



Changing labour market risks in the service economy: Low wages, part-time employment and the trend in working poverty risks in Germany

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Abstract

The article presents an analysis of the development of labour market risks in Germany in light of changing working poverty risks. Low hourly wages and part-time employment are identified as the main demand-side-related mechanisms for household poverty. Their measurement and development are discussed as well as their contribution to trends in working poverty risks. A rise in low wages, especially among part-time employed households, was decisive for the increase in working poverty risks in Germany by 45% between the end of the 1990s and the end of the 2000s. We therefore study these trends more closely in the multivariate analysis. The results show that while low wages are unequally distributed across occupations and industries, shifts in employment between sectors explain only a minor part of the change in low wages. However, they reveal a polarization of low-wage risks by skill-level and sector of employment, on the one hand, and full-time and part-time employees, on the other hand.

Keywords

In-work poverty, low-wage, part-time employment, industry sector, skill-level

Introduction

On the individual and household level, gainful employment represents the most effective tool to prevent income poverty. Thus, policy strategies for combating poverty and inequality are often focused on boosting employment because these policies seem promising to achieve poverty reduction without the need to increase spending on social transfers (Cantillon, 2011; Cantillon and Vandenbroucke, 2014). The limited success of

these policies revealed that job growth per se does not guarantee decreasing poverty rates, but that, instead,

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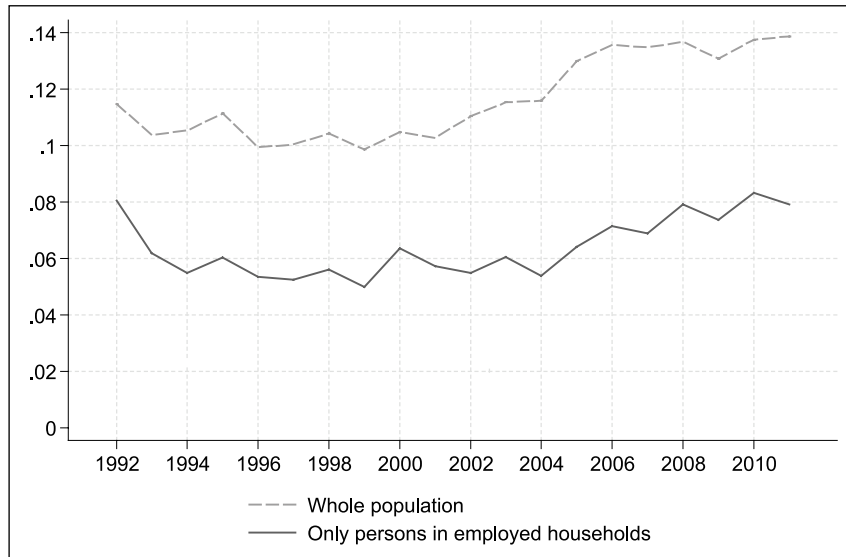


Figure 1. Poverty rates for working households and the whole population.

Data: SOEP 1992–2011. Own weighted calculations.

the relationship is contingent on many other factors, for example, the distribution of work among households.

A central concern in this respect is the development of poverty risks among working individuals or households. The observation that job growth and poverty reduction are by no means identical, may be one reason for the increased attention that the topic of in-work poverty received over the last 10 years (Andreß and Lohmann, 2008; Brady et al., 2013; Crettaz, 2013; Fraser et al., 2011; Lohmann, 2009). Furthermore, while poverty among the unemployed mainly depends on the effectiveness of social insurance systems and other kinds of social transfers, the notion of in-work poverty poses questions about basic structural characteristics of the economy and the labour market. Results on increasing poverty among employees raise concerns about the polarization of labour markets and an increase of jobs of poor quality (Kalleberg, 2011; Organisation for Economic Co-operation and Development (OECD), 2015). However, as shown by Halleröd et al. (2015), most measurements of in-work poverty confound effects of unemployment with effects of low wages: whereas the definition of employment is based only on persons being temporarily employed during a period of

1 year, the definition of poverty considers the household income for every month. Their analysis raises the question of whether trends of rising in-work poverty as defined most often are in fact mainly due to unemployment risks.

In this article, we contribute to the discussion by concentrating on the main labour market sources of in-work poverty risks – low hourly wages and part-time employment – as dimensions of job quality. We show how measures of individual part-time employment and low wages can be applied to the household level and clarify their relation to the change of in-work poverty risks. We analyse the period between 1992 and 2011 in Germany. Figure 1 shows that poverty increased in Germany since the end of the 1990s for the whole population, as well as for working households. The largest increase happened from 1999 to 2010, when poverty among individuals in employed households increased by well over 50% from 5% to 8%. At the same time, this period is marked by both an increase of employment with low hourly wages, and the increasing importance of part-time work. These developments signal a turning point in Germany's post-war settlement, which was characterized by a limited wage dispersion and the dominance of the standard employment relationship (Streeck, 1995).

They were fuelled not only by growing demands for flexibility from employers but also a partial deregulation of labour market institutions (Palier and Thelen, 2010; Thelen, 2014), making Germany a prime example for the idea of institutional dualization.

