



**Work related well-being.
The case of knowledge workers in
Poland**

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Abstract

The presented thesis tackles the subject of well-being at work, investigating in detail the link between the employment flexibility and job insecurity, organizational justice and their association with job satisfaction of the employees, as well as work-family balance. The research strives to unravel the role of these aspects of job environment and work-related perceptions among knowledge workers in Poland. The focus on this particular group brings a unique contribution to the existing body of research by providing insights on the actors in the fast growing knowledge sector as well as by exploring situation on one of the most employment-flexible labour markets in the European Union. The thesis is divided into four parts.

In the first part, the research aims to show how job insecurity among various contractual groups impacts job satisfaction of knowledge workers compared to the remainder of the workforce. The analysis showed that job insecurity is the most influential factor in the model of job satisfaction for all employees. However, this impact differs depending on the employment arrangements. Flexible workers are much more vulnerable to job insecurity in terms of job satisfaction.

In the second part, the influence of one of the dimensions of organizational justice, namely interpersonal justice, on job satisfaction among employees with various employment contracts is addressed. The analysis showed that interpersonal injustice significantly diminishes job satisfaction both among the knowledge workers and other workers. However, in the case of the knowledge workers, this effect is significantly smaller among employees with temporary contracts. The mitigating effect of temporary employment is not present among the remainder of the workforce. The results suggest that permanent knowledge workers are more exposed to the adverse impact of the interpersonal injustice.

In the third part, occupational unemployment is analysed as an antecedent of job insecurity. The results of the investigation showed that job insecurity among temporary workers in occupations with low unemployment does not differ significantly from job insecurity among permanent workers. Occupational unemployment adversely affects

only temporary knowledge workers, while permanent knowledge workers are uninfluenced.

In the final part of the thesis, the relation between work and family life is explored. The link between long working hours, work-related problems, the use of ICTs at home for work-related task and problems in familial life is analysed. The research showed that the relation between the working hours and familial problems is ambiguous and can depend on the work perception – positive work perception mitigates the negative effect of working long hours. Additionally, the study has shown that dealing with the work-related issues at home by means of ICTs can increase the family-related problems.

The conclusions provide a valuable source of insights both for the employers and policymakers. The study presents the main drivers of workers' satisfaction and well-being. Such knowledge might be invaluable in attracting the potential employees and keeping them motivated. On the other hand, the analysis exposes vulnerabilities of the analysed groups, showing who should be provided a greater institutional protection and in which areas.

Keywords: Well-being • Knowledge work • Job satisfaction • Job security • Organisational justice • Interpersonal justice • Occupational Unemployment • Work-life balance • Work-family balance

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To the Reader

Given that the dissertation is published as a collection of articles, the files herein are in the PDF format created from the original publications. As a result, the dissertation was arranged in a way that each of the papers constitutes a separate chapter. The page numbers within the chapters correspond to the page number of the volume in which the article was originally published.

CHAPTER I

INTRODUCTION

1 Motivation

Majority of the population spends a great part of their adult life at work. Therefore, having a fulfilling work life with respectable working conditions is crucial to overall quality of most people's life. For this, numerous aspects of working life have been subject of hitherto research. Researchers analysed the physical working conditions (Eurofound, 2017), job quality (Charlwood & Green, 2011), work intensity (Kivimäki et al., 2015) and other aspects of work environment. Alongside the objective measures, the perceptions of employees about their work and work-related well-being i.e. job satisfaction (Boswell, Shipp, Payne, & Culbertson, 2009), job burnout (Maslach, Schaufeli, & Leiter, 2001) or work engagement (Bakker & Demerouti, 2008) have been widely investigated. This ample body of research however does not fully accommodate the rapid changes in the nature of work. Firstly, labour markets are moving towards the model of knowledge economy. Secondly, jobs are becoming more precarious with a raise of flexible employment arrangements, sometimes taken to the extreme as in the case of the gig economy. The objective and subjective measures of work-related well-being require further investigation that would shed light on workers' well-being in the face of those changes.

The presented thesis strives to provide a unique contribution to the existing research, by focusing on workers whose jobs represent the changing nature of labour markets. Namely, the study presents insights centred around the work-related well-being of a specific group: knowledge workers in Poland. Knowledge sector is relatively new, yet continuously dynamically expanding element of the economy. The group of knowledge workers is growing in numbers and importance. However, there are few analyses focusing on the subject of their well-being, in particular well-being at work. The literature on the topic is even more scarce in the context of Eastern European countries. Additionally, the Polish labour market is particularly interesting, as it is characterised by distinguishably high rate of temporary workers and self-employed without employees. In fact, Polish labour structures allow working under civil-law contracts that are considered the most precarious working arrangements for the employees. It is also characterised by high percentage of bogus self-employment. Thus, study focused on

Polish workers would provide insights that might serve as future lessons for countries in which the precarious working arrangement is not yet as spread.

