

# In-work Poverty in Europe

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## Extent, Structure and Causal Mechanisms

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In-work poverty in Europe is an intensely discussed issue. The topic generates extensive media coverage and is high on the EU policy agenda. In social science, however, in-work poverty is far from being an established research topic. This can partly be traced back to the roots of research on poverty and exclusion. Ever since the first studies on poverty, employment was regarded as the best way out of such a situation (Rowntree 1918). Also in the current debate on activation (Barbier 2005; van Berkel and Moller 2002) a job is perceived as the most effective prevention mechanism against falling into poverty and at the same time as a panacea leading out of poverty. Against this theoretical background, the fact that people might suffer from poverty even though they are employed fulltime was mostly left out of account. This has changed gradually since the 1990s. A main driver for progress in this research field has always been the EU (Frazer et al. 2011b). In 2003 the EU explicitly formulated the goal of reducing the number of working poor as part of the European Employment Strategy and the “open method of coordination” on poverty and social exclusion. For this purpose an indicator for measuring in-work poverty was added to the respective indicator set (Eurostat 2010b). Until today, existing studies deal almost exclusively with the individual and household-related circumstances of in-work poverty (Commission 2011a; Cooke and Lawton 2008; Ponthieux 2010). The question how country-level political, social or economic institutions influence in-work poverty patterns is only just starting to be taken into account by research (Frazer et al. 2011a; Lohmann 2009; Lohmann and Andreß 2008). To shed a light on these national factors which influence the level of in-work poverty is the aim of the present article.

The existing micro-level studies on the working poor point at a crucial characteristic feature of in-work poverty (Nollmann 2009; Peña-Casas and Latta 2004): There are different angles to look at the working poor. On the one hand they can be regarded as poor persons who are working, on the other as working persons who are poor. Each perspective has far-reaching consequences for the undertaken research: Studies following the latter perspective – working but poor – often stress the relevance of labour-market related factors. In consequence, they discuss the importance of policy measures that aim at improving the quality and remuneration of jobs. In contrast, research that departs from the poverty perspective focuses more on household related factors and emphasises the importance of raising the employment intensity of households. These two different approaches refer to a key characteristic of in-work poverty: The combination of individual and household related elements. The former aspect refers to the individual labour market situation, whereas poverty is usually measured on the household level. Hence, in-work poverty can be described in a general sense as the situation that an employed person

lives in a poor household. A comprehensive approach thus has to encompass individual and household related aspects. It makes a difference if a person is regarded as in-work poor despite potential household resources or if it is taken into account that a working person might be poor precisely because of the household context he or she lives in. Furthermore, measuring in-work poverty on the household level has the advantage that it provides a better understanding of the social problems in-work poverty entails (Peña-Casas and Latta 2004). With regard to the country-level research interest of the present article the household perspective on in-work poverty allows to take the influence of policy measures into special consideration, as they are often targeted at the household level.

The distinction between individual characteristics and the household context is crucial for understanding in-work poverty. It is therefore obvious that both individual and household related aspects have to be considered as explanatory factors for belonging to the working poor. Yet, a comprehensive approach also has to take the country-level influences into account that underlie in-work poverty. This is right the starting point of the present article. On the basis of the influence of individual characteristics and household related aspects that are taken from reviewing the literature the crucial question to ask is: How much of the extent of in-work poverty is explained by the institutional country-level setting of the labour market and welfare state related policies, especially family policies, and transfers and benefits and how does this pattern vary across European countries? The basic assumption is that households are working poor not only because of their certain composition or the characteristics of their household members, but because of the prevailing labour market and welfare state institutions and policies. Using the EU-SILC 2010 data it will be analysed if or to what extent such country-level factors explain in-work poverty net of the individual and household context. The present article adds to existing research as it regards the in-work poverty risk as being moderated and filtered through the country-level institutional context. This special focus will be dealt with by using multi-level models.

The article is organised as follows: The first section deals with the theoretical concept of in-work poverty. Section two takes a closer look at the EU-SILC data and the applied methods. The varying structure of in-work poverty in European countries will be analysed in section three. In a next step, the explanatory power of country-level influences is discussed against the background of the results of the multi-level models. In a last section the main findings are critically assessed. The article concludes with proposals for further research as well as some policy suggestions for combating in-work poverty.

## 1. The concept of in-work poverty

This section departs from the combination of individual and household related factors that characterises in-work poverty. The first part deals with the state of the discussion concerning these two explanatory aspects. The second focus is to derive the hypotheses under study. According to the research perspective of the present article, these are focused on the national mechanisms that underlie in-work poverty. The task is to explain how the national institutional setting contributes to the risk of being working poor.

As mentioned above, in-work poverty is a very young research topic. A first study dealing with the relation of earning low-wages and being poor was published in 2002 (Observatory 2002). A huge step forward was the implementation of the “EU Survey on Income and Living Conditions” (EU-SILC) in 2003. This study was especially designed to monitor the changing living conditions in Europe and to provide sound information on various faces of poverty and social exclusion (Wolff et al. 2010). In the wake of launching this survey many studies were published that stated markedly rising in-work poverty rates in Europe. They focus on the extent of the poverty risk among employed persons in Europe (Bardone and Guio 2005), the socio-demographic profile of the working poor (Eurostat 2010b; Ponthieux 2010) or the influence low wages have on explaining in-work poverty (Cooke and Lawton 2008; Grimshaw 2011; Nolan et al. 2010). Taken together, all these studies describe patterns of in-work poverty and explain how individual characteristics and household related factors lead into being working poor (Eurostat 2010b; Lohmann 2008). The two micro-level explanatory strands, individual and household related aspects, are analysed in the following paragraphs.

### 1.1 Micro-level pathways into in-work poverty

1. *Individual factors causing in-work poverty*: Individual characteristics are in general related to the employment situation of employed poor individuals. Low wages are an important factor contributing to a high risk of being in-work poor (Cooke and Lawton 2008; Grimshaw 2011; Nolan et al. 2010). Research therefore is often focussed on revealing the mechanisms that are crucial for explaining low wages (Asplund and Persson 2000; Bardone and Guio 2005; Observatory 2002; Peña-Casas and Latta 2004): The bottom line story of this literature is that being poorly educated is the most prominent explanatory factor as it increases the risk to earn low-wages markedly: The lower the level of qualification obtained, the higher the risk of earning low-wages and, in turn, the higher the risk of being in-work poor

(Commission 2011b; Cooke and Lawton 2008).<sup>1</sup> A further aspect that makes a decisive contribution to a low-wage risk is being a migrant (Grimshaw 2011). Furthermore, it is widely agreed that low-wages tend to dominate among younger and female employees and that they are clearly concentrated in certain occupations, especially in unskilled blue-collar jobs (Peña-Casas and Latta 2004). Given all these aspects, it is important to stress, that most low-paid workers are not poor when taking the household context into account (Nolan et al. 2010). According to Strengmann-Kuhn (Strengmann-Kuhn 2003) only one quarter of the risk of being in-work poor can be explained by earning low wages. Furthermore, fixed-term contracts and part-time employment vastly increase the in-work poverty risk (Commission 2011b). Self-employment is a further employment situation that is positively related to the risk of being in-work poor (Lohmann and Andreß 2008).

2. *Household related factors causing in-work poverty*: Turning to the household related aspects of being working poor, means turning to the poverty part of in-work poverty. The household perspective emphasises that the individual well-being strongly depends on the sum of resources pooled by all household members and, in turn, on their needs (Bardone and Guio 2005). Whether a household falls below the poverty threshold or not depends on the level of the disposable household income. This income consists of three elements: The financial resources of all household members, mainly their earnings, the household benefits and the household composition. The latter refers to the number of dependent persons, especially children and retired, who live in a household. It was proven that a high number of household members who depend on the total household income is a main factor leading into in-work poverty (Commission 2011b).<sup>2</sup> Single parents with dependent children face the highest, households with more than one adult without dependents the lowest in-work poverty risks (Frazer et al. 2010). This works through three mechanisms: Firstly, dependents increase a household's needs and they do not contribute to the household income. Secondly, a high number of persons who need special care such as young children may lead to constraints for taking up a full-time or a second employment. Furthermore, the household composition accounts for the earnings-part of the disposable household income as it influences the employment intensity of the household members. This aspect of the household composition explains a major proportion of the in-work poverty risk. Yet, the type of contract plays

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<sup>1</sup> Yet, it is important to mention that the link between low-wages and poverty is far from being straightforward. In fact, many studies have shown that there is only a restricted overlap between low-wages and poverty (Commission 2011b; Nolan and Marx 2000; Nolan et al. 2010).

<sup>2</sup> This factor is, from a statistical perspective, to a great deal balanced by using equivalence scales to compute the disposable income.

an important role as well (Commission 2011a): The higher the proportion of full-time employees with permanent contracts, the lower the risk of being in-work poor (Nolan et al. 2010; Nollmann 2009). Accordingly, households with many unemployed or economic inactive members, the latter being especially associated with women, are overrepresented among working poor (Ponthieux 2010).