In the light of these developments, we will focus on the question *how dimensions of job quality are related to household poverty risks* and building on this general question, *how the changes of the German labour market contributed to the rise of in-work poverty*. We add to our previous knowledge in two respects. First, by putting the trends in job quality in the context of labour market cleavages by employment position and sector beyond and above growing skill-divides in the labour market with respect to wages, poverty and employment risks (Abrassart, 2015; Dustmann et al., 2009; Heidenreich, 2015; Kalleberg, 2011; Rovny, 2014). Second, we will study the changing relationship between two aspects of job quality – low wages and low working hours – and its implications for in-work poverty risks. The precarious position of being both employed part-time and on low hourly wages has been neglected by the literature on working poverty so far, despite its severe implications for household incomes. Our analysis will be able to uncover potential patterns of polarization of wage risks between different labour market locations and employment types and relate them to trends in household poverty, adding an important layer to research on institutional dualization and economic polarization. Because our results shed light on the consequences of trends observed in many countries – rising low-wage and part-time employment – their relevance extends well beyond Germany.

Before presenting the empirical results, we will discuss the basic theoretical and empirical premises of the topic of in-work poverty and develop a model of demand-side driven changes of in-work poverty risks in the following part, building on the approach of Crettaz and Bonoli (Crettaz, 2011, 2013; Crettaz and Bonoli, 2011). Then, the development of low wages and low working hours will be discussed, before putting the pieces together and examining the consequences of these trends for poverty risks among employed households. Because the results of the descriptive part indicate that trends in low wages

are paramount for the explanation of in-work poverty risks, these are analysed in more detail in the multivariate part of the analysis. The article concludes with a discussion of the results and the derivation of implications for social policy.

Demand-side explanations for changing in-work poverty

Building on the theoretical approach of Crettaz and Bonoli (Crettaz, 2011, 2013; Crettaz and Bonoli, 2011), three main mechanisms can be identified for the link between macro-level conditions and employed households' income poverty: low wages per working hour, low working hours and high household needs. While they also relate to individual decisions, the first two of these mechanisms are directly affected by labour market conditions. While individuals' and households' basic socio-demographic characteristics are controlled for in the multivariate analysis, they are not at the heart of the analysis in this article. For a more detailed treatment of these variables, see Levanon et al. (2015).

For both low hourly wages and low working hours, a specific literature exists, dealing with wage inequality and low-wage work, on the one hand, and part-time employment as a type of non-standard employment, on the other. In the following sections, we will review results from both streams on change over time and the relation to labour market location with a focus on Germany before turning to in-work poverty itself.

Wage inequality and low-wage work

For a long time, Germany was considered a high-wage and low inequality economy, where macro-economic pressures would rather manifest themselves in high unemployment and not in a growing dispersion of wages (Blau and Kahn, 2002; Crettaz, 2013; DiPrete, 2005). However, since the beginning of the 1990s, wage inequality and low-wage work have grown steadily in Germany (Bosch and Weinkopf, 2008; Corneo et al., 2014). Part of this change took the form of increasing inequalities between skill-groups (Dustmann et al., 2009; Giesecke and Verwiebe, 2009). In contrast, the change in the sectoral composition of the labour

market does not seem to be particularly important for the increase in wage inequality (Giesecke et al., 2015; Möller and Hutter, 2011).

The dichotomous indicator of low-wage employment reduces the overall wage inequality to the distinction of a group falling under a certain threshold and all those who do not. The most commonly used threshold is a value of two-thirds of the median of national hourly wages (Gautié and Schmitt, 2010). However, some studies focusing on poverty risks define low wages in relation to the distribution of household incomes (Berninger and Schröder, 2015; Dingeldey and Berninger, 2013; Lohmann, 2010). In Germany, the risk of falling into the low-wage group is strongly related to low education, low labour market experience and age, but also to working in specific sectors of the labour market, especially agriculture and consumer services (Mason and Salverda, 2010).

A specific pattern for the development of low-wage employment in Germany is related to a very high incidence of low wages in East Germany following the reunification of the Federal Republic of Germany and the German Democratic Republic in 1990. Starting from rates of above 60% in the first years of the 1990s, these figures declined sharply until 1995 to below 40%. While the incidence of low-wage employment is still much higher in the eastern part of Germany, the trends have been broadly parallel for both parts of the country since then. The overall low-wage incidence increased from around 20% between 1994 and 1998 to above 25% in 2007 (Lohmann and Gießelmann, 2010).

Labour supply and part-time employment

In contrast to low wage employment, part-time employment has often been voluntary, especially if those workers are secondary earners in a household (Hakim, 1997; Houseman, 1995). According to OECD-data, the incidence of part-time employment in Germany increased from about 15% in 1990 to almost 27% in 2013. According to the same data source, only a minority of these workers are involuntarily part-time employed, but their share among all employees has also been rising from below 1% in the early 1990s to above 4% in 2010.

The increase in part-time employment is related to the increasing labour force participation of women, and the *modified breadwinner model* (Crompton, 1999): a main income from full-time work that is supplemented with part-time employment of the secondary earner, which has become the dominant employment pattern of German couple households (Trappe et al., 2015). At the same time, part-time employment can be found mainly in service employment, for tasks that rely on a high degree of temporal flexibility, like sales and consumer services (Houseman, 2001). The unequal distribution of part-time employment over industries suggests that part-time employment is not purely driven by households' labour supply decisions but also by employers' needs for flexible staffing arrangements.