Work-related well-being - focal concept to the study, can be defined as "part of an employee's overall well-being which is determined primarily by work and which can be influenced by workplace intervention" (Juniper, B., White, N., & Bellamy, 2009). It has been conceptualised to represent several dimensions, capturing both its cognitive as well as affective aspects. As proposed by Warr (2002), work-related well-being can be depicted on four axes, of which one, *pleasure-displeasure* represents the cognitive component represented by job satisfaction. The remaining three axes: *anxiety-comfort*, *enthusiasm-depression* and *fatigue-vigour* are associated with the work-related affect and can be represented by the measures of occupational stress, work engagement and job burnout, respectively.

This study focuses on the cognitive aspect of work related well-being, i.e. job satisfaction. It also pinpoints antecedents of work-related well-being that are especially relevant given the characteristics of knowledge workers in Poland, as well as the specificity of labour market they are part of. Namely, it focuses on job security, organizational justice and work-family balance. Additionally, these concepts are analysed in the context of employment flexibility - one of the main aspects to be considered when analysing work-related well-being in Poland, as it is characterised by high percentage of temporary contracts and bogus self-employment, evoking an ongoing public debate regarding precariousness of such arrangements. The topics related to the employment flexibility and precarious working conditions, that are also extensively analysed in the thesis, are job security and organizational justice. Finally, the study touches upon the matter of work-family balance, an issue especially concerning knowledge workers whose boundaries between work and family life are often blurred.

There are number of reasons to focus the study of knowledge workers on job satisfaction. Firstly, there is an indication of reciprocity between job satisfaction and life satisfaction. That is to say that persons who are satisfied with their jobs tend to have higher subjective well-being and *vice versa* (Judge & Watanabe, 1993). Diminished job satisfaction may also adversely impact the mental and physical health of workers (Locke, 1976). From the employer's perspective, guaranteeing job satisfaction among

employees is important for a variety of reasons, including the prevention of high turnover and absenteeism within organizations (Lévy-Garboua, Montmarquette, & Simonnet, 2007; Locke, 1976). As job satisfaction plays a central role in the good functioning of the organization and in the quality of life of an individual, it is vocal to recognize not only important consequences of job satisfaction but also its antecedents.

One of the predictors of job satisfaction considered in this study – job security, stands out as central to both: organisational outcomes such as performance (Cheng and Chan 2008) and personal well-being including mental health (Bernhard-Oettel, De Cuyper, Schreurs, & De Witte, 2011; Sverke, Hellgren, & Näswall, 2002). The hitherto research recognizes three categories of factors that influence job security: macro-level factors, individual characteristics (including job characteristics and demographic variables) and personality traits (De Witte, 2005). The unemployment rate, in particular, is considered to be a strongly influential macroeconomic factor determining job insecurity. The studies usually take the regional or country-level unemployment rate as a potential determinant of job security. However, the presented thesis proposes a novel, alternative approach to analyse the impact of this factor. Namely, unemployment is considered on the level of occupations. As occupational groups gather employees with similar personal and job characteristics, they have a greater discriminating power.

Another intangible working condition analysed in the presented study that is relevant for work-related well-being is the organizational justice. Organisational justice is one of the predictors of job satisfaction (Cohen-Charash & Spector, 2001; Kernan & Hanges, 2002). It can also bring some favourable outcomes such as job performance (Wang, Lu, & Siu, 2015) or organizational citizenship behaviour (Brockner, Wiesenfeld, Siegel, Bobocel, & Liu, 2015).

Given the characteristics of the Polish market, the relationships between the mentioned dimensions are analysed in the context of employment flexibility. Poland is the country that has had the highest percentage of temporary contracts in Europe for five consecutive years between 2012 and 2016 (in 2017 it came second, after Spain). It has also one of the highest percentage of own-account workers: self-employed persons without employees. In fact, temporary workers and own-account workers together make up over a third (34% in 2017) of total employment in Poland, making it a country with the highest share of workers with flexible contract arrangements (European

Commission, 2014a, 2014b). Prevalence of civil law contracts widely referred to as junk contracts, see e.g. Wojciechowski (2015) and bogus self-employment (Kwiatkiewicz, 2008) is a frequent topic of public debates in Poland. Taking the characteristics of Polish labour market into account, the analysis of job satisfaction and job security needs to be performed in the context of contractual arrangements. For this, the presented analysis strives to highlight the situation of temporary and own-account workers – group that in total constitutes over a third of employment in Poland (European Commission, 2014a, 2014b). The study explores how workers with different employment contracts are influenced by job insecurity or interpersonal justice in terms of job satisfaction. The thesis also investigates the impact of unemployment in occupations on the perception of job insecurity among workers with different contractual arrangements.

