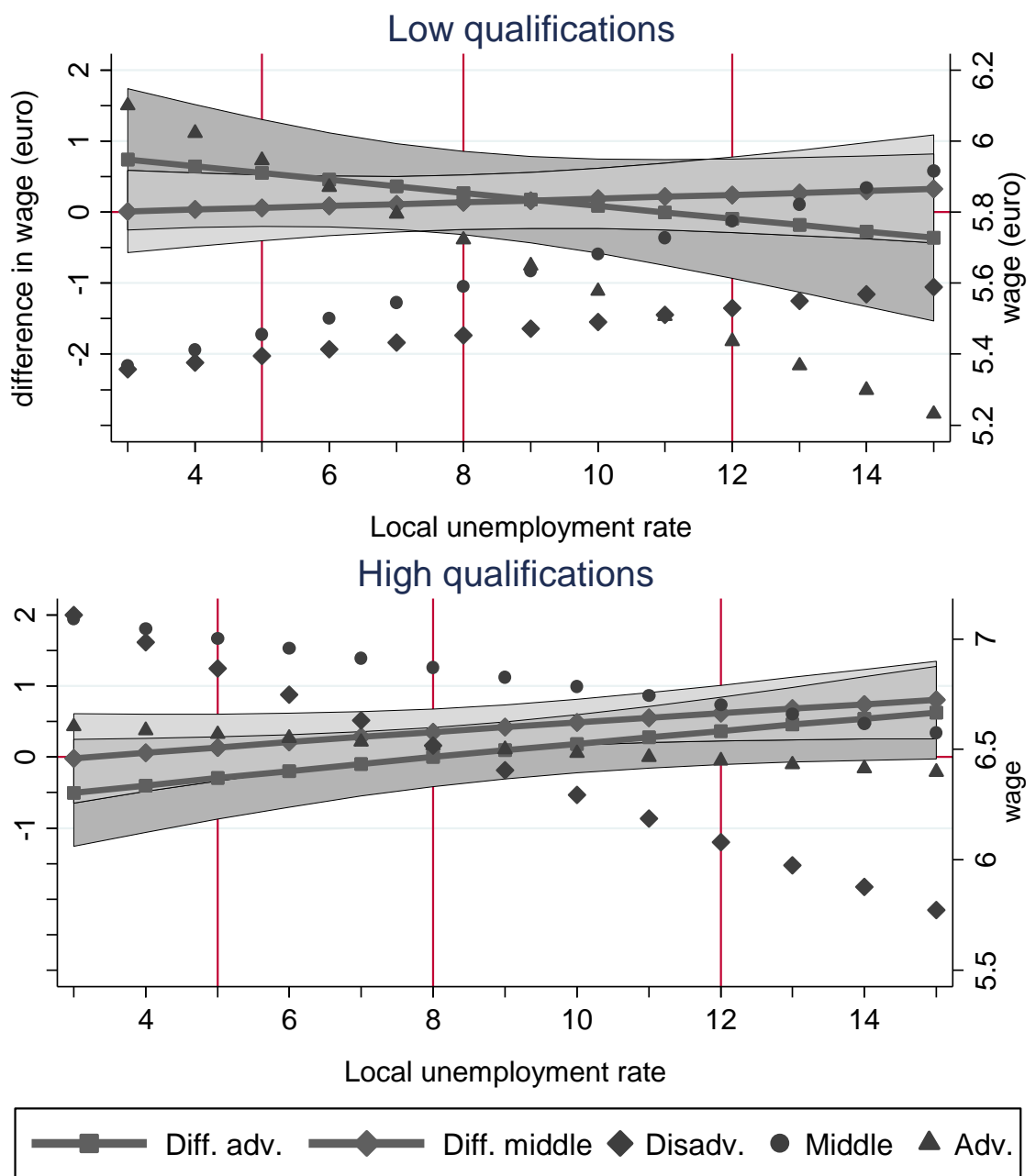
The graph presents the predicted average wage at the grand margin for young adults from a disadvantaged background, middle 60% or the most advantaged. The vertical lines indicate the lowest decile, the median and the highest decile of the local unemployment rate. The difference between the lowest and highest quintile and the 90% confidence interval around it are shown, as is the difference between the middle group and the disadvantaged with its 90% confidence interval.

5.3 Working on a temporary contract

As the employment probability is quite high in West Germany it is important to study inequality in types of job. A temporary contract entails less protection and therefore offers less stability than a permanent contract (Kurz et al., 2005). The results for the lower educated are presented in the top panel of the 4th column in table 4. An increasing unemployment rate is associated with a higher probability of working on a temporary rather than a permanent job for the most and least advantaged. The odds of working on a temporary contract increase 1.24 times for each percentage point the unemployment rate increases, while the odds increase 1.18 times for the most advantaged (0.95*1.24). The middle group is hardly affected by the unemployment with odds ratios of 1.04 (1.24*0.84) which is statistically significantly (at p<0.05) different from the effect for the disadvantaged. The top panel of figure 3 shows that on average the risk of working on a temporary contract increases as the local unemployment rate rises, but it does so fastest for the least advantaged. This supports the idea that the disadvantaged are most sensitive to the changes in labour market conditions. It is only at high rates of unemployment that the disadvantaged are much more likely than the others to be working on a temporary contract however.

The reverse is visible among the higher educated. As the unemployment rate increases, the odds of working on a temporary contract are reduced by 0.82 times for the least advantaged while the odds ratios are 0.90 (1.10*0.82) for the most advantaged and 0.92 (1.12*0.82) for the middle group. The latter is statistically significantly (at p<0.1) different from the slope for the disadvantaged. The lower panel of figure 3 presents the predicted probabilities by background and unemployment rate. While the disadvantaged have a higher probability of working on a temporary contract at times of low unemployment this swiftly drops as the unemployment rate increases. The middle group and the advantaged converge towards each other at times of higher unemployment. Partly this may be due to temporary workers being the first to be dismissed during worse economic times therefore increasing the relative importance of permanent contracts. It is also possible that employers reduce the amount of temporary workers they need during worse economic times meaning fewer jobs exist.

As the risk of unemployment is not that high among the higher qualified however this seems unlikely.

The type of job that is most often temporary may not always be undesirable. It is possible that some of the better jobs for the more highly educated are temporary (Scherer, 2004). These jobs could be part of a higher-status career trajectory and lead to good, secure jobs after this initial stage. The lower skilled jobs are also more strictly regulated in Germany and they are not always allowed to be temporary. Therefore the less skilled jobs would be more likely to be permanent. This would support previous findings by Gebel (2009) who found that the higher educated young adults were more likely to choose temporary work, which is lower paid, upon graduation. He states that these jobs may be chosen as part of a career and have better long-term prospects. The meaning of holding a temporary job may therefore differ depending on whether someone is higher or lower qualified. In this case young adults with higher qualifications and from a disadvantaged background would be crowded out of the temporary positions that may be more desirable as the unemployment rate increases.

While the disadvantaged are more sensitive to the business cycle than their more advantaged counterparts, the pattern is the reverse of what was expected among those with higher qualifications. In this group, the probability of working on a temporary contract decrease as the unemployment rate increases and decrease fastest for the disadvantaged.

Figure 3: Marginal predicted probability of temporary work by unemployment rate and background
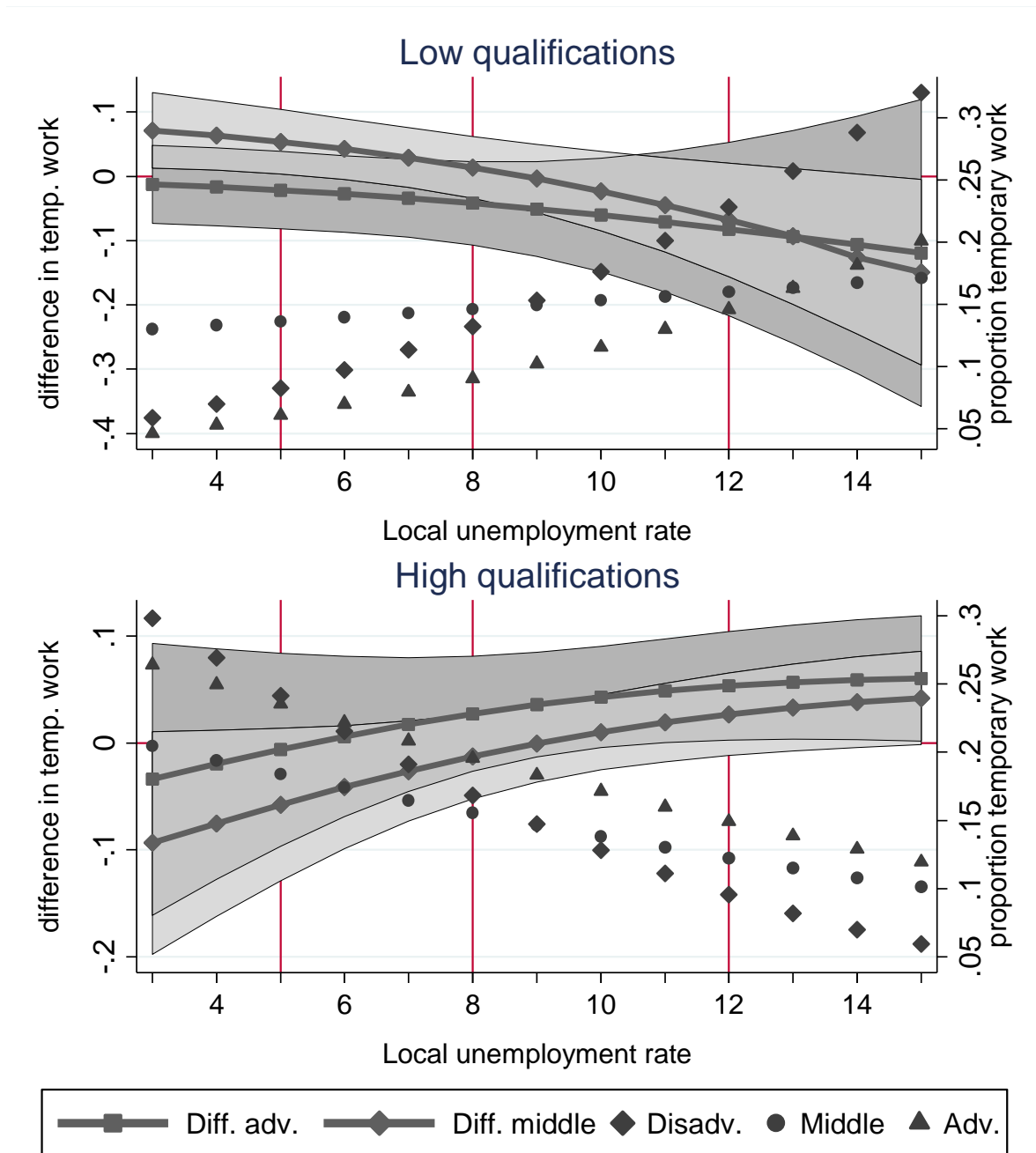
for young adults, by education