Bringing it all together: demand-side driven working poverty risks

The sources of in-work poverty risks are summarized in Figure 2. A similar model was already proposed by Bonoli and Crettaz (Crettaz, 2011; 2013; Crettaz and Bonoli, 2011) to identify different mechanisms and analyse their importance in a cross-national perspective. They show that labour force attachment, low hourly wages and a low adult-to-child ratio are all relevant predictors for in-work poverty risks. For Germany, especially the two former mechanisms are important, most prominently, low hourly wages (Crettaz and Bonoli, 2011). The role of low hourly wages in the determination of poverty risks depends on the role of low-wage work in the household: is it a supplementary income additional to a main income, or is it the main source of income in the family? This aspect is also stressed by Lohmann and Gießelmann (2010) in their analysis of changing in-work poverty risks in Germany. They show that the rise in low-wage work is important for an increase of in-work poverty risks from about 4% in the 1990s to more than 7% in 2008. At the same time, they find that increasing conditional poverty risks among low-wage employees also matter for in-work poverty trends, potentially pointing towards compositional changes within this group.

The combination of low hourly wages and low working hours implies a more precarious position

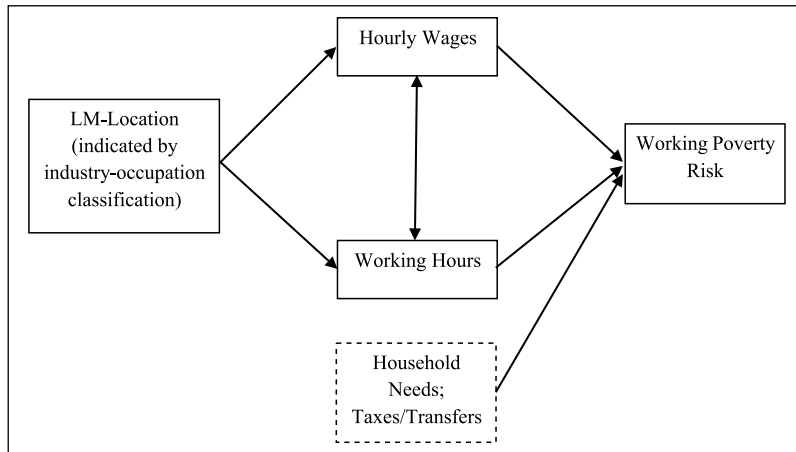


Figure 2. Labour market risks and working poverty.
Own diagram based on Crettaz and Bonoli, 2011.

than both low-wage work and part-time employment alone and therefore warrants specific attention when analysing in-work poverty risks. A correlation of both dimensions of job quality could be due to both being determined by the same attributes, for example, education and employment sector. However, a specific wage disadvantage of part-time workers can also be explained by their weaker bargaining position, compared to full-time employees. Investments of employers are typically higher for full-time employees and thus a potential departure would be more costly. In contrast to standard employees, part-time employees' positions are therefore often located at the 'periphery' of firms (Kalleberg, 2009).

Previous research on consequences of non-standard employment shows that, indeed, being employed in part-time jobs has negative consequences for further career patterns and gross hourly wages (Fouarge and Muffels, 2009; Giesecke, 2009; Vogel, 2009). Similarly, part-time employees suffer from higher risks of being employed on low wages (Bosch and Weinkopf, 2008). In spite of these results, the interdependence between part-time employment and low wage work has so far received little attention in research on in-work poverty risks.

Divides between full-time and part-time workers can be expected to increase in the context of the German labour market: as emphasized by the literature on labour market dualization (Emmenegger

et al., 2012; Palier and Thelen, 2010; Thelen, 2014), high levels of economic security have been preserved for core employees, whereas growing flexibility requirements were borne mainly by workers at the periphery. Specifically, regulations for non-standard employment were considerably weakened between the end of the 1990s and 2005, which could have further weakened the bargaining position of part-time employees (Eichhorst and Marx, 2011). At the same time, the system of collective bargaining became more fragmented (Möller, 2015), meaning that differences in bargaining power between core and periphery workers could more often lead to actual differences in outcomes. Previous research shows that risks of working poverty in Germany are increasingly borne by entrants and re-entrants into the labour market (Gießelmann, 2009, 2015), which is consistent with the idea of an increasing concentration at the periphery of the labour market.

The focus on demand-side explanations for working poverty risks also implies that locations in the labour market should be incorporated in the analysis. Especially occupation and sectoral boundaries figure prominently in many narratives of changes in the quality of work (Kalleberg, 2011; Kenworthy, 2008). Our analysis will therefore track patterns across occupational levels and industries. By controlling for labour market location, we can also answer whether the shift of employment between sectors – that is, ter-

tiation – explains the observed trends in job quality, or if changes happened mainly within segments.

A recurring problem for addressing the relationship of labour market risks and poverty is their level of measurement: while poverty is inherently a household concept, low wages and working hours are individual-level characteristics. The strategy of aggregating these on the household level will be crucial for the identification of interrelations of trends. In the following section, these measurement issues are described in more detail.