To put it in a nutshell: A single-earner household with high needs resulting from many dependents is the prototypical working poor household, especially if the earner is poorly educated and part-time employed (Brady et al. 2010; Goerne 2011). Departing from this picture, we can state that there are two micro-level pathways that lead an employed person into poverty: First, if a worker earns a low-wage and the income resources of the other household members, if there are any, are not sufficient to lift the household as such above the poverty threshold. The second mechanism relates to workers whose individual earnings are above the poverty line. They can become in-work poor, because of the household context they live in. The household related influences are twofold: Firstly, it can be the case that a household is poor because of a certain unfavourable household constellation, i.e. high needs and a low employment intensity of the working-age household members (Crettaz 2011). The second household related mechanism refers to the household benefit level: The household an employed person lives can be poor, because the public transfers and benefits this household receives are not sufficient to lift it above the poverty threshold.

Recalling the three micro-level mechanisms - individual labour market circumstances, household constellation and benefit level – that explain in-work poverty leads us right to the core of classical welfare state research: State, market and families as the producers of welfare (Esping-Andersen 1990; Titmuss 1958). This welfare triad can be applied to the present research model if it is extended by splitting it up for individual characteristics and household related factors (**Tab. 1**). From the individual worker's point of view the employment dimension is the most important explanatory factor. Low wages and atypical employment, especially part-time work, are the major risks for being in-work poor. The governmental welfare dimension adds to this risk by not, or not sufficiently, counterbalancing low wages through top-ups. Household related risk factors are first and foremost a low work intensity of the household members. The family dimension is the second crucial explanatory mechanism. The public welfare is part of this story with the benefit and transfer system.

**Tab. 1 The welfare triad of in-work poverty: Individual and household level**

Level	Welfare agency		
	Employment	Family	Public welfare
<b>Individual characteristics</b>	- Low wages - Atypical employment - Low qualifications		- No or insufficient in-work benefits
<b>Household related factors</b>	- Low employment Intensity	- Single earner - High number of children, elderly and otherwise inactive or unemployed persons	- Low levels of benefits and transfers

Source: Own research

## 1.2 The influence of the national institutional context

Research on in-work poverty that also takes the macro-level into account often does this in order to explain the varying levels of in-work poverty in different countries. Existing literature focuses on the impact of institutional factors. These studies analyse the influence of labour market institutions (Lohmann 2009), redistribution (Lohmann 2010a), welfare regimes (Crettaz 2011; Lohmann and Marx 2008) or the economic performance (Brady et al. 2010). Others examine how the cross-national variations of in-work poverty can be explained (Crettaz and Bonoli 2011a; Lohmann 2008; Lohmann and Andreß 2008).

Departing from a general point of view, we can state that the country-level frame for explaining in-work poverty underwent major changes in recent years. Five macro-structural trends are of special relevance for our purpose: Skill biased technological changes (SBTC) and globalisation trends of the economy, growing labour market inequalities, welfare-to work policies and the welfare state retrenchment. Most of these developments are directly related to the labour market dimension.

1. *Skill biased technological changes*: The focus of the “SBTC-hypothesis” is on a shift within the demand side of the labour market. It is assumed that jobs for low-skilled persons are on the decline. Especially the rapid rise of the importance of information technologies, the decline of the fordist model of production and, in turn, the rising relevance of a knowledge based service economy are discussed as driving factors for shifting labour demand away from low skilled towards high-skilled workers (Giesecke and Verwiebe 2009). A consequence of these developments is an increasing segmentation of labour markets (Frazer et al. 2011b; Nollmann 2009).
2. *Globalisation trends*: Globalisation processes are regarded as a further driving factor for the loss of jobs for low-skilled persons. The extent to which a national economy is integrated in the global production of goods and services and the scope of integration into global labour

markets affect low skilled workers. They now face a situation where they directly compete with low-waged economies especially in countries outside Europe (Frazer et al. 2011b). Furthermore, a growing global interdependence of national economies could weaken the influence of employees on the labour market.

3. *Rising inequalities*: The third crucial development is a rising inequality both within the labour market as within the wage distribution. It results at least partly from the two other trends. Technological changes work against low skilled workers as they entail growing inequalities. The underlying mechanisms are twofold. Firstly, new jobs are concentrated in relatively high and low pay levels especially in the service sector (Commission 2011a). Secondly, skill biased technological demand shifts lead to higher financial rewards for highly skilled employees (OECD 2011). A further aspect that is discussed in this context is the rising female employment. Women are often employed part-time and/or in low-wage jobs (Alderson and Nielsen 2002; Crettaz 2011).<sup>3</sup>
4. *“Welfare-to-work”-policies*: From a policy point of view the recent turn towards welfare-to-work policies is an important aspect. At the heart of these policies are increasing work incentives for the non-working population. As a consequence, the proportion of workers who formerly lived on unemployment benefits or social assistance increased. Many of these persons were employed in poorly paid jobs at the bottom end of the labour market (Andreß and Lohmann 2008). This is right the mechanism how active labour market policies could pave the way to rising in-work poverty. Several studies point at the fact that activation measures shift poor households with no one working into working poor households because individuals often are forced to take up any job they are offered no matter how bad the job conditions are (Lohmann 2008; Nollmann 2009).
5. *Welfare state retrenchment*: What can be stated with regard to changing welfare state settings is first and foremost a decline or stagnation of spending levels for the working-age population (Cantillon et al. 2012). Furthermore, the spending has shifted to a more work-orientated approach (Frazer et al. 2011b): Work-related spending was increased while the generosity of passive income support declined (Cantillon 2011).

All these trends form the background against which it is now possible to derive the hypotheses. They aim at explaining the influence the country level setting has on in-work poverty.

### 1.3 Hypotheses

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<sup>3</sup> Interestingly, empirical evidence from Scandinavian countries, especially Sweden, shows that this does not have to be the case. Sweden has high female employment rates and low wage inequalities (Larsson and Halleröd 2011).



The country-level setting works as a filter through which the micro-level risks for becoming in-work poor can be either reduced or increased. Each individual and household related risk dimension – employment characteristics, household constellation and benefit level – is being moderated through different nation-level institutions. Employment related aspects are mainly influenced by labour market institutions which alter the effect of market forces. The household constellation is shaped through family policies that set (dis-)incentives for the formation of certain household types. The benefit level of course is related to the financial part of the welfare system.

### 1.3.1 Labour market setting

Turning to the first strand, we have to recall that low wages are the main explanatory factor of in-work poverty and that the risk of earning low wages is especially high for low skilled employees at the margins of the labour market. Thus, the main question is: How do national employment regimes contribute to these mechanisms? Low wages reflect first of all the employers' ability and willingness to pay higher wages and the readiness of the employees to accept low wages. The crucial labour market institutions that influence these elements are the structure of the labour force and the trade unions as they have a decisive influence on the wage levels. Wage dispersion as an outcome measure will be considered as a third element.

1. *Structure of the labour force*: The crucial question is: Which are the population groups that are overrepresented at the bottom of the labour market? Against the backdrop of the “SBTC-hypothesis” and the impact of globalisation it can be assumed that the decisive characteristics of the population groups in question are low educational and/or vocational skills. With regard to in-work poverty we can therefore argue: A labour force that is characterised through high shares of low skilled reduces the relative demand for low-skilled employees and therefore increases the pressure on these groups. Hence, a first crucial figure for the present analysis is the percentage of low skilled among the labour force.
2. *Trade unions*: Unions play an important role in wage bargaining processes. It has been proven they have an important influence on the wage levels and therefore on the individual low-wage risk (Lohmann and Marx 2008; Lucifora 2000). Thus it can be assumed that low wages are less wide-spread in countries with influential trade unions. Hence, union density is the second explanatory aspect of the labour market context.
3. *Wage dispersion*: The third element that will be considered is the extent of wage dispersion. Previous research on this topic widely stated that countries with a high degree of wage differentiation tend to have higher shares of low wages (Blau and Kahn 1996; Lucifora 2000).

It is important to stress that the extent of wage dispersion has to be regarded as an outcome of the structure of the labour force and the role of trade unions. Countries with powerful unions have more egalitarian wage structures, i.e. lower income inequalities (Alderson and Nielsen 2002; Grimshaw 2011).