The graph presents the predicted probabilities at the grand margin for young adults from a disadvantaged
background, middle 60% or the most advantaged. The vertical lines indicate the lowest decile, the median and
the highest decile of the local unemployment rate. The difference between the lowest and highest quintile and
the 90% confidence interval around it are shown, as is the difference between the middle group and the
disadvantaged with its 90% confidence interval.

5.4 Explanations: overqualification and social networks

The previous sections have shown that disadvantaged young adults are on average more sensitive to the local labour market context than their counterparts. The results support our hypotheses. As the labour market worsens those from a disadvantaged background are affected the most. The way in which they are affected also depends on their qualifications which is consistent with the crowding-out hypothesis (Buttner et al., 2010; Devereux, 2002). Those with higher qualifications are bumped down to jobs that pay less well. They are also less likely to work in temporary jobs, which may be the more desirable ones in term of career progression (Gebel, 2013; Scherer, 2004). Among those with lower qualifications the difference shows itself in a rapidly increasing risk of unemployment for the disadvantaged when compared to their more advantaged counterparts. They are also more likely to work on less secure temporary contracts as conditions worsen.

Two possible drivers of these results are a different use of social networks in job search and a perceived or de facto difference in skills. This is tested by modelling the probability of working on a job that matches a person's qualifications in terms of social status and the probability of finding a job through friends and relatives. Whether finding a job through personal contacts affects the hourly wage differently by background is also estimated for the subsample of respondents for whom information on job search methods is available. The network of the disadvantaged is expected to be less effective in obtaining high-paying jobs. The coefficients are shown in table 5.

Table 5: Odds ratios (standard error) for having a job matching qualifications and for finding a job through friends and networks and effect network on log hourly wage

	Prestige matched	Job founds through network	Log hourly wage
Middle (vs disadv.)	0.46 (0.28)	0.82 (0.53)	-0.07 (0.11)
Adv. (vs disadv.)	0.34 (0.27)	0.57 (0.43)	-0.14 (0.13)
Unemployment rate	0.85 (0.05)**	0.82 (0.09)*	-0.01 (0.01)
Middle * Unemployment	1.10 (0.07)	1.06 (0.07)	0.02 (0.01)
Adv. * Unemployment	1.24 (0.10)**	1.08 (0.09)	0.02 (0.01)
Network			0.05 (0.05)
Middle * Network			-0.04 (0.06)
Adv. * Network			0.05 (0.07)
Rho	*0.76*	*0.32*	*0.35*
N persons	*2209*	*1563*	*1522*
N observations	*10359*	*3058*	*2928*

*: p<0.1, **: p<0.05, controlled for year (dummies), state (dummies), sample (dummies), school (dummies), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics. The channel through which a job was found is only available from 1998 onwards.

The odds of working on a job that matches or exceeds the sort of occupational prestige one could expect given their qualifications declines fastest for the disadvantaged. Their odds decrease by 0.85 times for each percentage point increase in the unemployment rate at the state level, while the odds ratios for the middle group are 0.94 (0.85*1.10) and for the most advantaged they are 1.05 (0.85*1.24). The latter differs statistically significantly from the slope of the disadvantaged. The top panel of figure 4 presents the predicted probabilities of working on a job that matches one's qualifications. At times of low unemployment there is very little difference in the type of job depending on background, but this gap widens to more than 10 percentage points as the

unemployment rate rises. This is consistent with a bumping down of the disadvantaged young adults (Buttner et al., 2010; Humburg et al., 2012; Reder, 1955).

It is possible that there are differences by background in the type and quality of qualifications in ways that are not captured here. This would still be consistent with the disadvantaged having lower human capital at similar levels of qualification however. An alternative explanation is that the disadvantaged are more likely to settle for worse jobs rather than risk unemployment as conditions worsen (Scherer, 2004). It is impossible to test this here. Even if the difference is pushed by a difference in preferences it can still have long-lasting effects on inequality by background, meaning it is still problematic.

A second mechanism is that growing up in a disadvantaged household results in having a less useful social network. A variable indicating that the job is found through relatives or friends is modelled as an outcome. The disadvantaged should see their probability of finding a job through social networks decline faster than the advantaged young adults as the unemployment rate rises. As this variable is only available since 1998 the sample is smaller. The coefficients are shown in the 3rd column of table 5. As unemployment increases the probability of finding a job through friends or networks declines, but it declines slightly faster for those from a disadvantaged background. The differences by background are not statistically significant however. Predicted probabilities are shown in figure 5. There is no difference by background in the probability of having found a job through friends and relatives. This may be because the measure is not that good, since it only includes those that were successful in finding a job.

The final column of table 5 shows how background and finding a job through networks rather than any other method affect wages. This shows whether there is a different return to networks depending on background as it is expected that the disadvantaged have access to a network that can provide less help in attaining good jobs. Young adults from a disadvantaged background who find a job through personal contacts earn on average 5% more than those having found the job through

other jobs. For those from an advantaged background it is 10% however (0.05+0.05) indicating higher returns to network for the most advantaged. The wages of the middle group are on average independent to the job search method used. As the disadvantaged are less likely to find a job through networks as the unemployment rate increases compared to the more advantaged they miss out more on the higher wages. None of these effects are statistically significant in the small sample however. We also tested a three-way interaction between the use of networks, background and the labour market conditions which is not shown here as there was no substantial difference.

Figure 4: probability of being employed at job matching appropriate for qualifications rather than

being overqualified, by local unemployment and background
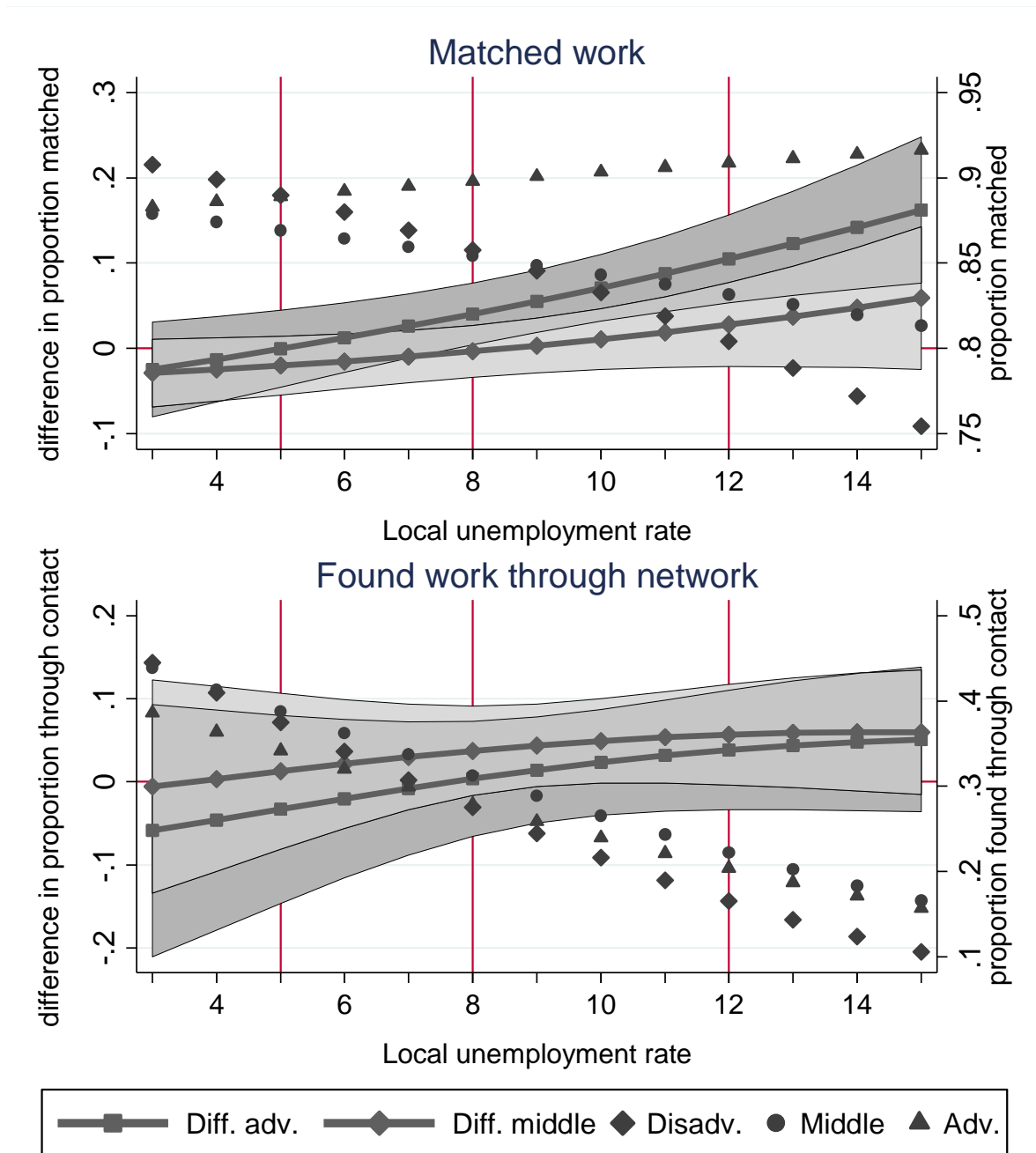
The graph presents the predicted probabilities at the grand margin for young adults from a disadvantaged background, middle 60% or the most advantaged. The vertical lines indicate the lowest decile, the median and the highest decile of the local unemployment rate. The difference between the lowest and highest quintile and the 90% confidence interval around it are shown, as is the difference between the middle group and the disadvantaged with its 90% confidence interval.