Data and methods

We use data from the German Socio-Economic Panel (SOEP) between 1992 and 2011. Whereas the descriptive findings give an overview of trends for the whole time period, the multivariate results will concentrate on the differences between the periods 1997–2001 and 2007–2011, as contrasting these time windows captures the interesting changes. The dataset includes information on households, as well as all adult members within each household (Wagner et al., 2007). The sample used throughout the analysis consists of households where at least one member is gainfully employed, aged between 18 and 65 years, and not in full-time education or retirement.¹ Furthermore, only households where all adult household members participated in the survey can be used in the analysis. Because of issues regarding the measurement of working hours and hourly wages, households with self-employed people are excluded.² Because of its panel structure, the data contain multiple observations per respondent household. We adjust the standard errors in the analysis for clusters defined by the original sample household. The basic units of analysis are households.

We make all decisions on the measurement of the three main variables – poverty, low wages, low working hours – in light of our focus on demand-side sources of poverty risks. Each measurement should be consistent with the other two and should depend on other sources of poverty risks – especially household composition – as little as possible.

We measure *poverty* based on household income divided by the square root of household size (Atkinson et al., 1994). We derive a poverty

threshold of 60%, which is also used as the official at risk of poverty threshold in the European Union (European Commission, 2002). We use the current household income given by the household head, which is corrected for inconsistencies with individual income information. By focusing on current income, we avoid problems of different time-frames in the measurement of poverty and employment that arise, when yearly income information is used (Halleröd et al., 2015). Missing values are not imputed. Because the information on individual wages and working hours of all employed household members is needed for the analysis, there are a substantial number of missing values. Among the households eligible for the analysis, 19% had missing values on one of the variables in the period 1997–2001 and 22% in the period 2007–2011. While this share is substantial, this will only influence our main conclusions if the non-response process changed over time.³

While poverty measures usually use the distribution of household income to define a poverty line, the standard cut-off level for *low-wage employment* is at two-thirds of the median of *wages*. Because we are interested in wages that put households at risk of poverty, we choose to apply the poverty threshold for both the definition of low-wage employment and poverty status. Additional assumptions have to be made, because the basic measure of low wages – hourly wage – abstracts from the amount of labour supply and the household composition. We transform the poverty threshold, which is based on monthly household incomes by dividing its value by 30 (hours per week) times 4.35 (weeks per month). This value can be interpreted as the hourly wage that would be sufficient to reach the poverty threshold assuming a single person who is employed 30 hours per week, abstracting from transfers and taxes. The hourly wage measure is calculated as the mean compensation among all hours worked by household members.

Part-time employment is also not straightforward to measure at the household level. If the main interest is simply the overall level of hours supplied by the household, a measure of average hours per adult is reasonable (Crettaz, 2013). However, as we are also interested in the role of part-time work as a

characteristic of the labour market position, this measure would average out important information (consider a household with one full-time employee and one inactive person). Furthermore, it is important to distinguish part-time employment of secondary earners, which is expected to mainly fulfil the function of combining labour market participation with other non-labour activities, from part-time employment of the primary earner of the household. The latter can be expected to imply much more severe economic consequences.

We therefore use the maximum among household members' working hours as the criterion for part-time employment and define a household to be part-time employed if the person with the highest number of working hours is working less than 30 hours per week. This means that part-time employment of secondary earners will not be relevant for the definition of part-time employment on the household level, if there is a full-time earner present.

Labour market location is captured using a typology of *occupational level and sector* that enables us to detect changes in composition of skill requirements as well as shifts among agriculture, industry and construction and different types of services. We capture the heterogeneity of service employment by differentiating between distributive services, producers' services, social services and personal services (Castells and Aoyama, 1994; Sassen, 1996). For each of these sectors as well as for the industry and construction sector, three groups are distinguished for high-skilled, intermediate and low-skilled occupations according to the skill levels underlying the International Standard Classification of Occupations (ISCO).⁴ Again, this variable is measured at the individual level, while the analysis applies to the household level. Therefore, we create a set of dummy variables that take the value 1, when at least one household member is employed in this occupation-sector group and 0 if this is not the case. In contrast to standard sets of dummies, multiple variables can take the value 1 at the same time if multiple earners are present and none of the variables is left out.

Additional variables controlled for in the analysis are supposed to capture demographic and structural characteristics of the population. They include a

household typology – combining information on number of adults, children and number of earners in the household – age, sex, education, minority status and region. Age, sex, education and minority status apply to the household head, who is defined as the person with the highest working hours, or in case of several persons working the same hours, monthly earnings.

Results include descriptive findings on the change of the main variables over time. The consequences of these results for household poverty will be analysed using a simple decomposition based on population shares and conditional poverty risks. Because this decomposition indicates that it is mainly an increasing risk of earning poverty-prone wages that matter for trends of in-work poverty, the multivariate analysis focuses on this indicator as the dependent variable. Cross-sectional household weights are used throughout the analysis. See Table A1 for the means for all variables and their change over time.

Descriptive results

Figure 3 shows descriptive trends in in-work poverty, as well as our measures of part-time employment of the household and poverty-prone wages at the household level. The graphs give some plausibility to the idea that the increase in working poor households between the periods 1997–2001 and 2007–2011 is due to an increase of part-time employment, on the one hand, and low wages, on the other hand, as both indicators increase significantly during this time.