Summing up these three considerations we can derive the first hypothesis:<sup>4</sup>

*H1: The extent of in-poverty can be explained through the labour market setting. Countries with a high percentage of low skilled among the labour force and high wage dispersion have higher numbers of working poor. High union density lowers their share.*

### **1.3.2 Dual earner policies**

The second hypothesis concerns policies which affect the relation of non-working and working household members as well as the work intensity of a household. In classical welfare state research such measures are summed up under the term “defamilisation”. A low level of defamilisation, as for example in the Mediterranean countries, describes a situation where the individual welfare is highly dependent on the own family. In turn, the individual welfare is more independent from family ties in countries with a high extent of defamilisation (as in Sweden). Such countries are characterised through a good availability of public childcare, care for the elderly and a high level of family transfers. As a result, women are more independent from care obligations and a male earner in such countries (Lohmann 2008). In policy terms defamilisation relates to dual earner policies. As seen above, the relation of needs and resources is the crucial explanatory mechanism for in-work poverty from a household point of view. The argument is that policies which foster dual earner households lead to lower numbers of working poor because a second income in a household vastly increases the chance that the disposable household income is lifted above the poverty threshold. The influences of dual earner policies on in-work poverty can be looked at from two different angles:

1. *Public childcare*: The availability of public childcare is assumed to be a direct measure of defamilisation. An easy access to public childcare facilities is regarded as a driver for high numbers of dual-earner households. We can therefore argue that countries with a dense net of public childcare have lower in-work poverty rates.
2. *Female employment*: The share of females among all employees is regarded as an outcome of dual earner policies. Female employment rates tend to be higher in countries which are

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<sup>4</sup> Active labour market policies definitely play a key role as well. Unfortunately it was not possible to include appropriate variables for the relevant policies. Hence, this explanatory strand will not be covered. A comprehensive overview on active labour market policies can be found in Bonoli (Bonoli 2010). For a discussion how such policies influence in-work poverty see Cooke and Lawton (Cooke and Lawton 2008).

characterised by a high degree of defamilisation. It is plausible, however, to assume that their share also depends on labour market characteristics.<sup>5</sup>

Taken together, all these aspects lead us to the hypothesis on defamilisation influences:<sup>6</sup>

*H2: Defamilisation policies, especially dual earner policies, have a decisive impact on the extent of in-work poverty. Countries with a good availability of public childcare and high female employment rates have lower in-work poverty shares.*

### **1.3.3 Transfers and benefits**

The last explanatory mechanism concerns the benefit level a household receives and hence an important aspect of decommodification policies. The term “decommodification” refers to the level and the availability of public transfers for those outside the labour market (Esping-Andersen 1990). Individuals who live in poor households even though they are in-work are of course not directly targeted by such policies. But as these measures have a decisive influence on the balance of a household’s needs and resources, they have to be taken into account. They mitigate the negative effect of risk factors such as low wages by ensuring that a household’s disposable income is adequate (Frazer et al. 2010). What could be proven is that the generosity of welfare states has a substantial effect on reducing in-work poverty (Brady et al. 2010; Lohmann and Marx 2008). Countries with higher levels of decommodification, for example Sweden, as a consequence have lower income inequality (Alderson and Nielsen 2002). Given the research focus of the present article, three categories of transfers and benefits are of special relevance:

1. *Unemployment replacement rates*: The benefits that are paid to unemployed persons directly counterbalance the mechanism that such household members increase the poverty risk of working households. In many households these benefits account for a significant part of the disposable income (Peña-Casas and Latta 2004). Replacement rates influence in-work poverty through a second mechanism: Lower replacement rates lead to lower wages as they reduce the wage levels individuals are willing to accept, i.e. the reservation wage. Due to prevailing male breadwinner models, such reservation wages tend to be lower for women than for men (Grimshaw 2011).

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<sup>5</sup> Defamilisation policies influence the extent of in-work poverty through a further mechanism the present article won’t pursue: Policy measures which are especially targeted at young unemployed persons reduce in-work poverty shares: If young adults, a group facing above average unemployment risks in most European countries, are forced to move back to their parents because they don’t receive enough public benefits this could shift the parent’s household into in-work poverty (Lohmann 2008).

<sup>6</sup> It has to be mentioned that there are two more core elements of defamilisation and dual earner policies. The first, transfers targeted to families, is included in the third hypothesis; the second, the availability of care for the elderly, cannot be covered due to the lack of data.

2. *Social assistance schemes*: Social assistance schemes, which are an important aspect of de-commodification policies, are included for two reasons: Firstly, the level of social assistance can be regarded as the breadline for an adequate socio-cultural standard. In many countries, low-wage earners are therefore eligible for top-ups that lift their income up to the social assistance level. Secondly, social assistance is in many countries the type of transfer that is paid to long-term unemployed – a population group which is overrepresented among in-work poor households. The easier it is for individuals outside the labour market to receive these benefits and the higher they are, the more likely it is that the level of benefits a working household receives is sufficient to lift it out of poverty. Hence, countries in which households or their members have to meet rather strict criteria to be able to receive public benefits are more likely to have high shares of in-work poverty. Working-age individuals living in these countries depend more exclusively on their labour market earnings.
3. *Family transfers*: Benefits for families are decommodification as well as defamilisation measures. Even though not directly targeted at persons outside the labour market, family transfers contribute a significant proportion to the disposable income of families and therefore partly counterbalance the effect of several unfavourable household constellations.

In sum, public transfers are not only important for the level of household benefits. They can also be regarded as shaping (dis-)incentives for individuals to accept low wages and for employer to pay such low wages (Grimshaw 2011). Given these considerations, the hypothesis on transfers and benefits is:

*H3: The lower the generosity of welfare state benefits, the higher the number of working poor. Countries with high unemployment replacement rates and generous social assistance schemes and high family transfers have lower shares of working poor.*

At this point it has to be recalled that these country-level mechanisms are not expected to explain the major part of the risk of being in-work poor. It is rather likely that their influence is small compared to the micro-level aspects. Yet, an approach that aims at explaining in-work poverty in a comprehensive way has to take all three explanatory levels into account: Individual labour market circumstances, the household composition and its benefit level as well as institutional factors of the labour market setting, family policies and welfare state arrangements. Based on the three country-level hypotheses we can now amend the welfare triad of pathways into in-work poverty with the third level and by doing this complete the research model (Tab. 2).

**Tab. 2 The welfare triad of in-work poverty: Country-level**

Level	Welfare agency		
	Employment	Family	Public welfare
<b>Individual characteristics</b>	- Low wages - Atypical employment - Low qualifications		- No or insufficient in-work benefits
<b>Household related factors</b>	- Low employment intensity	- Single earner - High number of children, elderly and otherwise inactive or unemployed persons	- Low levels of benefits and transfers
<b>Country-level influences</b>	- Low skilled in labour force - Trade unions - Wage dispersion	- Degree of defamilisation - Dual earner policies	- Unemployment replacement rates - Social assistance Schemes - Family transfers

Source: Own research

## 2. Data and methods

After analysing micro- and macro-level influences on the risk of being working poor, the issue how to define and operationalise in-work poverty is tackled now. What is rather astonishing is that, despite all the progress in research and the huge political interest in this topic, there are still vivid debates about how exactly in-work poverty should be measured. This ambiguity can certainly be explained by a characteristic feature of the research subject: The combination of poverty and work.

Looking at the definition of poverty is the easier part of the story. It is widely agreed that households are defined as poor if they have an equivalised disposable net-income of less than 60% of the national median income. When proceeding to the definition of the status “worker”, things turn out to be more complex. Researchers still have not agreed on a common understanding of this term. Existing approaches can be broken down into three dominating concepts, all of them referring to the main activity status an individual reports for at least six months in the past year (Peña-Casas and Latta 2004; Ponthieux 2010):<sup>7</sup> Firstly the active approach, a concept, which is used by the US Bureau of Labour and Statistics. It is the broadest of the three concepts as it defines employment as being active on the labour market, either employed or unemployed. Secondly, the French employment concept which is based on the US-approach. Yet, it restricts the US-concept in one central aspect: An individual has to be employed during at least one of the six months in order to be designed the status “worker”. This criterion narrows the potential population group markedly to all those persons who were unemployed for

<sup>7</sup> This list only includes the three most important approaches. For an instructive overview over other concepts see Crettaz (Crettaz 2011).

only a comparatively short period, while the US-approach even includes long-term unemployed. The third concept is the in-work approach. This is the one that is officially used by the EU. Defining “working” as being in-work is a strict concept: Individuals are regarded as being in-work only if they that were employed during at least six months in the past year.

The decision about one of these three concepts has both theoretical and empirical implications. A broader concept like the active approach attaches more importance to labour market factors whereas a more restricted one is more likely to produce the result that the household composition prevails over the individual labour market situation in explaining in-work poverty (Ponthieux 2010). The empirical implication of how to define being “in-work” refers to the issue of how broad or narrow the size of the potentially working poor population is. The pattern is obvious: The more restricted the underlying definition of being a worker, the lower the shares of in-work poverty.<sup>8</sup> As the present article aims at being comparable with other studies in this field the dominating EU-approach is applied. Thus, in-work poverty is defined as follows: A person is in-work poor if he or she reports employment as his or her main activity status for at least six months during the past year and if this person lives in a household that has a disposable of less than 60% of the national median.