5.5 Business cycle

The question this paper aimed to answer is whether young adults from a disadvantaged background are more sensitive to the business cycle than their more advantaged peers. The predicted employment probabilities for young adults by their background are used to calculate their estimated unemployment rate, given the official unemployment rate in West Germany over time. The results are shown in figure 5. The left panel shows that in the total group the disadvantaged follow the actual unemployment rate the closest although their risk of unemployment is higher. During recessions their unemployment rate increases the most, as was expected. The middle and advantaged groups have a far more stable unemployment rate showing a lower sensitivity to the labour market conditions. The right-hand panel shows the estimated unemployment rates for the higher and lower educated. In both groups the disadvantaged show more volatility and are clearly more sensitive to the labour market conditions. Among the higher qualified, it is interesting to note that the advantaged are estimated to show a small countercyclical effect, meaning that when unemployment is high they are more likely to be employed.

Figure 5: business cycle with official unemployment rate and predicted probabilities of employment by background and education
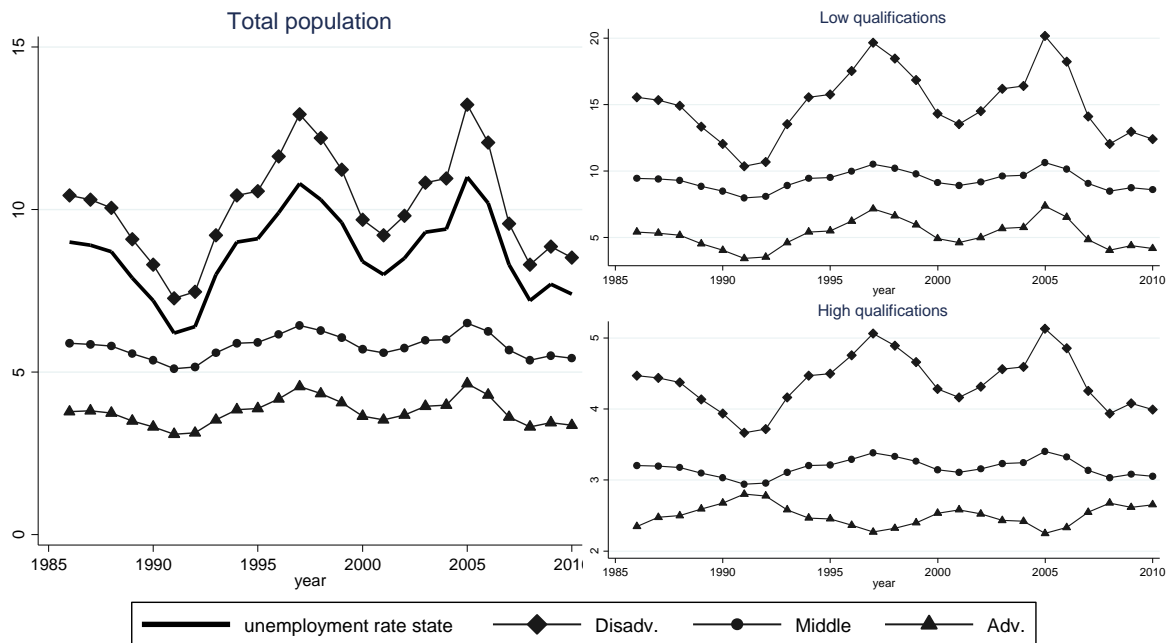
The predicted unemployment rate for the total sample is calculated from the probabilities of employment at the grand margin for the lower and higher educated by family background, weighted by the proportion of education groups. The annual unemployment rate for West Germany is substituted for the local unemployment rate to calculate the business cycle effects.

6. Robustness analyses

6.1 Accounting for differences among siblings

These analyses do not account for unobserved characteristics that may be correlated with the main explanatory variables. This is important as these unobserved characteristics would include attitudes or aptitudes that may be shared within a family and influence both the child's outcomes and the circumstances while growing up, while not being the result of the family background. To account for this we use a subsample of 1,651 people for whom siblings are also observed. There are 705 sibling groups in the sample which hold between 2 and 6 young adults. The difference in age between two siblings is on average 4 years and smaller if more siblings are more observed. These siblings grew up

in a similar context but may differ in the labour market conditions in which they enter the labour market. If young adults from a disadvantaged background are indeed more sensitive to the business cycle the difference between two siblings who get hired or look for employment during a different context would be bigger among the disadvantaged than the more advantaged. By using this variation between siblings we can reduce the likelihood that an unobserved characteristic shared within families is driving the results rather than the experience of disadvantage itself.

Sibling fixed effects models account for unobserved time-invariant family-specific characteristics that may be correlated with the other independent variables. The method is equivalent to adding an indicator variable for each family so that all specific effects are absorbed. This means that only the variation within sibling groups is used to estimate the model. The binary outcomes are modelled using fixed effects logistic regression. It is important to notice that the logistic fixed effects estimator uses only those observations that change in the outcome, which is why the sample size is smaller for the binary than the continuous outcomes. The main effect of family background is imprecisely estimated as there is not so much variation between siblings in whether the household was disadvantaged when they were young. The coefficient of interest is the interaction between background and the local unemployment rate however, which varies between siblings.

The sample for these models is very small and not representative. This makes it hard to draw conclusions but it can serve as a support for the results reported above. Due to the small sample size the analyses are not split up by education, but the coefficients for the local unemployment rate, interacting with family background, are interacted with whether the respondent has higher qualifications or not. All other coefficients are therefore assumed to be the same for the lower and the higher qualified.

Table 6: coefficients and standard error of family background interacting with local unemployment rate on outcomes, accounting for sibling fixed effects

Lower qualifications	Employment probability (odds ratio)	Hourly wage (log)	Temporary employment (odds ratio)
Background (middle) low qualifications	0.02 (0.03)**	-1.00 (0.18)**	42.21 (66.75)**
Background (advantaged) low qualifications	9.05 (4848.3)	-0.15 (0.31)	1384368 (8.45*e^8)
Background (middle) high qualifications	0.53 (0.50)	-0.06 (0.10)	0.03 (0.03)**
Background (advantaged) high qualifications	0.77 (1.45)	-0.38 (0.15)**	0.39 (0.54)
Unemployment rate (ROR) low qualifications	0.87 (0.05)**	-0.01 (0.01)*	1.27 (0.09)**
Middle * Unemployment low qualifications	1.15 (0.09)	0.02 (0.01)	0.73 (0.06)**
Highest * Unemployment low qualifications	1.06 (0.20)	-0.05 (0.02)**	0.97 (0.13)
Unemployment rate (state) high qualifications	0.88 (0.07)*	-0.02 (0.01)*	0.95 (0.07)
Middle * Unemployment high qualifications	1.12 (0.10)	0.03 (0.01)**	1.09 (0.09)
Adv. * Unemployment high qualifications	1.09 (0.19)	-0.02 (0.01)	1.09 (0.11)
N siblings	*290*	*694*	*451*
N persons	*735*	*1485*	*1002*
N observations	*4549*	*8091*	*5652*

*: p<0.1, **: p<0.05, controlled for year (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, living with parents, experience full-time and part-time work. The sample is restricted to people with observed siblings and a fixed effect for the family is included.

Table 6 presents the coefficients of family background and the local unemployment rate for the lower and higher qualified young adults, accounting for family-specific fixed effects, on the probability of being employed, the probability of working on a temporary contract and on the logarithm of the hourly wage. As the local unemployment rate increases the odds of employment decrease and this effect is strongest for the disadvantaged, but the differences are not statistically significant. This indicates that the conditions at which they look for work matter more for two siblings from a disadvantaged background than had their background been more advantaged.

When studying wage we find a difference with the main results. The wage of disadvantaged young adults reduces significantly as the unemployment rate increases, but that of the most advantaged decreases even faster and statistically significantly (at $p<0.1$) for the lower educated (-0.01 – 0.05). Among those with high qualifications the disadvantaged lose about 2% of their wage for each increase of the unemployment rate by one percentage point. The middle group are estimated to have an increase of 1% on the other hand (-0.02+0.03) which is a statistically significant difference. The difference with the most advantaged is not statistically significant but the latter are estimated to be even more affected. So, while the disadvantaged are more sensitive to the business cycle than the middle group, the most advantaged siblings are estimated to be even more sensitive in terms of wage.