The share of households, whose average hourly wage was below the poverty line, assuming a single person employed at least 30 hours a week, increased from 3.5% to over 7%. Note that these numbers are well below conventional indicators of low-wage employment, which was above 17% in the most recent period for the household heads in our sample. While identifying fewer households than conventional measures, our indicator of low pay can be expected to have a stronger connection to household poverty because its threshold is based on information on household incomes and not only hourly wages.

Similarly, our measure of households' part-time employment identifies relatively few households as

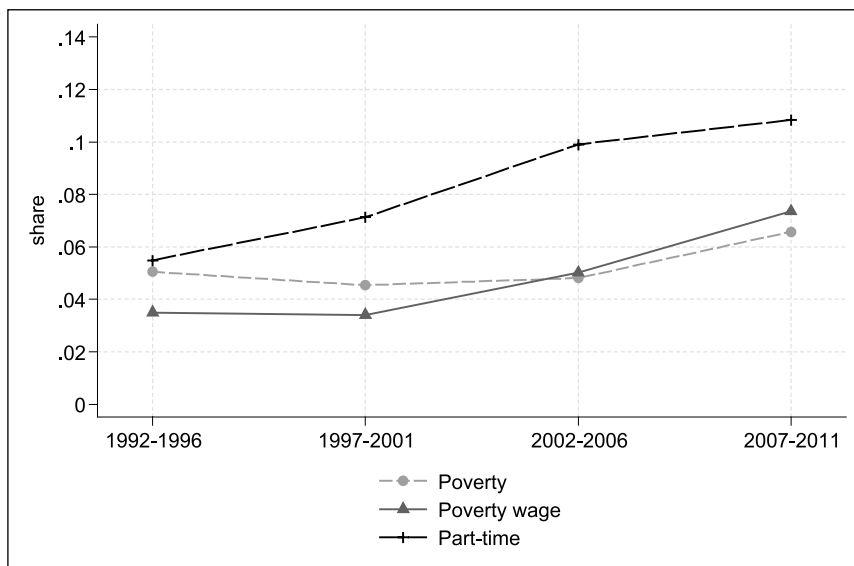


Figure 3. Development of poverty, poverty wages and part-time employment among employed households. Data: SOEP 1992–2011. Own weighted calculations.

part-time employed, because it does not consider low employment participation among secondary earners if there is a full-time earner present in the household. However, the share of households with only part-time employees is increasing sharply from roughly 5.5% to almost 11%.

How strong can we expect the impact of these trends to be on poverty risks? Both, the increase of households with insufficient hourly wages, as well as the increase in households with only part-time employees imply elevated risks of in-work poverty of the household. The most immediate risk, however, results from the combination of both low wages and low working hours. Table 1 shows the development of poverty risks among the different types of households according to combinations of poverty wages and part-time employment status between the end of the 1990s and the most recent period (columns 2 and 4).

Households which are neither part-time nor low-wage employed have a relatively low poverty risk, which is roughly around 2.4% in both periods. Note that because of its large size, this group still represents a large share of households in poverty. However, because their share of all households and their conditional poverty risk is declining over time,

their share among all poor households in the sample shrinks as well.

Among households who are part-time employed but do not earn a poverty wage, roughly one in five households lives in poverty. The conditional poverty risk of this group is also constant between both periods. In contrast, the poverty risks among households with poverty wages rose slightly from 30% to 34%. As expected, even higher risks of poverty are shown for the group which is both part-time and low-wage employed. While slightly below 47% for the period 1997–2001, the poverty risks for this group increased to over 55% between 2007 and 2011. Considering the large standard errors for these numbers, however, the increase in poverty risks for the two latter groups should be taken with a pinch of salt.

With this information, a simple decomposition of poverty rates over time can be calculated. The contribution of each group to the share of households living in poverty is given by the product of the respective overall share and the conditional poverty risk. If we exchange the respective share of the groups by their values in the period 1997–2001, we arrive at a counterfactual poverty rate. This shows how frequent poverty would be among working households if the share of each group would have

Table 1. Population shares, conditional poverty risks and counterfactual poverty rates.

	1997–2001		2007–2011		Poor in 2007–2011		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Share (%)	Poverty risk (%)	Share (%)	Poverty risk (%)	Observed (3) × (4)	Counterfactual (1) × (4)	Difference (5) – (6)
Regular employed	90.43 (0.40)	2.43 (0.18)	84.95 (0.56)	2.33 (0.20)	1.98	2.11	-0.13
Only part-time	6.16 (0.33)	18.75 (2.26)	7.69 (0.39)	18.46 (1.65)	1.42	1.14	0.28
Only poverty wage	2.44 (0.17)	29.86 (2.72)	4.20 (0.32)	33.91 (3.48)	1.43	0.83	0.60
Both	0.97 (0.10)	46.93 (5.05)	3.15 (0.23)	55.49 (3.55)	1.75	0.54	1.21
All	100.00	4.54 (0.27)	100.00	6.57 (0.36)	6.57	4.61	1.96

SOEP: German Socio-Economic Panel.