The empirical analysis is based on the cross-sectional EU-SILC 2010 data. This dataset is currently the most comprehensive survey for comparative purposes within Europe.<sup>9</sup> It consists of a household questionnaire and an individual one for all household members older than 15 years. The EU-SILC 2010 covers approximately 137.000 households with 283.00 persons from all EU-27 countries plus Island and Norway (Eurostat 2010a). Being in-work is measured using the self-reported information about the most frequent activity status for each month of the past year. The income information is measured by converting the equivalised disposable monthly household income into power purchasing parities using the conversion factors proposed in the EU-SILC.<sup>10</sup> <sup>11</sup> The sample is restricted to working-age individuals who are full-time em-

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<sup>8</sup> The socio-demographic aspects that characterise the working poor also depend a great deal on the definition used: A higher selectivity of the definition especially leads to higher shares of single-earner households (Ponthieux 2010).

<sup>9</sup> The data set, however, has some considerable problems concerning the strategies that are used for collecting data and sampling. Some population groups, especially foreigners and the elderly as well as young children are underrepresented in many countries (Frick and Krell 2010). Furthermore, the EU-SILC combines personal survey data with register data and information from proxy interviews. This leads to a few difficulties in comparing the data (Lohmann 2010). Nevertheless, the EU-SILC is the best available data source for large-scale cross-national comparisons.

<sup>10</sup> The data are 1% top- and bottom-coded. Incomes that are zero are excluded.

<sup>11</sup> This method entails some problems. The main one is the time discrepancy of the employment information and the income data: The income variable refers to the month the survey is carried out, the employment status to the

ployed.<sup>12</sup> The operationalised research question is: How can the impact of the three county-level mechanisms under study be evaluated against the background of the micro-level influences? This is examined by using multi-level models which will be explained later. First, the potential influences the micro- and macro-level variables have on in-work poverty are described.<sup>13</sup>

## 2.1 Micro-level variables

The micro-level variables encompass the three dimensions of the welfare triad of in-work poverty: Individual labour market circumstances, the household constellation, i.e. especially the labour market attachment of the household members and the household benefit level (**Tab. 1**). Their influences on the risk of being in-work poor is briefly described on the basis of the literature findings discussed in section 1.1.

1. *Individual labour market circumstances*: As described above, low wages mainly stem from the occupation held, the educational level and the type of contract. A low educational level, a fixed-term contract and an occupation at the bottom of the labour market are related to a high risk of being in-work poor.
2. *Household composition*: The three variables that are used to measure the household composition focus on the ratio between a household's needs and resources: The percentage of full-time employed per working-age household member. This element is assumed to decrease the in-work poverty risk. In contrary, a high percentage of unemployed will increase this risk. The assumed influence of the percentage of dependents, i.e. the number of household members who are younger than 18 or older than 64 is: The higher their proportion the higher the in-work poverty risk.
3. *The benefit level*: This further important influential household characteristic is measured by summing up the level all relevant individual and household-related benefits. The influence on in-work poverty is obviously risk-decreasing.

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months in the year prior to the study. This problem is at least partly attenuated by the fact that most employees are in stable employment situations (Eurostat 2010b).

<sup>12</sup> The concentration on full-time employment has the advantage that in this case a low household income does not reflect the effects of limited hours of work (Nolan et al. 2010). Nevertheless it has to be stressed that low hours of work and the spread of part-time employment are an important explanatory factor for in-work poverty. Yet it can be argued from a policy point of view, that full-time, not part-time employment should prevent a household from falling below the poverty threshold. Self-employed are excluded from the analysis because this group is, compared to employed workers, rather heterogeneous in terms of structure and with regard to policy measures addressing them (Eurostat 2010b).

<sup>13</sup> A table with all variables is in Tab. 7 in the appendix.

## 2.2 Macro-level variables

The impact county-level institutions have on in-work poverty is focused on the three dimensions of the welfare triad described above (**Tab. 2**):

1. *Labour market setting*: Following the arguments in section 1.2, three variables are used to measure labour market institutions: First, the percentage of low skilled in the labour force. The hypothesis is that higher shares of low-skilled increase the in-work poverty risk, as such persons face markedly higher risks of earning low wages. The wage differentiation (2) is measured using the D9/D1-ratio of gross earnings. It is assumed that higher wage inequalities entail higher in-work poverty risks because higher wage dispersion is interrelated with higher shares of low wages. The strength of trade unions (3) is measured as the union density. Powerful unions are expected to positively influence wages, i.e. to lessen the spread of low wages. Consequentially, it is hypothesised that influential unions decrease the risk of belonging to the working poor.
2. *Dual earner policies*: The mechanisms in question focus on two aspects: The availability of public childcare and the female employment rate. It is argued that both are negatively related to the in-work poverty risk, i.e. to decrease it. The underlying argument is that both indicators are expected to increase the number of dual-earner households.
3. *Transfers and benefits*: As described above three types of benefits and transfers are of special relevance for the in-work poverty issue: Firstly, family transfers as they directly influence the household constellation. Secondly, unemployment replacement rates that not only contribute to the household benefit level but also influence the wage level through lowering or increasing reservation wages. Social assistance is the third important benefit scheme. Its main impact on in-work poverty is that social assistance counterbalances the effect of unfavourable household constellations, especially for such with many long-term unemployed. The hypothesis is that more generous benefits increase the chance an in-work person has to live in a household with a disposable income above the poverty threshold.



**Tab. 3 Expected influences of the country-level context**

Hypothesis	Indicators	Expected impact on in-work poverty
<b>Labour market setting (h1)</b>	Low-skilled employees	+
	Importance of trade unions	+
	Wage dispersion	+
<b>Dual earner policies (h2)</b>	Public childcare availability	-
	Female employment	-
<b>Transfers and benefits (h3)</b>	Family transfers	-
	Unemployment replacement rates	-
	Social assistance	-

Source: Own research

### 2.3 Combing micro- and macro-level: Multi-level models

In order to combine micro- and macro-level multi-level models are used. The outcome variable is binary coded: Poverty among full-time employed working-age individuals. Therefore the research question requires a logistic regression, if we had only a single level. The aim, however, is to analyse the influence of two different levels which means that the observations in the same country are not independent from each other: Therefore, multi-level models have to be used. Such multi-level estimations can be understood as an extension of regression models. They take the hierarchical nesting of data into account by splitting up the error terms for each level. Thus, such models allow comparing the influence the household and the country-level variables have on the in-work poverty risk. The multi-level estimation that is applied in the present article is the logistic two-level random intercept model using the xtemelogit algorithm in Stata. The similarity between regression and multi-level models can be seen by comparing the equations for the logistic linear regression (1) (Guo and Zhao 2010; Hox 2010)

$$\text{logit} [p_i / (1-p_i)] = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \varepsilon \tag{1}$$

and the logistic two-level random intercept model (2)

$$\text{logit} [p_{ij} / (1-p_{ij})] = \beta_0 + \beta_1 X_{ij} + \beta_2 Z_j \varepsilon_{ij} + \mu_j \tag{2}$$

where  $p_{ij}$  is the probability that a household  $i$  in a country  $j$  is in-work poor.  $X_{ij}$  is a micro-level explanatory variable and  $Z_j$  is one on the country level. The probability  $p_{ij}$  that the outcome equals one, i.e. that a present household is in-work poor, is modelled using a logistic link function.<sup>14</sup> The multi-level model decomposes the error variance into a proportion associated with the household level ( $\varepsilon_{ij}$ ) and one associated with the country level ( $\mu_j$ ).<sup>15</sup>

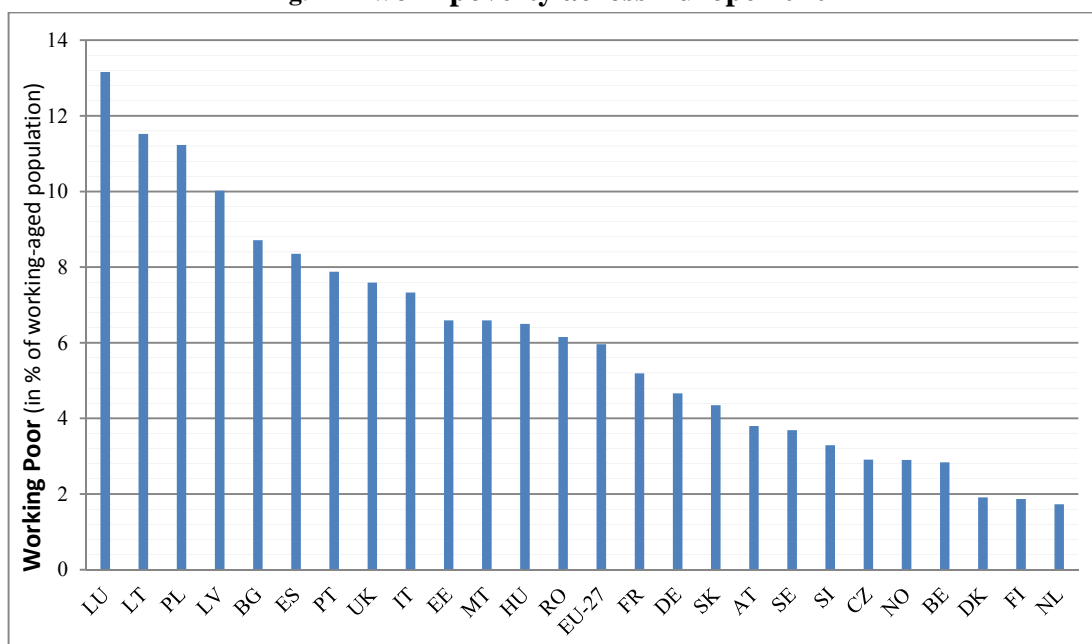
<sup>14</sup> For reasons of comparability the variables are z-standardised.