Lower educated young adults are more likely to work on a temporary contract as the unemployment rate increases. There is no real difference with the most advantaged, but the middle group again is clearly less affected by the business cycle (1.27*0.73 = 0.93). Among the higher qualified the differences are not statistically significant. The coefficients indicate that as the unemployment rate increases, the disadvantaged are less likely to work on a temporary contract, but the middle and most advantaged groups are not negatively affected.

Table 7 shows the results for the probability of working on a job matching the qualifications and on whether the job has been found through friends and relatives. There is no effect on the latter, and on the former there is some indication that the probability of working on a job that matches the person's qualification level reduces only for the disadvantaged, but the effects are less pronounced than when not accounting for the family fixed effects. Due to the small sample size the effect of job search methods on wage is not estimated with sibling fixed effects.

Table 7: coefficients and standard error of family background interacting with local unemployment rate on mediating mechanisms, accounting for sibling fixed effects

	Matching job (odds ratio)	Found through contacts (odds ratio)
Background (middle 60%)	0.29 (0.41)	$4.09*e^{-7}$ (0.00)
Background (20% most advantaged)	0.00 (0.01)**	Omitted
Unemployment rate (state)	0.96 (0.06)	1.03 (0.16)
Middle * Unemployment	1.15 (0.08)**	0.97 (0.15)
Highest * Unemployment	1.10 (0.10)	0.94 (0.15)
N persons	*1013*	*593*
N siblings	*446*	*282*
N observations	*5499*	*1419*

*: p<0.1, **: p<0.05, controlled for year (dummy), school (dummy), gender, marital status, child, migrant,

satisfaction with health, living with parents, experience full-time and part-time work. The sample is restricted

to people with observed siblings and a fixed effect for the family is included.

The results of wages and employment probabilities for those with higher qualifications were not robust to the inclusion of family-specific unobserved characteristics. These models still lead to the same conclusions however, namely that the disadvantaged tend to be more affected by the business cycle than their more advantaged counterparts. Among the lower qualified, this means a higher probability to be unemployed and to work on a less secure temporary contract. Among the higher qualified this affects the probability of attaining temporary contracts and the latter may be more

beneficial for a later career. For all young adults from a disadvantaged background, the rising unemployment rate makes it less likely that they find a job that matches their qualifications.

6.2 Other robustness analyses

This section presents the different operationalizations that are used in order to establish the robustness of the results discussed above. Only the effects on the probability of employment, the log hourly wage and the probability of working on a temporary job are shown. All tables can be found in the appendix. The probability of finding a job through contacts and of finding a job matching one's qualifications were also estimated, but are not shown here. These results are robust throughout the different specifications.

The classification of family background as disadvantaged is based on a scale combining parental education, household income and parental occupational prestige while the child was growing up. In order to test how sensitive the conclusions are to this particular definition of disadvantage, the analyses were repeated using three separate scales where only two of the aspects were used (tables A3 to A5). Each aspect was also used on its' own to divide people by background (tables A6 to A8). All aspects play a different role, but the conclusions all point in the same direction, namely that the disadvantaged are more sensitive to the business cycle than the more advantaged. The results therefore seem robust to this particular definition of experiencing a disadvantaged background.

As a further test the analyses are carried out separately by gender. This results in very small sample sizes, especially among the working young adults with low qualifications (table A9). The main differences are that among lower educated young adults advantaged women are less likely to be employed than the disadvantaged young women, but not statistically significantly so. The faster decline of the wages of disadvantaged young adults with higher qualifications is driven mainly by women. It is possible that the mechanisms through which background affects early career changed after reunification. Therefore an analysis is carried out on the subsample of years after 1991 (table A10), showing no changes.

As a test of the sensitivity to the cut-off point of disadvantage two more tests were carried out. First, family background was divided in three equal parts instead of 5 so that the disadvantaged were the lowest 33.3% (table A11). The conclusions are very similar so the results are not sensitive to the exact cut-off point. A second test was to dichotomise family background in the lowest 20% (disadvantaged) rather than all the rest (table A12). The results support the conclusions that the disadvantaged are more sensitive to the local unemployment rate.

In the analyses it is assumed that the effect of family background remains equally important over the course of the early career. It is possible however that the effects of family background matter more in the earliest stages of the career. Later on work experience and recommendations may become more important and employers could have a better view of someone's actual skills which could reduce the effect of signals of low skill associated with family background. In an additional test the sample is split up to analyse the first 5 years in which a person is observed and the later years (table A13). The main differences are that the effect of employment conditions on the hourly wage and on temporary work for the higher qualified only holds in the first 5 years after entering the labour market.

It is possible that these findings are explained by the disadvantaged selecting into industries that are more prone to fluctuations in the labour market. Therefore the sector at the 1-digit NACE level, was included in the analyses of all outcomes except for employment itself (table A14), showing no difference.

Finally, tables A15 to A18 present the estimated odds ratios of an increase in the local unemployment rate for all outcomes by family background. This indicates the robustness to the different specifications which is quite high.

7. Conclusion

This paper studies whether family background plays a role on early labour market success after accounting for education in West Germany. We find that this depends on the context in which someone enters the labour market. Using multilevel models it is shown that growing up in a more disadvantaged household increases vulnerability to the business cycle. The results are consistent with a crowding-out effect where young adults with a disadvantaged background are bumped down to worse jobs or out of work altogether as the unemployment rate increases. Their equally qualified but more advantaged counterparts are more likely to get the better positions.

Among young adults with lower qualifications the difference in employment probabilities between the most and least advantaged widens rapidly with increasing unemployment in the travel-to-work area. The disadvantaged are most likely to work on temporary contracts as the unemployment rate rises. Among young adults with higher qualifications an increase in the unemployment rate at the state level is associated with a stronger reduction in wage for the disadvantaged than their more advantaged counterparts. The former are also increasingly unlikely to work on a temporary contract. These positions might be the more desirable ones as they could form part of a better career trajectory. While the unemployment probability among those with higher qualifications is low the disadvantaged are more at risk of being out of work than their more advantaged counterparts.

As labour market conditions worsen young adults from a disadvantaged background are the first to be bumped down to jobs for which they are overqualified, as well as being more at risk of unemployment. This may indicate that they signal lower skills to employers. As the number of desirable jobs at the appropriate level decreases the disadvantaged are the first to lose out. Besides a perceived skill difference, disadvantaged young adults are also thought to have access to a social network that is less useful in job search and in attaining good jobs than their more advantaged peers. We find no support for this last pathway, but this may be due to the measure used here and the small sample.

This paper shows that, even in Germany where the economy is strongly stratified by education, background still plays a role after accounting for objective measures such as education and work experience. Growing up in a disadvantaged household is not always equally bad however. The difference between the most and least advantaged young adults is very similar if the local labour market conditions are good. If local conditions are worse, there is a bigger gap as the disadvantaged find it harder to find good jobs or find no jobs at all. This is important in that it shows that family background must be studied, taking the labour market context into account. If this is not done, wrong conclusions about general inequality or larger trends can be drawn.

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Appendix

Table A1: Mean (standard deviation) of main variables by background and education

Family background	Disadvantaged		Middle group		Advantaged	
Education	Low	High	Low	High	Low	High
Employed	0.81 (0.39)	0.91 (0.28)	0.85 (0.36)	0.94 (0.23)	0.93 (0.26)	0.97 (0.16)
Temporary contract	0.19 (0.39)	0.16 (0.37)	0.22 (0.42)	0.20 (0.40)	0.19 (0.39)	0.30 (0.46)
Hourly wage	6.17 (3.02)	7.20 (3.51)	5.98 (3.70)	7.32 (3.73)	7.83 (8.78)	8.05 (4.95)
Job that at least matches qualification	0.78 (0.41)	0.77 (0.42)	0.78 (0.41)	0.75 (0.43)	0.68 (0.47)	0.73 (0.44)
Job search through friends or relatives	0.59 (0.49)	0.28 (0.45)	0.52 (0.50)	0.32 (0.46)	0.57 (0.50)	0.29 (0.45)
age	22.45 (4.85)	25.56 (4.78)	20.52 (3.91)	25.03 (4.40)	19.20 (2.60)	24.95 (4.05)
Satisfaction health	7.92 (2.03)	7.78 (1.76)	7.95 (1.86)	7.61 (1.88)	8.02 (1.74)	7.77 (1.79)
Male	0.50 (0.50)	0.53 (0.50)	0.51 (0.50)	0.47 (0.50)	0.52 (0.50)	0.49 (0.50)
Full-time work	2.38 (3.58)	3.52 (3.95)	1.04 (2.25)	2.96 (3.45)	0.19 (0.92)	1.61 (2.67)
Part-time work	0.24 (0.79)	0.58 (1.44)	0.33 (0.88)	0.71 (1.48)	0.31 (0.75)	1.22 (1.76)
No degree	0.38 (0.49)	0.00 (0.00)	0.46 (0.50)	0.00 (0.00)	0.71 (0.45)	0.00 (0.00)
Basic sec.	0.55 (0.50)	0.00 (0.00)	0.44 (0.50)	0.00 (0.00)	0.15 (0.36)	0.00 (0.00)
Technical or general sec.	0.03 (0.17)	0.00 (0.00)	0.08 (0.28)	0.00 (0.00)	0.14 (0.34)	0.00 (0.00)
Other sec.	0.04 (0.19)	0.00 (0.00)	0.02 (0.14)	0.00 (0.00)	0.00 (0.06)	0.00 (0.00)
Apprentice or voc. school	0.00 (0.00)	0.69 (0.46)	0.00 (0.00)	0.66 (0.47)	0.00 (0.00)	0.29 (0.46)
Technical school	0.00 (0.00)	0.09 (0.28)	0.00 (0.00)	0.06 (0.25)	0.00 (0.00)	0.03 (0.17)
Other voc.	0.00 (0.00)	0.03 (0.16)	0.00 (0.00)	0.02 (0.12)	0.00 (0.00)	0.01 (0.12)
Technical college	0.00 (0.00)	0.04 (0.19)	0.00 (0.00)	0.03 (0.17)	0.00 (0.00)	0.04 (0.20)