Data: SOEP 1992–2011. Clustered standard errors in parentheses. Own weighted calculations. Part-time refers to no household member working more than 30 hours per week. Poverty wage: household average hourly wage below poverty threshold (60%), assuming a single household with 30 hours a week.

remained constant, but the conditional poverty risks in each category are allowed to change. The overall sum in the counterfactual scenario is almost identical to the actual poverty rate at the end of the 1990s. Thus, the change between both periods – almost 2 percentage points, that is, an increase of more than 40% – was almost entirely due to the changes in part-time employment and poverty-prone wages.

The decomposition also indicates that changes are driven mainly by the increasing importance of poverty wages, both for part-time employed households and not part-time employed households, which is responsible for 1.2 and 0.6 percentage points of the overall increase in in-work poverty, respectively. Thus, part of the explanation why in-work poverty increased in Germany between the end of the 1990s and the end of the 2000s seems to be that low wages increased disproportionately among households with low working hours. The following section will further analyse this issue, by studying low wages using a multivariate perspective, considering part-time employment as well as labour market location as independent variables.

Multivariate results

The descriptive results have shown that the pivotal trend for the explanation of the rise of in-work poverty in Germany is the growing risk of earning a poverty wage, for regular employees, but specifically for

households where only part-time employees are present. The following section will address whether the increase in low-wage is still visible, after accounting for changes in the composition of the underlying population. We will also show how changing risks are distributed over labour market segments, as represented by the combination of occupational skill-level and sector. Finally, we will address the effect of part-time employment on the risk of earning a poverty-prone wage. While the full regression tables can be found in Table A2 in the Online Appendix, the results are presented as average adjusted probabilities, conditional on the period, labour market location and working hours of the household, depending on what dimension is at the focus. The probabilities are calculated by estimating the probability of a positive outcome (that is, earning a poverty-prone wage) for each observation, holding constant the variables conditioned on but given the observed values of the remaining independent variables. The difference between the average adjusted probabilities between two groups are identical to the average marginal effect.

Figure 4 shows that after adjusting for a changing composition of the population, the risk of earning a poverty wage increases from 3.5%–7.2%, which is similar to the descriptive results presented above. These aggregate figures clearly hide important differences between labour market locations. Risks of earning a poverty-prone wage ranged from less than

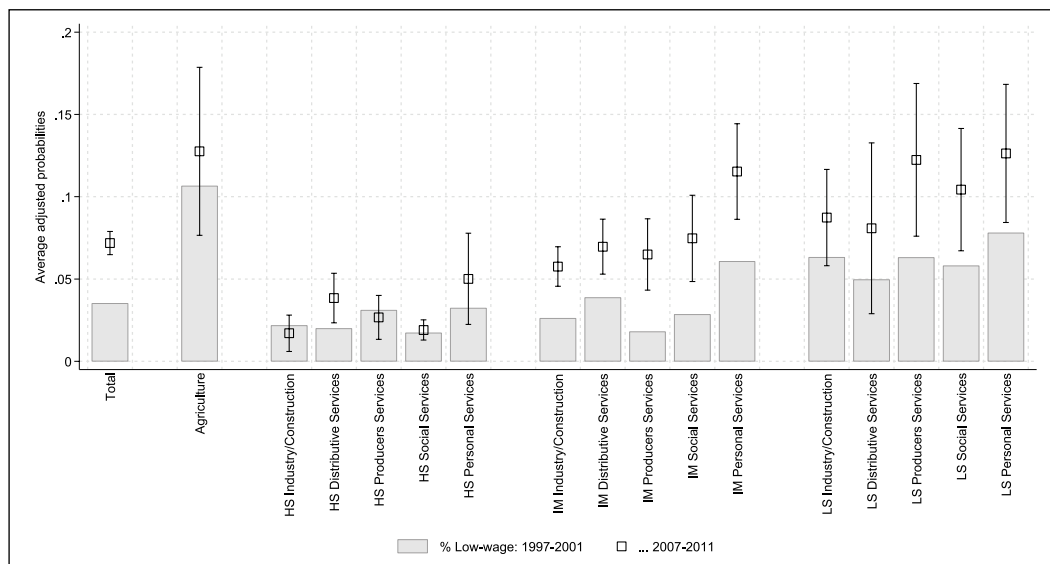


Figure 4. Predicted probabilities that employed households earn a poverty wage by labour market location. Data: SOEP 1992–2011. Own weighted calculations. To improve readability, 95% confidence intervals (CIs) are only shown for the period 2007–2011. See Table A2 for full regression results. Average adjusted probabilities and 95% CI estimated from model M1a (total) and M1b (by labour market location), respectively.

2% in high-skilled distributive and social services, to 8% in low-skilled personal services and even 11% in agriculture (Figure 4). However, controlling for the labour market location of the employees in the household does not contribute markedly to an increase of low wages. Thus, rising risks of poverty-prone wages and in-work poverty risks are not due to an increase in employment in specific segments of the labour market. Looking at the descriptive trends in the importance of labour market locations in Table A1, this is not surprising. The two major changes between the earlier and the later period are the decrease of jobs in the intermediate industry/construction segment, on the one hand, and the increase in high-skilled service occupations, on the other hand. Thus, changes happened mainly in locations where the risks of poverty-prone wages are low to moderate and there was no growth of jobs in locations with high low-wage risks.