<sup>15</sup> In the case of a logistic two-level model the error term for the household level is by definition  $\pi^2/3 \approx 3,29$  (Rabe-Hesketh and Skrondal 2008).

### 3. Patterns of in-work poverty across Europe

The extent of in-work poverty (Fig.1) varies significantly across European countries. It ranges from less than 2% in the Netherlands to more than 13% in Luxembourg– a picture that is consistent with the results in literature (Brady et al. 2010; Commission 2011a). On average, in 2010 almost 6% of all full-time employees lived in poor households.<sup>16</sup>

**Fig.1 In-work poverty across Europe 2010<sup>17</sup>**



Source: EU-SILC 2010, own calculations.

The countries with the lowest level of in-work poverty are dominated by the Nordic countries while east European and Mediterranean countries exhibit the highest figures. This picture shows some similarity to the extended typology of Esping-Andersen’s welfare state regimes (Esping-Andersen 1999; Ferrera 1996). The general pattern we can state is: Countries with a socio-democratic welfare regime (Denmark, Finland, Norway and Sweden) tend to have the lowest in-work poverty rates, whereas the conservative-corporative cluster has moderately low, under-average figures – especially France, Germany and Austria; the Netherlands and Belgium have very low in-work poverty shares. The Mediterranean countries (Italy, Malta, Portugal and Spain) have high in-work poverty rates. The east European cluster is on the one hand characterised through high working poor rates (Bulgaria, Estonia, Latvia, Lithuania, Poland); on the other hand we find countries with only slightly above-average numbers (Hungary and Roma-

<sup>16</sup> The result that Luxembourg is an outlier corresponds with findings in literature and is also found in studies dealing with poverty rates in general. It does not seem to be possible to find a good explanation for this result. This why Luxembourg is left out in some studies (Kangas and Ritakallio 2004).

<sup>17</sup> The country abbreviations are explained in Tab. 8 in the appendix.

nia) and even such with under-averages figures (Czech Republic, Slovakia and Slovenia). The fact that welfare state regimes have an impact on the extent of in-work poverty, albeit in various degrees, is a well-known finding (Brady et al. 2010; Crettaz and Bonoli 2011a; Lohmann and Marx 2008). This is not astonishing, if we recall that defamilisation and decommodification policies, both definitory dimensions of welfare state regimes, are assumed to influence the extent of in-work poverty markedly.

There are some deviations from these general patterns that are worth mentioning: Firstly, Sweden, which exhibits, compared to the other Nordic countries, high numbers of in-work poverty. A possible explanation might be the fact that young Swedes tend to leave their parent's household rather early and often live on their own (Crettaz and Bonoli 2011b). Therefore, if they earn low wages, what is quite probable at early stages of the career, these are not balanced by further incomes. The results for the Netherlands and Belgium are noteworthy too, as they exhibit by far the lowest figures among countries belonging to the continental cluster. The result for the Netherlands might be related to the fact that this country seem to be a hybrid type with a high proximity to the socio-democratic regime (Esping-Andersen 1999). The case of Belgium, however, is a good example for a within-type variation (Lohmann and Andreß 2008). Was is also striking is that the Czech Republic, as an east European country, has an in-work poverty rate of less than 3%. The figures in Slovakia and in Slovenia are not much higher. Earlier research proved that the very low in-work poverty shares in the Czech Republic can be explained by the highly distributive effects of its welfare system (Commission 2011b). Taking these results into account, we can assume that the impact of the country-level variables under study varies between the different welfare state regimes. This is examined by plotting the in-work poverty shares against the country-level indicators.<sup>18</sup>

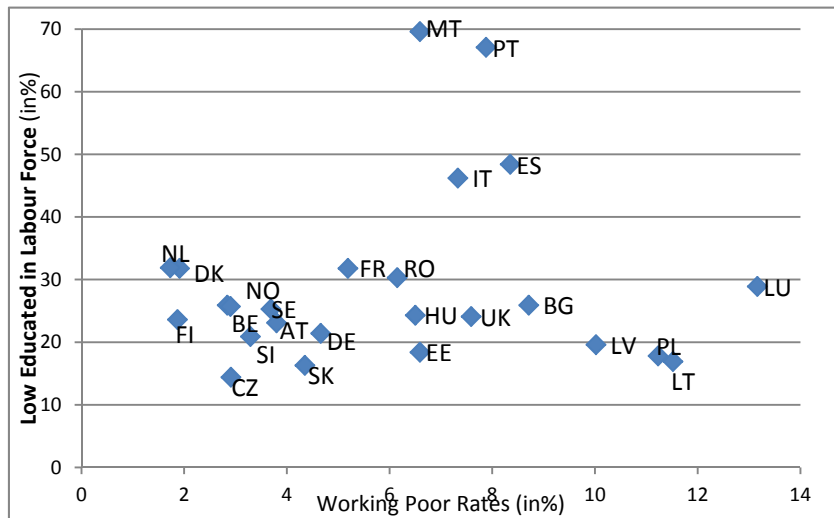
Figure Fig. 2 presents the interaction of the qualificational structure of the labour force and the in-work poverty rate. Several trends can be identified: Firstly, it can be seen that the structure of the labour force is not strongly related to the extent of in-work poverty. Secondly, the data demonstrate that all Mediterranean countries are characterised through high in-work poverty rates and very high shares of low skilled in the labour force. The Nordic and the continental European countries are located near the bottom left corner with comparatively low figures in both dimensions.<sup>19</sup>

<sup>18</sup> The scatterplots are only displayed for the country-level variables that proved to have a significant influence on the in-work poverty rate when including them in the multi-level models.

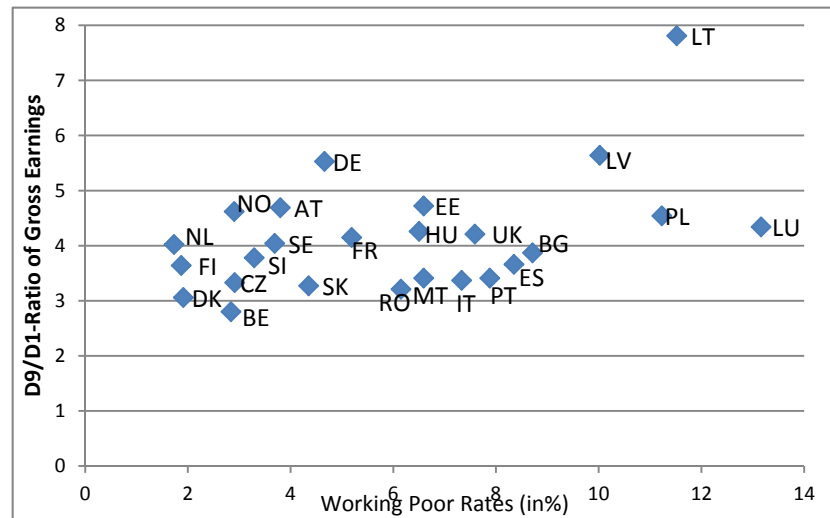
<sup>19</sup> With the exception of Luxembourg what is due to its extremely high in-work poverty rate.