University	0.00 (0.00)	0.16 (0.36)	0.00 (0.00)	0.23 (0.42)	0.00 (0.00)	0.62 (0.49)
married	0.28 (0.45)	0.27 (0.44)	0.09 (0.29)	0.18 (0.38)	0.02 (0.14)	0.08 (0.27)
dummy: migration background	0.82 (0.38)	0.68 (0.47)	0.39 (0.49)	0.30 (0.46)	0.14 (0.35)	0.13 (0.33)
at least one child in the household	0.69 (0.46)	0.42 (0.49)	0.56 (0.50)	0.32 (0.47)	0.60 (0.49)	0.21 (0.41)
parents' current class: white-collar	0.07 (0.26)	0.12 (0.32)	0.49 (0.50)	0.50 (0.50)	0.89 (0.32)	0.81 (0.39)
parents' current class: petty bourgeoisie	0.02 (0.15)	0.01 (0.10)	0.05 (0.22)	0.05 (0.21)	0.06 (0.25)	0.06 (0.24)
parents' current class: farm self employed	0.00 (0.06)	0.00 (0.04)	0.01 (0.07)	0.01 (0.10)	0.00 (0.00)	0.00 (0.04)
parents' current class: skilled worker	0.15 (0.36)	0.16 (0.37)	0.20 (0.40)	0.15 (0.36)	0.01 (0.12)	0.01 (0.11)
parents' current class: non-skilled worker	0.43 (0.50)	0.37 (0.48)	0.16 (0.37)	0.14 (0.35)	0.01 (0.11)	0.02 (0.13)
parents' current class: not working	0.32 (0.47)	0.33 (0.47)	0.09 (0.29)	0.15 (0.35)	0.02 (0.15)	0.10 (0.30)
parents' highest work experience	52.34 (7.46)	56.39 (8.08)	49.52 (6.71)	53.87 (7.02)	51.09 (6.28)	56.46 (6.67)
Father age	49.09 (7.60)	52.46 (7.71)	46.29 (6.06)	50.66 (6.60)	48.06 (5.42)	53.12 (6.08)
Mother age	0.02 (0.14)	0.02 (0.15)	0.05 (0.21)	0.02 (0.15)	0.04 (0.20)	0.03 (0.18)
spent more than half of observed time not with biological parents	8.63 (3.08)	8.61 (2.82)	8.49 (2.83)	8.26 (2.85)	8.35 (2.99)	8.52 (3.18)
initial unemployment rate by ROR	8.61 (2.60)	8.76 (2.44)	8.94 (2.69)	8.85 (2.69)	9.09 (2.86)	9.20 (3.01)
unemployment rate by state	28.56 (8.77)	31.70 (9.37)	26.76 (7.80)	31.05 (7.70)	25.57 (6.66)	30.49 (6.51)
maximum years of education of parent while child grew up	8.60 (1.37)	9.00 (1.39)	11.17 (1.39)	11.16 (1.26)	16.24 (2.24)	16.09 (2.41)
highest average siops of parents while child grew up	28.01 (6.84)	27.66 (6.28)	41.67 (7.81)	42.32 (7.74)	59.55 (8.59)	59.52 (8.21)
highest average household income of parents when child grew up	1349 (3676)	14356 (3973)	20979 (6216)	21068 (6158)	38322 (14557)	36398 (13729)
N observations	2463	2108	5885	7831	2143	2431
N people	565	412	1840	1583	719	530

Table A3: Model coefficients of random intercept models for employment probabilittemporary work and hourly wage (log) by education

Low qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Constant	2213.2 (3931.9)	0.59 (0.30)	30.37 (69.37)
Mean age	0.73 (0.04)	0.00 (0.01)	0.81 (0.06)
Deviation age	0.86 (0.04)	0.01 (0.01)	0.83 (0.06)
Deviation age^2	0.99 (0.01)	0.00 (0.00)	1.02 (0.01)
Male	0.89 (0.17)	0.03 (0.03)	1.25 (0.30)
Married	1.02 (0.24)	0.09 (0.03)	1.20 (0.33)
Mean child	0.62 (0.19)	-0.05 (0.05)	0.78 (0.30)
Deviation child	1.36 (0.26)	0.02 (0.02)	1.03 (0.23)
Migrant	1.30 (0.42)	0.09 (0.05)	1.81 (0.73)
Mean health	1.21 (0.08)	0.05 (0.01)	0.80 (0.07)
Deviation health	1.09 (0.04)	0.00 (0.00)	1.06 (0.05)
Deviation part-time	2.39 (0.37)	0.02 (0.01)	0.87 (0.12)
Mean part-time	5.02 (0.88)	0.07 (0.02)	0.71 (0.10)
Deviation full-time	2.48 (0.20)	0.06 (0.01)	0.76 (0.07)
Mean full-time	1.57 (0.11)	0.03 (0.01)	0.79 (0.07)
No degree (ref)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Basic/intermediate secondary	0.24 (0.05)	-0.07 (0.03)	2.62 (0.76)
Technical/general sec.	0.47 (0.17)	-0.01 (0.04)	4.95 (1.93)
Other secondary	0.09 (0.04)	-0.20 (0.07)	1.46 (0.95)
Parents class: white-collar (ref.)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
-Petty bourgeoisie	2.30 (1.01)	-0.05 (0.05)	0.66 (0.31)
-Farm self employed	1.09 (1.21)	-0.74 (0.16)	0.47 (0.95)
-Skilled workers	1.15 (0.30)	-0.10 (0.03)	1.30 (0.39)
-Non-skilled workers	0.83 (0.20)	-0.06 (0.03)	1.27 (0.37)
-Non working	0.67 (0.18)	-0.11 (0.03)	0.94 (0.32)
Parents' work	0.99 (0.01)	0.00 (0.00)	0.98 (0.02)
Father's age	1.05 (0.02)	-0.01 (0.00)	0.97 (0.03)
Mother's age	0.95 (0.02)	0.01 (0.00)	1.03 (0.03)
Not living with parents	0.47 (0.21)	-0.02 (0.08)	0.70 (0.44)
Middle (vs disadv.)	0.60 (0.35)	-0.01 (0.09)	4.80 (3.47)**

Adv. (vs disadv.)	3.84 (4.08)	0.18 (0.15)	0.87 (1.10)
Unemployment rate (ROR)	0.79 (0.48)**	0.004 (0.009)	1.24 (0.09)**
Middle * Unemployment	1.15 (0.07)**	0.005 (0.010)	0.84 (0.07)**
Highest * Unemployment	1.02 (0.11)	-0.016 (0.017)	0.95 (0.14)
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Sample fixed effects	Yes	Yes	Yes
Rho	*0.48*	*0.59*	*0.59*
N persons	*1370*	*959*	*817*
N observations	*4198*	*3093*	*2731*

High qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Middle (vs disadv.)	0.95 (0.61)	-0.04 (0.07)	0.35 (0.22)*
Constant	507.32 (1009.21)	-0.22 (0.33)	2.68 (5.16)
Mean age	2.40 (1.00)	0.03 (0.01)	0.96 (0.05)
Deviation age	9.59 (2.96)	0.02 (0.01)	0.96 (0.05)
Deviation age^2	0.00 (0.00)	0.00 (0.00)	1.01 (0.00)
Male	0.37 (0.12)	0.09 (0.02)	1.28 (0.18)
Married	0.70 (0.65)	0.03 (0.02)	1.10 (0.19)
Mean child	0.93 (0.21)	0.01 (0.03)	0.71 (0.18)
Deviation child	0.71 (0.14)	0.01 (0.01)	1.00 (0.15)
Migrant	0.66 (0.15)	0.02 (0.03)	0.95 (0.24)
Mean health	1.03 (0.01)	0.02 (0.01)	1.07 (0.06)
Deviation health	1.00 (0.02)	0.00 (0.00)	0.99 (0.03)
Deviation part-time	1.01 (0.02)	0.00 (0.01)	0.94 (0.07)
Mean part-time	0.73 (0.30)	0.01 (0.01)	0.83 (0.07)
Deviation full-time	0.00 (0.00)	0.02 (0.01)	0.63 (0.04)
Mean full-time	0.00 (0.00)	0.02 (0.01)	0.63 (0.04)
Schooling: Apprentice/vocational (ref)	0.95 (0.61)	0.00 (0.00)	0.00 (0.00)
-Technical school	0.59 (0.57)	0.07 (0.02)	0.85 (0.23)
-Other vocational	0.00 (0.00)	0.11 (0.05)	1.91 (0.96)
-Technical college	0.92 (0.07)	0.20 (0.03)	0.80 (0.25)
-University	0.00 (0.00)	0.12 (0.02)	1.64 (0.31)
Parents class: white-collar (ref.)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
-Petty bourgeoisie	0.00 (0.00)	-0.01 (0.03)	0.73 (0.20)
-Farm self employed	0.00 (0.00)	-0.01 (0.09)	0.35 (0.28)