Figure 4, however, reveals some interesting patterns in the increase of wage risks within different labour market locations. What is most important is that high-skilled occupations are largely exempt from the otherwise universal trend of increasing

low-wage risks. This implies a growing gap in low-wage risks among these occupations and the rest of the economy. In contrast, intermediate occupations did not fare substantially better than low-skilled occupations and for some industries – namely, industry/construction and distributive services – low-wage risks of intermediate occupations even approach the risks of their low-skilled counterparts. Furthermore, besides the differences by skill level, the employment sector also influences low-wage risks and these differences have also increased slightly over time. Within each skill-level, the personal services sector is the one with the highest estimated low-wage risks, whereas the secondary sector is consistently located among those with the lowest poverty risks. Overall, the range of estimated risks is substantially higher in the second period, ranging from 2% in some of the high-skilled occupations to 13% in low-skilled personal services.

Adding the indicator for part-time employment shows that risks of earning a poverty wage increased for full-time employed households from 2.6%–5.3%, but the increase was even more pronounced for part-time employed households, whose estimated

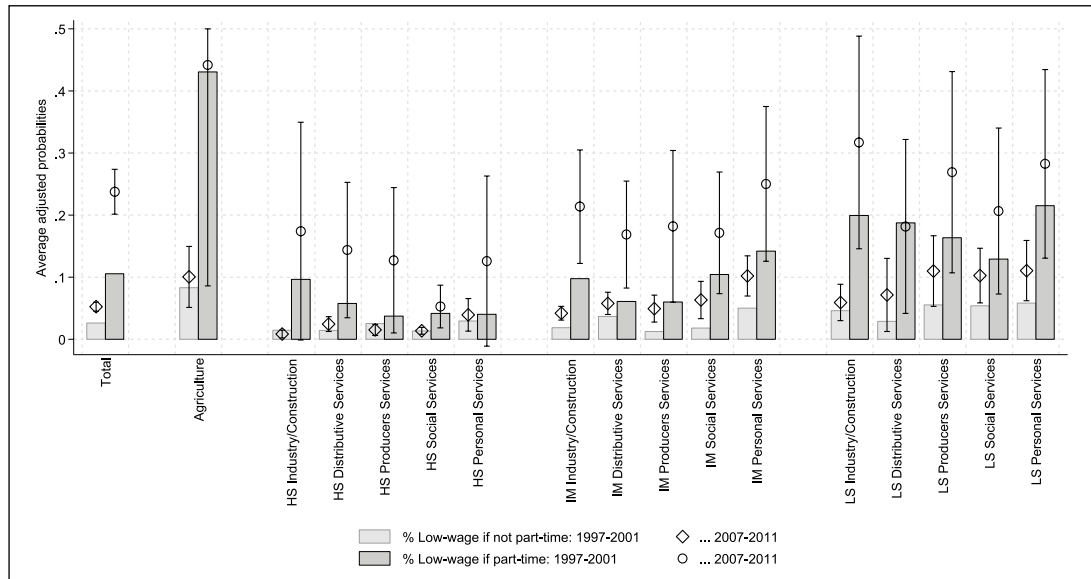


Figure 5. Predicted probabilities that employed households earn a poverty wage by part-time employment and labour market location.

Data: SOEP 1992–2011. Own weighted calculations. To improve readability, 95% confidence intervals (CIs) are only shown for the period 2007–2011. See Table A2 for full regression results. Average adjusted probabilities and 95% CI estimated from model M2a (by part-time employment) and M2b (by part-time employment and labour market location), respectively.

probability to earn a poverty-prone wage increased from 10.5%–23.8% (Figure 5). Thus, net of changes in the composition of the population by different demographic variables we find that the increase of risks to earn a poverty-prone wage is larger among part-time employed households than other households, indicating that a growing share of households is affected by both dimensions of low job quality.

These results are also disaggregated by labour market location, but the precision of the estimates within each location is relatively low, as indicated by the large confidence intervals in Figure 5. Still, two tentative patterns seem to be worth noting: low-wage risks are increasing for part-time employed households, even in high-skilled segments, where general low-wage risks did not increase. Furthermore, part-time employment in the secondary sector seems to carry a stronger disadvantage compared with the different service sectors. Thus, with the exception of high-skilled social services, working in a segment with low prevalence of poverty wages does not seem to protect workers from the wage disadvantage carried by part-time employment, especially in the second time period.

Besides our main variables of interest – labour market location and part-time employment – household type, age, education and sex of the household head, as well as place of residence also matter for risks of poverty-prone wages: if the household head is a woman, aged below 35 years, or the household is located in eastern Germany the probability of earning a poverty-prone wage is higher. The same holds for second generation migrants, if labour market location is not controlled for. Furthermore, risks are lower, the higher the educational level of the household head.

To capture different implications of part-time employment by household context, we included interactions with household type: the main effects of household type indicate that households with multiple earners have the lowest risks of earning poverty-prone wages, whereas single parents and single earners without children have the highest risks, if the household is not part-time employed. However, the effect of part-time employment is weaker for single parents and single earners without children, compared to single adults, as shown by the interaction effects. One explanation for these

patterns could be that having only part-time workers in the household is more often voluntary in these household types, indicating a less disadvantaged labour market position.