**Fig.2-5 Working poor rates by qualifiational structure of the labour force (Fig. 2), wage dispersion (Fig.3), female employment (Fig. 4) and replacement rates (Fig.5)**

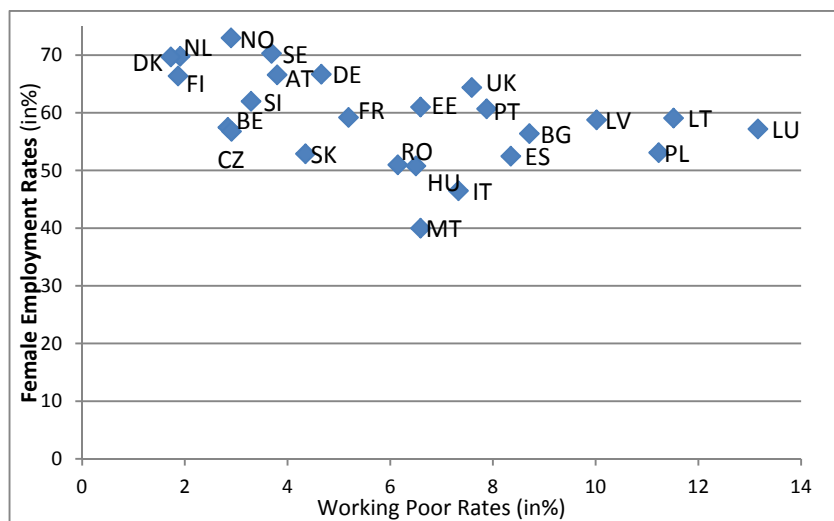
**Fig. 2**



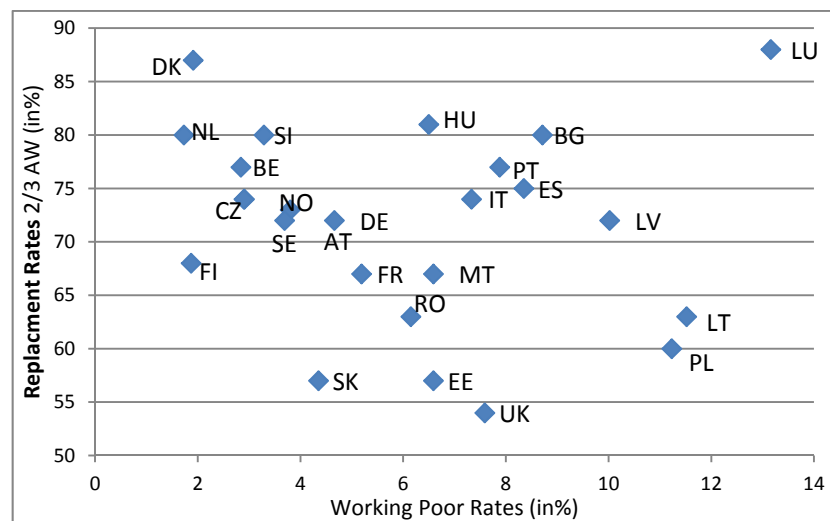
**Fig.3**



**Fig. 4**



**Fig.5**



How in-work poverty rates interact with wage dispersion is displayed in figure Fig.3. The data indicate an obvious pattern: Countries that have high wage inequalities tend to have high in-work poverty shares. East European countries dominate in the top right corner (marked wage dispersion and many working poor), the corporatist-conservative and the Nordic countries at the opposite end. All four Mediterranean countries (Italy, Malta, Portugal and Spain) are located close together in the centre of the figure.

The results for female employment rates (**Fig. 4**) demonstrate a clear trend: Countries with high female employment tend to have low numbers of working poor. Especially the Nordic and the continental European countries show a close interaction of both dimensions. All of them are located in the top left corner of the picture.

Replacement rates interact slightly negative with in-work poverty (**Fig.5**). Yet, the picture the data depict is heterogeneous. The Mediterranean countries (except for Malta) as well as some east European countries have high values in both dimensions, whereas Estonia, Romania and Slovakia are characterised by rather low replacement rates and low in-work poverty shares.

If we put together the two aspects discussed above – the extent of in-work poverty and its interaction with the significant country-level variables – we can derive some first hints how these patterns could be explained. The countries with the lowest shares of in-work poverty tend to have comparatively low wage dispersion (with the exception of Norway). Female employment as well as the replacement rates are on average very high. Most of the countries with moderately low in-work poverty are characterised by a rather high percentage of low skilled (except France) and, with the exception of Slovakia, high female employment rates. What can be noted beyond that is that the majority of the countries with slightly above-average in-work poverty rates is characterised through the lowest female employment rates in the sample and low replacement rates (except Hungary). The expenditures for family transfers tend to be under-average in the countries with slightly above-average working poor rates. The picture for the countries with the highest numbers of in-work poverty confirms the suspicion that Luxembourg is an outlier. For all the other countries it can be stated that they have moderately low shares of low skilled and rather low female employment rates.

Taken together, what does this picture tell us? It points at the direction that low wage dispersion is interrelated with low in-work poverty rates. What we can also assume furthermore is that the connection between in-work poverty and public childcare is not that straightforward: Both the countries with the highest and the lowest in-work poverty rates show findings that

seem to contradict the assumption that a good availability of childcare facilities goes together with high female employment rates. Noteworthy, quite a few countries with a low extent of in-work poverty have above-average shares of low-skilled employees (e.g. Denmark and the Netherlands), whereas others, such as Poland and Lithuania, show high in-work poverty rates and low shares of low-skilled.

These aspects will be looked at in more detail in the multi-level section. The task now is to analyse the features that characterise the working poor. This is done by comparing the mean distribution of the micro-level variables at the European level for the in-work poor with those for the other, not-poor, employees (Tab. 4).<sup>20</sup> This paragraph is kept rather short as the results widely confirm the picture of the literature review described in section 1.1.

**Tab. 4 Socio-demographic structure of the working poor<sup>21</sup>**

	Working Poor	Other employees
Not more than lower secondary education (ISCED 0-2)	41.89 (.49)	21.03 (.41)
Higher secondary education (ISCED 3+4)	49.13 (.50)	50.41 (.48)
Tertiary education (ISCED 5+6)	8.89 (.29)	28.57 (.45)
Male	50.25 (.50)	49.83 (.49)
Female	49.75 (.58)	50.17 (.46)
Semi- unskilled workers (EGP6)	38.00 (.43)	19.97 (.57)
Lower professionals (EGP2)	7.54 (.26)	21.46 (.41)
Upper professionals (EGP1)	1.21 (.11)	5.48 (.23)
Foreigners	16.30 (.37)	7.38 (.26)
Employees with temporary contract	27.14 (.44)	11.80 (.32)
Age (mean)	40.59 (12.47)	43.54 (13.46)
Full-time employed per household (mean)	53.41 (24.20)	71.56 (27.09)
Unemployed per household (mean)	19.82 (28.17)	5.78 (16.12)
Dependents per household (mean)	13.61 (29.48)	14.96 (35.74)

Source: EU-SILC 2010, own calculations. All values are %. The figures in parenthesis are standard deviations.

<sup>20</sup> To make it easier to follow, only the results for the European average are displayed. A table with the data for all countries in the sample is in Tab. 8 in the appendix.

<sup>21</sup> The table displays the distribution of the variables among the working poor reps. the other, not-poor, employees. All values are in percent and refer to the unweighted averages across all countries in the sample. The t-test proved that the null-hypothesis can be rejected in all cases except the gender dimension. All other results have p-values of less than 0.001.

The result for the educational dimension is very marked: Less than 9% of all working poor have a tertiary education, more than 40% have only a low educational level. Not even 10% of the working poor are employed as higher or lower professionals (compared to more than 25% of all other employees), while almost 40% of them are semi- or unskilled workers (other employees: 20%). The percentage of foreigners among working poor is more than twice as high as among other employees. The former are on average slightly younger. More than 27% of the working poor have fixed-term contracts – compared to less than 12% of the other employees. The gender distribution is fairly equal. From the household perspective it can be said that working poor individuals live in households where, on average, slightly more than half of all working-age household members are full-time employed while almost 20% of them are unemployed – a figure that is more than three times higher than among the other employees.<sup>22</sup>

#### **4. The country-level explanation of in-poverty**

The aim of this section is to test the three hypotheses under study in order to judge the relative explanatory power of the labour market, dual earner policies and benefits and transfers by using multi-level models. This will be done in four steps (**Tab. 5**): Firstly, a baseline model without any explanatory variables is calculated (M0). Secondly the influence of the micro-level variables is analysed (M1). M2 through M4 each test one of the three hypotheses. Finally, the relative importance of each of these hypotheses will be examined by including all three of them in one model (M5). The coefficients are displayed as odds ratios. A value greater than one indicates a positive effect; a figure less than one a negative influence: The higher the value for the explanatory variable, the lower the in-work poverty risk.

The empty model (M0) is the starting point for the analysis. It shows that the in-work poverty risk differs a great deal by country (between-country variance = 0.37). This variance, however, is mainly explained by the micro-level. The ICC of the null-model is 0.10 what tells us that only 10% of the whole variance of in-work poverty across Europe is explained by the country-level.<sup>23</sup> At first sight, this seems to be a very low proportion. Yet, this figure is very much in line with the findings in relevant literature (Lohmann 2010a). Nevertheless, the majority of the factors that explain in-work poverty are part of the micro-level story. Accordingly, the micro-model (M1) shows a high significance of all included variables; being male is the only insignif-

<sup>22</sup> It is worth mentioning that this picture certainly differs between the welfare regimes. An overview of the distinct working poor profiles of the country clusters is found in Lohmann and Andreß (Lohmann and Andreß 2008).