-Skilled workers	1.05 (0.07)	0.01 (0.02)	1.50 (0.28)
-Non-skilled workers	1.15 (0.11)	-0.01 (0.02)	1.02 (0.18)
-Non working	2.40 (1.00)	0.00 (0.02)	0.58 (0.11)
Parents' work	9.59 (2.96)	0.00 (0.00)	0.99 (0.01)
Father's age	0.00 (0.00)	-0.01 (0.00)	1.04 (0.02)
Mother's age	0.37 (0.12)	0.01 (0.00)	0.98 (0.02)
Not living with parents	0.70 (0.65)	-0.02 (0.06)	2.59 (1.09)
Adv. (vs disadv.)	0.59 (0.67)	-0.12 (0.09)	0.59 (0.44)
Unemployment rate (state)	0.92 (0.07)	-0.017 (0.008)**	0.82 (0.06)**
Middle * Unemployment	1.05 (0.07)	0.011 (0.008)	1.12 (0.08)*
Highest * Unemployment	1.15 (0.11)	0.015 (0.009)*	1.10 (0.09)
State fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Sample fixed effects	Yes	Yes	Yes
Rho	*0.57*	*0.53*	*0.55*
N persons	*1843*	*1696*	*1618*
N observations	*8673*	*7881*	*7436*

Table A3: Employment probability by different combinations of disadvantage

Low qualifications	Occupation and income	Occupation and education	Income and education
Background (middle 60%)	1.05 (0.69)	0.62 (0.39)	0.81 (0.48)
Background (20% most advantaged)	3.38 (3.83)	2.15 (2.41)	1.74 (1.92)
Unemployment rate (ROR)	0.79 (0.06)**	0.76 (0.05)**	0.81 (0.05)**
Middle * Unemployment	1.10 (0.08)	1.15 (0.08)**	1.08 (0.07)
Highest * Unemployment	1.08 (0.13)	1.11 (0.13)	1.13 (0.14)
Rho	0.48	0.47	0.49
N persons	1261	1256	1361
N observations	3701	3688	4179

High qualifications	Occupation and income	Occupation and education	Income and education
Background (middle 60%)	0.60 (0.37)	0.97 (0.62)	1.54 (1.01)
Background (20% most advantaged)	0.84 (0.81)	0.59 (0.56)	1.70 (1.71)
Unemployment rate (state)	0.90 (0.07)	0.94 (0.07)	0.95 (0.07)
Middle * Unemployment	1.11 (0.07)*	1.04 (0.07)	1.01 (0.07)
Highest * Unemployment	1.09 (0.11)	1.10 (0.10)	1.04 (0.11)
Rho	0.37	0.37	0.35
N persons	1737	1748	1824
N observations	8063	8145	8569

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, social class own work (for temporary work and hourly wage), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.*

Table A4: Log hourly wage by different combinations of disadvantage

Low qualifications	Occupation and income	Occupation and education	Income and education
Background (middle 60%)	0.07 (0.10)	0.05 (0.10)	-0.00 (0.09)
Background (20% most advantaged)	0.11 (0.15)	0.30 (0.15)**	0.21 (0.15)
Unemployment rate (ROR)	0.02 (0.01)*	0.01 (0.01)	0.00 (0.01)
Middle * Unemployment	-0.01 (0.01)	-0.00 (0.01)	0.01 (0.01)
Highest * Unemployment	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
Rho	0.62	0.61	0.59
N persons	865	862	952
N observations	2688	2677	3078

High qualifications	Occupation and income	Occupation and education	Income and education
Background (middle 60%)	-0.04 (0.07)	-0.14 (0.07)**	-0.02 (0.08)
Background (20% most advantaged)	-0.10 (0.09)	-0.21 (0.09)**	-0.13 (0.09)
Unemployment rate (state)	-0.01 (0.01)*	-0.02 (0.01)**	-0.01 (0.01)*
Middle * Unemployment	0.01 (0.010	0.02 (0.01)**	0.01 (0.01)
Highest * Unemployment	0.01 (0.01)	0.02 (0.01)**	0.01 (0.01)
Rho	0.54	0.54	0.53
N persons	1597	1608	1679
N observations	7323	7404	7784

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, social class own work (for temporary work and hourly wage), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A5: Working on a temporary contract by different combinations of disadvantage

Low qualifications	Occupation and income	Occupation and education	Income and education
Background (middle 60%)	15.19 (12.56)**	4.05 (3.17)*	1.26 (0.91)
Background (20% most advantaged)	0.44 (0.57)	0.99 (1.28)	0.80 (1.00)
Unemployment rate (ROR)	1.37 (0.12)**	1.24 (0.10)**	1.15 (0.08)*
Middle * Unemployment	0.70 (0.07)**	0.82 (0.07)**	0.96 (0.08)
Highest * Unemployment	0.99 (0.15)	0.90 (0.14)	0.96 (0.14)
Rho	0.56	0.56	0.59
N persons	731	730	812
N observations	2357	2350	2720

High qualifications	Occupation and income	Occupation and education	Income and education
Background (middle 60%)	0.17 (0.11)**	0.24 (0.15)**	0.50 (0.34)
Background (20% most advantaged)	0.49 (0.38)	0.35 (0.26)	0.70 (0.56)
Unemployment rate (state)	0.76 (0.06)**	0.80 (0.06)**	0.82 (0.06)**
Middle * Unemployment	1.23 (0.09)**	1.14 (0.08)**	1.09 (0.08)
Highest * Unemployment	1.10 (0.09)	1.14 (0.09)*	1.11 (0.09)
Rho	0.54	0.55	0.54
N persons	1524	1535	1601
N observations	6907	6989	7342

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, social class own work (for temporary work and hourly wage), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A6: Employment probability different composition effects of family disadvantage

Low qualifications	Education	Occupation	Income
Background (middle 60%)	0.51 (0.30)	1.29 (0.85)	3.28 (1.99)**
Background (20% most advantaged)	1.07 (1.08)	3.57 (4.02)	3.41 (3.09)
Unemployment rate (ROR)	0.80 (0.05)***	0.82 (0.06)***	0.86 (0.05)**
Middle * Unemployment	1.11 (0.07)*	1.01 (0.07)	0.97 (0.06)
Highest * Unemployment	1.12 (0.12)	1.00 (0.12)	1.02 (0.10)
Rho	0.48	0.47	0.49
N persons	1363	1263	1368
N observations	4182	3704	4195

High qualifications	Education	Occupation	Income
Background (middle 60%)	2.10 (1.43)	1.02 (0.64)	0.53 (0.34)
Background (20% most advantaged)	1.84 (1.73)	0.98 (0.94)	0.69 (0.65)
Unemployment rate (state)	1.03 (0.08)	0.97 (0.08)	0.87 (0.06)*
Middle * Unemployment	0.93 (0.07)	0.99 (0.06)	1.13 (0.07)*
Highest * Unemployment	0.95 (0.09)	1.04 (0.10)	1.12 (0.11)
Rho	0.35	0.37	0.35
N persons	1839	1752	1828
N observations	8662	8156	8580

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, social class own work (for temporary work and hourly wage), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A7: probability of temporary work by different composition effects of family disadvantage

Low qualifications	Education	Occupation	Income
Background (middle 60%)	1.78 (1.29)	10.22 (8.29)***	5.63 (4.20)**
Background (20% most advantaged)	1.55 (1.87)	0.80 (1.02)	0.90 (1.09)
Unemployment rate (ROR)	1.18 (0.09)**	1.34 (0.12)***	1.28 (0.10)***
Middle * Unemployment	0.91 (0.07)	0.74 (0.07)***	0.79 (0.07)***
Highest * Unemployment	0.87 (0.12)	0.93 (0.14)	0.95 (0.13)
Rho	0.59	0.56	0.59
N persons	814	733	815
N observations	2722	2359	2729

High qualifications	Education	Occupation	Income
Background (middle 60%)	0.14 (0.10)***	0.30 (0.17)**	0.71 (0.43)
Background (20% most advantaged)	0.29 (0.23)	0.55 (0.39)	1.05 (0.77)
Unemployment rate (state)	0.76 (0.06)***	0.79 (0.05)***	0.84 (0.06)**(
Middle * Unemployment	1.22 (0.09)**	1.17 (0.08)***	1.08 (0.07)
Highest * Unemployment	1.20 (0.10)**	1.11 (0.08)	1.06 (0.08)
Rho	0.55	0.55	0.54
N persons	1615	1538	1604
N observations	7430	6995	7348

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, social class own work (for temporary work and hourly wage), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A8: Working on a temporary contract by different combinations of disadvantage

Low qualifications	Education	Occupation	Income
Background (middle 60%)	0.02 (0.09)	-0.01 (0.10)	0.08 (0.09)
Background (20% most advantaged)	0.22 (0.14)	0.24 (0.15)*	0.01 (0.14)
Unemployment rate (ROR)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)
Middle * Unemployment	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)
Highest * Unemployment	-0.02 (0.02)	-0.02 (0.02)	0.01 (0.02)
Rho	0.59	0.62	0.59
N persons	954	867	957
N observations	3080	2690	3091

High qualifications	Education	Occupation	Income
Background (middle 60%)	-0.02 (0.08)	-0.14 (0.07)**	0.07 (0.07)
Background (20% most advantaged)	-0.16 (0.09)	-0.18 (0.08)**	-0.01 (0.09)
Unemployment rate (state)	-0.01 (0.01)	-0.02 (0.01)***	-0.01 (0.01)
Middle * Unemployment	0.00 (0.01)	0.01 (0.01)*	-0.00 (0.01)
Highest * Unemployment	0.01 (0.01)	0.02 (0.01)**	0.00 (0.01)
Rho	0.53	0.54	0.53
N persons	1693	1611	1682
N observations	7373	7412	7792