Overall, the multivariate results indicate a growing polarization of low-wage risks with respect to two dimensions: on the one hand, a growing share of high-skilled employees is exempt from an otherwise universal increase of wage risks. On the other hand, being part-time employed carries a growing disadvantage compared to full-time employees.

Discussion

This article aimed at clarifying how demand-side changes in labour markets contributed to rising poverty risks among working households in Germany. We identified two major sources of risks, low hourly wages and part-time employment. The prevalence of both has been shown to increase in Germany in the period under study. We could show that the changing composition of the population in these two characteristics and their combination explains the change in the poverty rate among working households. More specifically, the increase of full-time and especially part-time employed households who earn poverty-prone wages could explain an increase of in-work poverty of 1.8 percentage points between the periods 1997–2001 and 2007–2011.

Given its decisive role for the increase in poverty risks, we further examined the distribution and change of low wages by labour market location and employment position. Risks of poverty-prone wages are clearly related to labour market location, but changes in labour market locations do not seem to represent the main drivers of change. Nevertheless, rising risks of low wages are strongly skill-biased: high-skilled occupations are partly exempt from the otherwise universal trend. This is consistent with a growing body of research that shows increasing labour market disparities by skill levels (Abrassart, 2015; Gebel and Giesecke, 2011; Giesecke and Heisig, 2010; Heidenreich, 2015). In addition, we also reveal a pattern of polarization between full-time and part-time employed households, as low-wage risks among the latter increased disproportionately. For research on in-work poverty, this result is particularly relevant because the combination of part-time and low-wage

employment indicates a particularly high risk of falling below the poverty line.

Germany is only one example for a polarization of job quality and the phenomenon of a concurrence of declining unemployment and stable or increasing poverty risks (Cantillon, 2011). Our results therefore have important implications for other country cases as well: first, job quality matters for poverty risks and not all employment actually makes households self-sufficient. Second, while promoting flexible employment might provide attractive job opportunities for parts of the workforce, it also entails severe risks to household incomes if employers use it mainly at the fringes of the labour market. Third, the concurrence of low hourly wages and low working hours has received too little attention in the debate of both poverty risks and job quality. There are good reasons to expect that fostering flexible employment will always bear the most severe consequences for those with the lowest bargaining potential. However, an interesting question of future research is whether the increasing correlation of poverty-prone wages and low working hours is also found for other countries that do not share Germany's pathway of a partially deregulated labour market.

Using a cross-sectional snapshot of the employment position within households, this study did not consider the temporal dimension of uncertainty or stability in employment. Given the increasing interrelation of part-time and low-wage risks, it would be interesting to see to what extent these also coincide with shorter employment spells, which represent another dimension of poverty risks (Halleröd et al., 2015).

Regarding the measurement of low wages and part-time employment, different aggregations on the household level matter, especially for part-time employment. Averaging working hours among adult household members could underestimate the increase in households relying only on part-time employment because of the parallel decrease in household size, while using the information on individual part-time employment overestimates risks of low household incomes, because it counts secondary earners in households. For low hourly wages, defining a threshold in terms of household incomes, in contrast to the earnings distribution helps to understand developments in working poverty, when the

median of household incomes and individual earnings develop differently.

While emphasizing the importance of different dimensions of job quality and their relation to labour market positions, we should not neglect that some of the socio-demographic characteristics controlled for in the regression models are strongly connected to poverty-prone wages. Thus, opportunities and decisions about labour supply that are shaped by household contexts and qualifications clearly matter for in-work poverty as well. These results shed some light on the mechanisms why some groups are more prone to working poverty: for example, the higher exposure to low wages of single adult households and households with only one earner partly explains why this group is especially prone to living in poverty (Levanon et al., 2015).

The prevalence of wages that are not sufficient to avoid poverty is clearly one piece of the puzzle of rising in-work poverty in Germany. Policy measures focusing on very low hourly wages – like the minimum wage introduced after the observation period of this study – can therefore be expected to decrease risks of working poverty. However, the results also point to a wider polarization of the German labour market. Fault lines between labour market positions with different levels of bargaining power, either because of their position in the organization of labour within the firm or because of different opportunities for market rents implied by skill-level and sector seem to become more deeply entrenched. To counter these trends, a return to a less fragmented system of collective bargaining seems to be one promising route.

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Notes

1. Overall, unemployment was lower in the years after 2005 than it has been since the mid-1990s. Thus, the process of selection into employment might have changed over time, because households that would have been unemployed in the earlier period could have been in employment in the later years. We run Heckman-type selection models as a robustness check to changes in the selection process, using the regional unemployment rate as an additional predictor of selection into our sample. While estimates for low-wage risks were slightly lower using these models, the pattern of change over time did not change (see Figures A3 and A4 and Table A4 in the Online Appendix).
2. Households with self-employed workers account for about 8.6% of all poor households in the period 1997–2001 and 7.4% in 2007–2011.
3. Robustness checks using imputed income information provided with the data did not change our substantive conclusions (see Figures A1 and A2 and Table A3 in the Online Appendix).
4. The two highest skill-levels are collapsed into the high-skilled level.

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