<sup>23</sup> The ICC, the intra-cluster-correlation, measures the proportion of variance that is associated with the country-level (Hox 2010).

icant one.<sup>24</sup> The results confirm the picture of the working poor described in section 3 and are supported by contemporary evidence (Commission 2011b; Lohmann 2009): A high educational level does indeed markedly decrease the in-work poverty risk. It is the strongest risk-lowering effect among all micro-level variables. The individual characteristics that increases the in-work poverty risk the most is being a migrant, followed by a temporary-contract. The effect age has on in-work poverty is u-shaped: Middle-aged persons face the highest in-work poverty odds. Not surprisingly, being employed as an upper professional lowers the risk to be in-work poor, while semi- and unskilled workers face higher risks. Turning to the household related variables we can state the highly negative effect of full-time employed household members. The higher their number the markedly lower the in-work poverty risk a household has. As expected, higher shares of dependents and unemployed household members increase the risk. The latter is the most powerful risk factor among all micro-level variables.

With regard to the country-level influences the first result to state is that the effects of individual characteristics and household related aspects are very robust. Their coefficients don't change when controlling for macro-level influences. This is certainly a further proof of the great explanatory importance of individual and household related characteristics. Looking at the effect of the labour market (M2) the results show that, as expected, both the percentage of low skilled as well as the wage dispersion are positively correlated with in-work poverty. The influence of the wage dispersion is more pronounced – a result that relates to the strong connection between marked wage dispersion and high low-wage shares described above. Union density does not have a significant effect.<sup>25</sup>

The second set of variables (M3) reveals that the availability of public childcare does not have a significant influence on in-work poverty. This fits the picture described above that the countries with very low in-work poverty rates are those with an under-average public childcare availability. The effect of female employment is as expected: The higher their rate the lower the odds of in-work poverty.

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<sup>24</sup> Already Lohmann (Lohmann 2010b) proved that the gender dimension has no significant influence on the in-work poverty risk.

<sup>25</sup> This does not necessarily have to lead to the conclusion that trade unions don't have an effect on in-work poverty. As Lohmann (Lohmann 2008) pointed out, union density is a rather weak indicator for the strength of trade unions. Yet, the more appropriate variable, the level of wage coordination did not fit in the applied models.



**Tab. 5 Country-level explanation of in-work poverty; odds ratios**

Independent variable	M0	M1	M2	M3	M4	M5
<b>Micro-level</b>						
Highest ISCED		.64*** (-43.06)	.64*** (-43.06)	.64*** (-43.03)	.64*** (-43.07)	.64*** (-43.08)
Upper professional (EGP1)		.43*** (-10.07)	.44*** (-9.82)	.43*** (-10.07)	.43*** (-10.07)	.44*** (-09.82)
Semi- unskilled worker (EGP3)		1.36*** (13.99)	1.36*** (13.99)	1.36*** (13.98)	1.36*** (13.99)	1.36*** (13.96)
Foreigner		2.21*** (25.36)	2.19*** (24.90)	2.21*** (25.37)	2.21*** (25.41)	2.20*** (24.99)
Temporary contract		1.71*** (20.79)	1.71*** (20.64)	1.71*** (20.78)	1.71*** (20.78)	1.71*** (20.60)
Age		3.59*** (20.72)	3.60*** (20.58)	3.59*** (20.70)	3.57*** (20.72)	3.60*** (20.57)
Age squared		1.0*** (-25.41)	1.0*** (-25.25)	1.0*** (-25.39)	1.0*** (-25.41)	1.0*** (-25.24)
% of full-time employed in household		.49*** (-58.47)	.49*** (-58.65)	.49*** (-58.46)	.49*** (-58.47)	.49*** (-58.61)
% of unemployed in household		1.40*** (47.61)	1.40*** (47.24)	1.40*** (47.61)	1.40*** (47.61)	1.40*** (47.54)
% of dependents in household		1.18*** (14.05)	1.18*** (14.20)	1.18*** (14.05)	1.18*** (14.05)	1.18*** (14.18)
Male		n.s.				
<b>Macro-level</b>						
<b>Labour Market</b>						
% of low educated working-age citizens			1.06** (2.72)			1.06** (2.71)
Wage dispersion			1.36*** (3.84)			1.36*** (5.11)
Union density			N.S.			
<b>Dual Earner Policies</b>						
Public Childcare				N.S.		
Female employment rates				.85* (-1.76)		.78** (-3.67)
<b>Transfers and benefits</b>						
Replacement rates					.80* (-2.51)	.87* (-2.19)
Social assistance (fam.+ 2 children)					N.S.	
Family transfers					N.S.	
Intercept	.05 (-24.50)	2.08 (4.57)	2.08 (4.97)	2.10 (4.76)	2.06 (4.73)	2.09 (5.44)
<b>Coefficients</b>						
N	221618	218222	213997	218222	218222	213997
Pseudo-R <sup>2</sup> (Mc-Fadden) <sup>26</sup>	.036	.031	.018	.028	.025	.008
ICC	.100	.080	.051	.072	.066	.027
Between-country variance $\sigma^2$	.365	.288	.178	.257	.231	.093
BIC	96577	79684	78486	79693	79690	78495

Source: EU-SILC 2010, own calculations. Comments: \*\*\*p<0.001; the figures in parenthesis are z-scores, n.s. = non significant.

<sup>26</sup> The pseudo R<sup>2</sup> values are extremely low. Unfortunately there does not seem to be an explanation for this result. It was robust throughout all models and did not change significantly when testing different variables.

Testing the influences of transfers and benefits (M4) shows an interesting picture: Both the expenditures for family transfers as well as social assistance are not significant. On the contrary, replacement rates decrease the in-work poverty risk significantly. This result relates to two aspects: Firstly, to the strong risk-increasing effect of high numbers of unemployed household members; Secondly, to the fact that working poor often live in with many unemployed. What we can conclude over and above this result is that unemployment replacement rates are a policy measure that successfully combats poverty among in-work individuals.

Including all significant macro-level variables in one model does not change much of the story (M5). By and large the results described above are very robust. The negative effect of wage dispersion and the positive influence of replacement rates are slightly higher in the full-model, whereas the effect of female employment rates decreases a bit. In total, all significant country-level variables reduce the between-country variance of in-work poverty by more than two third ( $\sigma^2_{mo}=0.365$  compared to  $\sigma^2_{m5}=0.092$ ). This reveals clearly that the country-level variables have a sizable effect on reducing the unexplained variance. Accordingly, the ICC of the full-model is very low with only 0.027, what is about one third of the ICC of the null-model. When comparing the weight of each hypothesis we can state that the labour market setting has the biggest influence on in-work poverty. Not only are there two labour market related variables that are significant, both of them exhibit the strongest effects of all country-level variables under study. Summed up, what do the results of the multi-level models tell us about the hypotheses under study? By and large the three hypotheses are confirmed (Tab. 6).

**Tab. 6 Observed influences of country-level context**

Hypothesis	Indicators	Expected impact	Observed impact on in-work poverty
<b>Labour market setting (h1)</b>	Low-skilled employees	+	+
	Importance of trade unions	+	n.s.
	Wage dispersion	+	+
<b>Dual earner policies (h2)</b>	Public childcare availability	-	n.s.
	Female employment	-	-
<b>Transfers and benefits (h3)</b>	Family transfers	-	n.s.
	Unemployment replacement rates	-	-
	Social assistance	-	n.s.

Source: Own research; n.s. = not significant

The hypothesis on the influence of labour market institutions (h1) is confirmed – with the limitation however, that union density does not have a significant influence on the risk of belonging to the working poor. The assumption that dual earner policies decrease the in-work poverty

risk is confirmed as well (h2) – yet, public childcare availability is not significant. The same applies to the hypothesis on the effect of transfers and benefits. In general, the assumption is confirmed. Two of the three indicators (family transfers and social assistance) do not have a significant impact on the in-poverty odds.

To put all these results in a nutshell: The risk an in-work individual has to live in a poor household is increased by the shares of low-skilled in the labour force and the extent of wage dispersion; while higher female employment and more generous replacement rates lower the risk. These findings relate to the picture the data in figures 2 to 5 describe and can be looked at using a welfare regime approach. The socio-democratic Nordic countries in general are characterised by a high degree of decommodification and defamilisation as well as low wage dispersion and comparatively few low-skilled in the labour force. Right these elements contribute to the low in-work poverty rates in these countries. On the other hand, the low levels of decommodification and defamilisation that are characteristic for the south European countries are the explanatory mechanisms that underlie the high incidence of in-work poverty in these countries (Lohmann and Marx 2008).

## **5. Summary and outlook**

For a long period in post-war Europe being employed worked fairly well as a mechanism which prevents poverty.<sup>27</sup> That in the EU in 2010 almost 6 % of all full-time employed persons lived in households with a disposable income below the poverty threshold, however, clearly demonstrates that employment is no longer a sufficient guarantee for preventing poverty. This landmark change has to be evaluated in the light of long-term structural changes within employment regimes, increasing labour market inequalities, growing global economic interdependencies and shifting welfare state policies (Andreß and Lohmann 2008; OECD 2011). Especially a skill biased technological demand shift within the labour market and a activation turn in labour market policies in combination with a gradual welfare state retrenchment are the main driving factors for this development (Frazer et al. 2011b; Lohmann 2010a). Against these developments the present article aimed at analysing the relative explanatory power of individual as well as household related characteristics and especially the impact of the institutional setting. This was done by computing multi-level models using the EU-SILC 2010 data.