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, social class own work (for temporary work and hourly wage), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A9: separate analyses by gender

	Employed		Log hourly wage		Temporary job	
Low qualifications	Male	Female	Male	Female	Male	Female
Background (middle 60%)	0.29 (0.26)	1.18 (1.02)	-0.04 (0.13)	-0.05 (0.12)	8.66 (9.84)*	3.07 (2.89)
Background (20% most advantaged)	0.92 (1.50)	33.43 (55.10)**	0.06 (0.20)	0.18 (0.20)	1.82 (3.56)	0.84 (1.44)
Unemployment rate (ROR)	0.69 (0.07)**	0.87 (0.07)*	-0.01 (0.02)	0.01 (0.01)	1.40 (0.16)**	1.08 (0.10)
Middle * Unemployment	1.26 (0.12)**	1.07 (0.10)	0.01 (0.01)	0.00 (0.01)	0.82 (0.10)*	0.85 (0.09)
Highest * Unemployment	1.26 (0.23)	0.80 (0.13)	0.00 (0.02)	-0.02 (0.02)	0.83 (0.19)	1.02 (0.19)
Rho	0.50	0.47	0.67	0.39	0.65	0.47
N persons	736	634	507	452	436	381
N observations	2370	1828	1786	1307	1578	1153

High qualifications	Male	Female +	Male	Female	Male+	Female
Background (middle 60%)	1.08 (0.95)	0.40 (0.42)	0.06 (0.10)	-0.18 (0.11)*	0.41 (0.35)	0.43 (0.42)
Background (20% most advantaged)	0.26 (0.38)	0.51 (0.73)	-0.03 (0.12)	-0.31 (0.13)**	0.25 (0.27)	1.94 (2.23)
Unemployment rate (state)	0.92 (0.10)	0.88 (0.10)	-0.00 (0.01)	-0.04 (0.01)**	0.87 (0.09)	0.78 (0.09)**
Middle * Unemployment	1.04 (0.10)	1.14 (0.13)	-0.00 (0.01)	0.03 (0.01)**	1.16 (0.11)*	1.04 (0.11)
Highest * Unemployment	1.29 (0.21)	1.14 (0.16)	0.00 (0.01)	0.04 (0.01)**	1.29 (0.14)**	0.92 (0.11)
Rho	0.38	0.31	0.56	0.47		0.56
N persons	928	915	852	844	809	809
N observations	4429	4244	4027	3854	3762	3674

*: p<0.1, **: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics. +: not fully converged.

Table A10: analyses carried out on sample after the reunification in 1991

Low qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Background (middle 60%)	0.69 (0.44)	-0.02 (0.09)	4.36 (3.49)*
Background (20% most advantaged)	4.41 (5.13)	0.17 (0.15)	0.61 (0.84)
Unemployment rate (ROR)	0.83 (0.06)**	0.01 (0.01)	1.24 (0.10)**
Middle * Unemployment	1.14 (0.08)*	0.00 (0.01)	0.83 (0.07)**
Highest * Unemployment	1.01 (0.12)	-0.01 (0.02)	0.94 (0.15)
Rho	0.50	0.61	0.60
N persons	1292	906	769
N observations	3765	2760	2435

High qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Background (middle 60%)	0.56 (0.37)	-0.05 (0.07)	0.51 (0.32)
Background (20% most advantaged)	0.84 (0.87)	-0.15 (0.09)*	0.96 (0.73)
Unemployment rate (state)	0.90 (0.07)	-0.02 (0.01)**	0.84 (0.06)**
Middle * Unemployment	1.10 (0.07)	0.01 (0.01)	1.09 (0.07)
Highest * Unemployment	1.11 (0.11)	0.02 (0.01)**	1.06 (0.08)
Rho	0.34	0.53	0.54
N persons	1821	1675	1596
N observations	8493	7727	7297

: $p < 0.05$, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A11: The scale of background disadvantage divided in three equal parts

Low qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Background (middle 33%)	0.98 (0.60)	0.15 (0.09)*	6.87 (5.21)**
Background (33% top)	2.12 (1.58)	0.14 (0.11)	1.07 (1.04)
Unemployment rate (ROR)	0.82 (0.05)**	0.01 (0.01)	1.21 (0.08)**
Middle * Unemployment	1.09 (0.07)	-0.01 (0.01)	0.79 (0.07)**
Highest * Unemployment	1.02 (0.08)	-0.01 (0.01)	0.92 (0.10)
Rho	0.49	0.59	0.60
N persons	1370	959	817
N observations	4198	3093	2731

High qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Background (middle 33%)	0.87 (0.50)	0.01 (0.06)	0.34 (0.19)*
Background (33% top)	1.03 (0.70)	-0.06 (0.07)	0.86 (0.49)
Unemployment rate (state)	0.94 (0.06)	-0.01 (0.01)*	0.84 (0.05)**
Middle * Unemployment	1.04 (0.06)	0.00 (0.01)	1.14 (0.07)**
Highest * Unemployment	1.07 (0.07)	0.01 (0.01)	1.06 (0.06)
Rho	0.35	0.53	0.55
N persons	1843	1696	1618
N observations	8673	7881	7436

*: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class, father birth year, mother birth year, social class own work (when employed), living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A12: The effects of growing up in a disadvantaged household (lowest 20%) rather than anything else

Low qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Disadvantaged (lowest quintile)	1.41 (0.81)	-0.01 (0.09)	0.25 (0.18)**
Unemployment rate (ROR)	0.90 (0.05)**	0.01 (0.01)	1.05 (0.07)
Disadvantaged * unemployment rate	0.88 (0.05)**	-0.00 (0.01)	1.17 (0.09)**
Rho	0.48	0.59	0.59
N persons	1370	959	817
N observations	4198	3093	2731

High qualifications	Employment probability (odds ratio)	Hourly wage	Temporary employment (odds ratio)
Disadvantaged (lowest quintile)	1.16 (0.74)	0.05 (0.07)	2.72 (1.70)
Unemployment rate (ROR)	0.98 (0.05)	-0.01 (0.00)	0.91 (0.04)**
Disadvantaged * unemployment rate	0.94 (0.06)	-0.01 (0.01)	0.89 (0.06)*
Rho	0.35	0.53	0.55
N persons	1843	1696	1618
N observations	8673	7881	7436

*: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.

Table A13: the sample split up in the first 5 years observed and afterwards

	Employed		Log hourly wage		Temporary job	
Low qualifications	>5	<=5	>5	<=5	>5 +	<=5
Background (middle 60%)	0.27 (0.36)	0.57 (0.42)	-0.11 (0.15)	0.06 (0.11)	3.73 (4.56)	9.55 (11.57)*
Background (20% most advantaged)	76.12 (245.75)	1.05 (1.39)	-0.13 (0.27)	0.22 (0.16)	0.19 (0.50)	4.46 (9.28)
Unemployment rate (ROR)	0.76 (0.09)**	0.77 (0.06)**	0.00 (0.01)	0.01 (0.01)	1.05 (0.12)	1.57 (0.21)**
Middle * Unemployment	1.22 (0.17)	1.18 (0.10)**	0.01 (0.02)	-0.00 (0.01)	0.88 (1.16)	0.79 (0.11)*
Highest * Unemployment	0.73 (0.23)	1.24 (0.18)	0.03 90.03)	-0.02 (0.02)	1.16 (0.37)	0.80 (0.19)
Rho	0.62	0.54	0.64	0.52	0.50	0.80
N persons	397	1299	345	867	330	726
N observations	1528	2670	1279	1814	1201	1530

High qualifications	>5 +	<=5	>5	<=5	>5 +	<=5
Background (middle 60%)	0.71 (0.77)	1.05 (0.86)	0.09 (0.09)	-0.09 (0.10)	0.32 (0.32)	0.20 (0.20)*
Background (20% most advantaged)	1.05 (1.51)	0.69 (0.95)	0.03 (0.11)	-0.35 (0.13)**	0.44 (0.51)	0.52 (0.62)
Unemployment rate (state)	0.92 (0.12)	0.89 (0.09)	0.00 (0.01)	-0.02 (0.01)**	0.79 (0.09)**	0.74 (0.09)**
Middle * Unemployment	1.12 (0.12)	1.02 (0.09)	-0.00 (0.01)	0.02 (0.01)	1.14 (0.12)	1.19 (0.13)
Highest * Unemployment	1.08 (0.15)	1.15 (0.17)	-0.00 (0.01)	0.03 (0.01)**	1.13 (0.13)	1.13 (0.15)
Rho	0.43	0.32	0.52	0.52	0.58	0.67
N persons	1156	1415	1102	1261	1051	1194
N observations	5284	3389	4918	2963	4616	2820

*: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics.
+: not fully converged

Table A14: The odds of family background interacting with local unemployment rate on type of job, controlling for industry

Low qualifications	Hourly wage	Temporary employment (odds ratio) +	Matched job (odds ratio)	Job found through contacts (odds ratio)
Background (middle 33%)	0.01 (0.10)	3.93 (3.10)*	0.33 (0.20)*	0.80 (0.52)
Background (33% top)	0.18 (0.16)	1.93 (2.74)	0.23 (0.19)*	0.66 (0.51)
Unemployment rate (ROR)	0.01 (0.01)	1.26 (0.10)**	0.84 (0.06)**	0.79 (0.09)**
Middle * Unemployment	0.00 (0.01)	0.85 (0.07)*	1.13 (0.07)*	1.06 (0.08)
Highest * Unemployment	-0.01 (0.02)	0.84 (0.14)	1.29 (0.11)**	1.07 (0.09)
Rho	0.66	0.62	0.75	0.28
N persons	872	757	2179	1511
N observations	2717	2462	10098	2869
High qualifications	Hourly wage	Temporary employment (odds ratio)	Matched job (odds ratio)	Job found through contacts (odds ratio)
Background (middle 33%)	-0.06 (0.08)	0.27 (0.18)**	0.33 (0.20)*	0.80 (0.52)
Background (33% top)	-0.13 (0.09)	0.43 (0.34)	0.23 (0.19)*	0.66 (0.51)
Unemployment rate (state)	-0.02 (0.01)**	0.78 (0.06)**	0.84 (0.06)**	0.79 (0.09)**
Middle * Unemployment	0.01 (0.01)	1.15 (0.08)*	1.13 (0.07)*	1.06 (0.08)
Highest * Unemployment	0.02 (0.01)*	1.13 (0.09)	1.29 (0.11)**	1.07 (0.09)
Rho	0.59	0.54	0.75	0.28
N persons	1636	1571	2179	1511
N observations	7399	7039	10098	2869

*: p<0.05, controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. Rho indicates the proportion of residual variance that is due to unobserved person-specific characteristics. The analyses for having found a job through contacts and working on a matched job are carried out on the full sample.

Table A15: estimated odds ratios of the increase in unemployment rate on employment by family background

Employment	Low qualifications			High qualifications		
	Disadv.	Middle	Adv.	Disadv.	Middle	Adv.
Original	0.79**	0.91**	0.81	0.92	0.97	1.06
Occ-Inc	0.79**	0.87	0.85	0.90	1.00*	0.98
Occ_educ	0.76**	0.87**	0.84	0.94	0.98	1.03
Inc_educ	0.81**	0.87	0.92	0.95	0.96	0.99
Education	0.80**	0.89*	0.90	1.03	0.96	0.98
Occupation	0.82**	0.83	0.82	0.97	0.96	1.01
Income	0.86**	0.83	0.88	0.87*	0.98*	0.97
Male	0.69**	0.87**	0.87	0.92	0.96	1.19
Female	0.87*	0.93	0.70	0.88	1.00	1.00
After 1991	0.83**	0.95*	0.84	0.90	0.99	1.00
33%	0.82**	0.90	0.84	0.94	0.98	1.01
After 5 years	0.76**	0.93	0.55	0.92	1.03	0.99
5 first years	0.77**	0.91**	0.95	0.89	0.91	1.02
Disadvantage	0.79**	0.90**		0.92	0.98	

*: $p<0.1$, **: $p<0.05$, ***: $p<0.01$, the significance for middle and higher advantage indicate that the coefficient is significantly different from that of the lower group. Effects are controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. The scale for family background is broken down in three parts: only including occupation and income (occ-inc), only including occupation and education (occ_educ) and only including income and education (inc_educ).It is also split up in only education, occupational status and income. The results are shown after 1991 (reunification) and for when disadvantage is not based on disadvantages but on three equal parts. Then the analysis is split up in the 5 first years of observation and in later observations. Disadvantaged is treated as a dichotomy by combining the middle and more advantaged group. Finally the industry in which someone works is included as a control variable.

Table A16: estimated effect of the increase in unemployment rate on log hourly wage by family background

Log hourly wage	Low qualifications			High qualifications		
	Disadv.	Middle	Adv.	Disadv.	Middle	Adv.
Original	0.00	0.00	-0.02	-0.02*	-0.01	-0.01*
Occ-Inc	0.02*	0.01	0.01	-0.01*	0.00	0.00
Occ_educ	0.01	0.01	-0.01	-0.02**	0.00**	0.00**
Inc_educ	0.00	0.01	-0.02	-0.01*	0.00	0.00
Education	0.01	0.01	-0.01	-0.01	-0.01	0.00
Occupation	0.01	0.01	-0.01	-0.02***	-0.01*	0.00
Income	0.00	0.00	0.01	-0.01	-0.01	0.00
Male	-0.01	0.00	-0.01	-0.00	-0.00	0.00
Female	0.01	0.01	-0.01	-0.04**	-0.01**	0.00**
After 1991	0.01	0.01	0.00	-0.02**	-0.01	0.00**
33%	0.01	0.00	0.00	-0.01*	-0.01	0.00
After 5 years	0.00	0.01	0.03	0.00	0.00	0.00
5 first years	0.01	0.01	-0.01	-0.02**	0.00	0.01**
Disadvantage	0.01	0.01		-0.02	-0.01	
Industry	0.01	0.01	0.00	-0.02**	-0.01	0.00**

*: p<0.1, **: p<0.05, ***: p<0.01, the significance for middle and higher advantage indicate that the coefficient is significantly different from that of the lower group. Effects are controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. The scale for family background is broken down in three parts: only including occupation and income (occ-inc), only including occupation and education (occ_educ) and only including income and education (inc_educ).It is also split up in only education, occupational status and income. The results are shown after 1991 (reunification) and for when disadvantage is not based on disadvantages but on three equal parts. Then the analysis is split up in the 5 first years of observation and in later observations. Disadvantaged is treated as a dichotomy by combining the middle and more advantaged group. Finally the industry in which someone works is included as a control variable.

Table A17: estimated odds ratios of the increase in unemployment rate on working temporary contract by family background

Temporary work	Low qualifications			High qualifications		
	Disadv.	Middle	Adv.	Disadv.	Middle	Adv.
Original	1.24**	1.04**	1.18	0.82**	0.92**	0.90
Occ-Inc	1.37**	0.96**	1.36	0.76**	0.93**	0.84
Occ_educ	1.24**	1.02**	1.12	0.80**	0.91**	0.91*
Inc_educ	1.15*	1.10	1.10	0.82**	0.89	0.91
Education	1.18**	1.07	1.03	0.76	0.93**	0.91**
Occupation	1.34***	0.99***	1.25	0.79	0.92**	0.88
Income	1.28***	1.01	1.22	0.84	0.91	0.89
Male	1.40**	1.15*	1.16	0.87	1.01*	1.12**
Female	1.08	0.92	1.10	0.78**	0.81	0.72
After 1991	1.24**	1.03**	1.17	0.84**	0.92	0.89
33%	1.21**	0.96**	1.11	0.84**	0.96**	0.89
After 5 years	1.05	0.92	1.22	0.79**	0.90	0.89
5 first years	1.57**	1.24*	1.26	0.74**	0.88	0.84
Disadvantage	1.23**	1.05		0.81*	0.91**	
Industry	1.26**	1.07*	1.06	0.78**	0.90*	0.88

*: $p<0.1$, **: $p<0.05$, ***: $p<0.01$, the significance for middle and higher advantage indicate that the coefficient is significantly different from that of the lower group. Effects are controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. The scale for family background is broken down in three parts: only including occupation and income (occ-inc), only including occupation and education (occ_educ) and only including income and education (inc_educ).It is also split up in only education, occupational status and income. The results are shown after 1991 (reunification) and for when disadvantage is not based on disadvantages but on three equal parts. Then the analysis is split up in the 5 first years of observation and in later observations. Disadvantaged is treated as a dichotomy by combining the middle and more advantaged group. Finally the industry in which someone works is included as a control variable.

Table A18: estimated odds ratios of the increase in unemployment rate on working on a matched job or finding a job through contacts by family background

	Matched job			Job through contacts		
	Disadv.	Middle	Adv.	Disadv.	Middle	Adv.
Original	0.85**	0.94	1.05**	0.82*	0.87	0.89
Occ-Inc	0.86**	0.93	0.94	0.90	0.87	0.86
Occ_educ	0.83**	0.93	1.03	0.86	0.88	0.87
Inc_educ	0.94	0.89	1.05	0.78**	0.87	0.84
Education	0.95	0.91	1.00	0.75**	0.86*	0.89*
Occupation	0.80***	0.95***	1.06***	0.86	0.87	1.03
Income	0.92	0.93	0.91	0.83*	0.86	0.87
Male	0.84**	0.85	1.13**	0.78	0.82	0.86
Female	0.87	1.04*	0.99	0.83	0.89	0.89
After 1991	0.86**	0.91	1.03**	0.81*	0.87	0.88
33%	0.97	0.92	1.00	0.82*	0.84	0.89
After 5 years	0.77**	0.94*	0.92	0.85	1.00	1.44
5 first years	0.93	0.98	1.30**	0.64*	0.67	0.67
Disadvantage	0.85**	0.96		0.82	0.87	
Industry	0.84**	0.95*	1.08**	0.79**	0.84	0.85

*: $p<0.1$, **: $p<0.05$, ***: $p<0.01$, the significance for middle and higher advantage indicate that the coefficient is significantly different from that of the lower group. Effects are controlled for year (dummy), state (dummy), sample (dummy), school (dummy), gender, marital status, child, migrant, satisfaction with health, parents' class (dummies), father birth year, mother birth year, living with parents, experience full-time and part-time work. The scale for family background is broken down in three parts: only including occupation and income (occ-inc), only including occupation and education (occ_educ) and only including income and education (inc_educ).It is also split up in only education, occupational status and income. The results are shown after 1991 (reunification) and for when disadvantage is not based on disadvantages but on three equal parts. Then the analysis is split up in the 5 first years of observation and in later observations. Disadvantaged is treated as a dichotomy by combining the middle and more advantaged group. Finally the industry in which someone works is included as a control variable.*