The results in the present article clearly demonstrate that micro-level aspects by far do explain the largest share of the risk an employed person has to live in a poor household. Yet, it is not

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<sup>27</sup> As the research field is young, it might however be, that in-work poverty did exist in the post-war decades but just was not visible in science (Airio 2008). Yet, it was certainly not regarded as a political problem in these days.

possible to explain the whole story only through micro-level aspects. The prevalence of in-work poverty varies markedly across Europe – and this variation is also due to varying institutional country-level settings. A comprehensive explanatory approach therefore has to take such macro-level characteristics into account.

There are several population groups who are rather prone to in-work poverty. Their characteristics can be related to three pathways leading into in-work poverty: First and foremost a low wage which often can be explained by a low educational level, secondly an unfavourable household composition, i.e. many dependents and few earners and as well as a low labour market attachment. The third mechanism relates to household benefit levels that are not sufficient to lift the household out of poverty. A further earner in a household vastly increases the likelihood of a household income above the poverty threshold. These three mechanisms relate to three core pillars of welfare provision: Employment, family and public welfare. Each of these dimensions relates to the importance of specific country-level influences. The employment dimension obviously relates to labour market institutions, the household constellation to family policies and the public welfare to the benefit and transfer policies.

The multi-level analysis showed that especially the labour market context has a decisive influence on in-work poverty. The hypothesis was confirmed, showing that the main explanatory factor is the share of low-skilled in the labour force. Dual earner policies also have a significant impact. Noteworthy, this works through the female employment rate as an outcome of such policies and not through the availability of public childcare. Regarding the influence of transfers it was proven that only replacement rates have a significant, risk-decreasing impact on in-work poverty, while the transfers targeted to families and social assistance proved to be insignificant. When comparing the explanatory power of the micro- and the macro-level the conclusion is: The influence of country-level aspects is small but highly significant. Put in a nutshell we can state: Being poorly educated or living in a household with many unemployed determines the poverty risk a working household has far more than the institutional framework at the country-level. Yet, the article confirms the evidence for institutional influences on the level of in-work poverty already observed by Lohmann and Andreß (Lohmann and Andreß 2008).

Summarising all results we can conclude that employment still is the best protection against poverty. To make sure that it stays this way, and therefore, in-turn, to reduce the extent of in-work poverty, national and European policies have to foster not only the job quantity; the job quality is at least just as important. Linking quantity and quality of work is vital to combat and prevent in-work poverty.

## 6. Appendix

Tab. 7 Micro- and macro-level variables. Data sources and operationalisation<sup>28</sup>

Variable	Operationalisation	Data Source
<b>Dependent</b>		
Poverty	Equivalised, disposable monthly household income <60% the nation median income	EU-SILC (hy090)
In-work	Self reported full-time employment as most frequent activity status for at least 6 months of the past year	EU-SILC (pl073)
<b>Independent micro-level</b>		
Occupation	Ericson-Goldthorpe-Portocarero-Classes (1-3) based on the ISCO88 data (ref. category: EGP2) <sup>29</sup>	EU-SILC (pl051)
Educational level	Highest ISCED level attained (High = ISCED 5+6; medium = ISCED 3+4, low = ISECD 1+2)	EU-SILC (pe040)
Type of contract	Fixed-term and permanent contract (ref. category)	EU-SILC (pl140)
Gender	Male and female (ref. category), control variable	EU-SILC (rb090)
Age	Age of working poor person, control variable	EU-SILC (rx020)
Migration Status	Working poor with a foreign nationality or born abroad (ref. category: residents), control variable	EU-SILC (pb210; pb220a)
Percentage full-time employed	Ratio of full-time employed household members to all household members aged 18 to 64	EU-SILC (pl140)
Percentage unemployed	Ratio of unemployed household members to all household members aged 18 to 64	EU-SILC (pl073)
Percentage dependents	Ratio of household members younger than 18 or older than 64 to all household members aged 18- 64	EU-SILC (rx020)
Level of household benefits	Sum of family and housing allowance, individual unemployment, old age, survivor, sickness and disability benefits as well as individual education related allowances, net value	EU-SILC (py010g, py090g, py100g, py110g, py120g, py130g, py140g)
<b>Independent macro-level</b>		
Qualificational composition of labour force	% of ISCED 0-2 per working-age citizen	Eurostat
Importance of trade unions	Trade Union density, share of employees who are members of a trade union	(Visser et al. 2009)
Wage dispersion	Individual gross earnings, D9/D1 ratio	Eurostat
Public childcare availability	Average weekly hours of formal childcare (children from the age of three up to the compulsory school age)	Eurostat
Female employment	Female employment rates in % of all women aged 15 to 64	Eurostat
Family transfers	Family and children benefits in % of GDP (2009)	Eurostat
Unemployment replacement rates	Net replacement rates for a married single-earner couple with 2 children, 67 % of the average wage in the initial phase of unemployment	OECD Database
Social assistance	Minimum income protection for a family with 2 children	SaMip <sup>30</sup>

<sup>28</sup> Unless otherwise stated all data refer to the year 2010.

<sup>29</sup> The other classes are omitted in the models because it is not possible to identify the clear hierarchical structure that is required for the model.

<sup>30</sup> "Social Assistance and Minimum Income Protection Interim Dataset" (Nelson 2007; 2011).

**Tab. 8 Macro-level variables by country<sup>31</sup>**

	% of low skilled in labour force	Wage dispersion (D9/D1-ratio)	Union Den- sity (in %)	Average hours of public childcare	Female em- ployment (in %)	Replacement rate (in %)	Social Assistance (PPP-Euro)	Expenditure for family transfers (in %)
Austria (AT)	23.1	4.69	28.1	25.2	66.6	73	20.783.1	3.07
Belgium (BE)	25.9	2.80	52.0	30.7	57.5	77	52.393.1	2.23
Bulgaria (BG)	25.9	3.87	19.0	38.8	56.4	80	399.0	1.99
Czech Republic (CZ)	14.4	3.33	17.3	28.2	56.8	74	13.746.0	1.4
Germany (DE)	21.4	5.53	18.6	27.7	66.7	72	3.751.2	3.17
Denmark (DK)	31.8	3.06	68.8	33.8	69.8	87	23.323.7	4.20
Estonia (EE)	18.4	4.72	6.7	39.6	61.0	57	4.302.0	2.26
Spain (ES)	48.4	3.66	15.9	29.6	52.5	75	111.701.4	1.51
Finland (FI)	23.6	3.64	70.0	29.5	66.4	68	12.072.3	3.31
France (FR)	31.8	4.15	7.6	29.4	59.2	67	7.083.1	2.65
Hungary (HU)	24.3	4.26	16.8	35.6	50.8	81	87.123.0	3.03
Italy (IT)	46.2	3.37	35.1	33.0	46.5	74	1	1.40
Lithuania (LT)	16.9	7.81	9.5	37.8	59.1	63	1.509.0	2.83
Luxembourg (LU)	28.9	4.34	37.3	27.3	57.2	88	105.440.4	4.04
Latvia (LV)	19.6	5.64	14.8	37.8	58.8	72	231.3	1.73
Malta (MT)	69.6	3.41	51.0	26.8	40.0	67	326.4	1.26
Netherlands (NL)	31.9	4.02	19.0	19.9	69.7	80	3.561.9	1.30
Norway (NO)	25.7	4.62	54.4	33.6	73.0	74	2.230.9	3.25
Poland (PL)	17.8	4.54	15.0	34.4	53.1	60	1.064.0	0.75
Portugal (PT)	67.1	3.41	19.3	38.3	60.7	77	129.599.6	1.49
Romania (RO)	30.3	3.21	32.8	24.7	51.0	63	399.0	1.70
Sweden (SE)	25.3	4.04	68.4	33.2	70.3	72	18.131.2	3.22
Slovenia (SK)	20.9	3.78	17.2	34.9	62.0	80	215.077.0	2.11
Slovakia (SI)	16.3	3.27	29.7	35.3	52.9	80	12.510.0	1.68
United Kingdom (UK)	24.1	4.21	27.5	19.2	64.4	54	1.272.2	1.82
Mean/ EU-average <sup>32</sup>	29.2	4.14	30.1	31.4	59.3	72.6	4.1625.8	2.3

Source: EU-SILC 2010, own calculations. Comments: <sup>1</sup>Italy has no nation-wide minimum income scheme. The data the SaMip-database provides refer to a locally run scheme. They are not representative for the whole country and are therefore treated as missing.

<sup>31</sup> The precise definition of the variables is described in Tab. 7 in the appendix.

<sup>32</sup> EU-27 except Cyprus, Greece and Ireland plus Norway.

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