Finally, to provide the entire perspective on the work-related well-being, one needs to consider the impact that job has on the individual's private life. That is especially important as the boundary between work and private life becomes blurrier and these two spheres continuously intertwine (Currie & Eveline, 2010). The further mingling of work and private life is enabled by the information and communication technologies (ICTs), that allow uninterrupted connectivity with the work environment. For this, the study proposes insights to the nature of work-family conflict among Polish workers. As work-family dynamics is more likely to directly depend on immediate working conditions, rather than employment arrangements, including type of contract, the employment flexibility was not analysed in the final part of the study.

2 Theoretical framework

2.1 Job satisfaction

According to discrepancy theory, proposed by Edwin Locke (1976), job satisfaction is a: “pleasurable emotional state resulting from the perception of one's job as fulfilling or allowing the fulfilment of one's important job values, providing these values are compatible with one's needs. (Values refer to what one considers beneficial, whereas needs are conditions actually required for one's well-being.)”. Job satisfaction is a

measure of the gap between an individual's ideal job, where all his or her values and needs are fulfilled, and the actual job position that he or she has. The high discrepancy between the reference and the actual job results in the lower job satisfaction. An important aspect of this theory is that individuals differ in valuing various job facets, giving them different importance. The effect of the discrepancy between the ideal level of a certain job aspect (e.g. number of working hours) and its actual level on job satisfaction is larger if that aspect is more important for an individual. Also, the influence of discrepancies within job facets on job satisfaction may differ in nature. That is to say that the relationship between some values and job satisfaction is linear.

A good example of this kind of value is pay. Usually, the bigger one's salary, *ceteris paribus*, the more satisfied he or she is. On the other hand, it is claimed that for some job facets the relationship with job satisfaction is bell-shaped. The bigger the discrepancy between the ideal scenario and reality, no matter if it is a deficit or surplus, the lower the job satisfaction. In the discrepancy theory, values are explicitly separated from expectations. Expectations are what one thinks will occur in the future. These might, but not necessarily do coincide with what is wanted (Locke, 1969). A concept similar to the discrepancy theory, but one that focuses rather on expectations is the experienced preference theory (Lévy-Garboua & Montmarquette, 2004). This takes past employment as a job of reference rather than the ideal job.

2.2 Knowledge economy and knowledge work

Today's developed economies are facing a rapid shift towards the post-industrial model of knowledge economy. The dynamics of occupational change is fostered by technological advancement and automation (Brynjolfsson & McAfee, 2011).

Several trends have been explored by researchers in the field of occupational change. Among others, the job polarisation of labour markets has been recognised in both the United States (Autor & Dorn, 2013; Autor, Katz, & Kearney, 2009) and Europe (Goos & Manning, 2007; Goos, Manning, & Salomons, 2009). Job polarisation is understood as the expansion of high-paid and low-paid employment accompanied by the decline of middle-wage, middle-skill jobs. The most favoured hypothesis to explain this

phenomenon is the diminishing demand for routine-task occupations, as workers in these occupations can be easily replaced with automated solutions.

According to some authors, the polarising trend prevailed in the 1990s, but it is not necessarily going to continue in the new millennium. The routine-task professions are no longer the only ones to face the risk of automation (Brynjolfsson & McAfee, 2011). Frey and Osborne (2013) presented an assessment of the computerisation probability of different occupations. According to their analysis, low-skill, low-wage occupations are the most susceptible to computerisation. Although the authors do not specify an exact time span in which the automation may occur, they suspect that "high-risk" occupations might be automated within one or two decades.

On the other hand, Oesch (2013), in a study of five European countries, did not observe a job polarisation trend in Europe at all. Instead, he discovered an upgrading trend in the European employment structure. According to his analysis, "upper-end" occupations, such as managerial and professional positions, grew in the past two decades. However, the growth did not occur at the cost of lower-skilled professions, as no significant change in unemployment rate for this type of professions was observed.

Conforming to the presented perspectives, the group of knowledge workers defined as individuals whose work requires high levels of creativity, intellectual skills and theoretical rather than purely contextual knowledge (Warhurst & Thompson, 2006) grows and will continue to grow in importance. By and large, knowledge workers are the most demanded category of employees (CEDEFOP, 2012; CEDEFOP, 2015). They are pillar of knowledge societies as they process, generate and disseminate information and knowledge to stimulate learning, invention and growth (Hargreaves, 2003).

The Warhurst's and Thompson's definition of knowledge workers, although accurate and based on the nature of job content itself, is problematic in terms of operationalisation, especially when dealing with large-scale survey data. Alternative approaches focus on occupational or educational background of individuals. For instance, Drucker (1993) defines knowledge workers as "professional, managerial and technical people". On the other hand, the educational approach classifies knowledge workers by their educational attainment. Either of these two approaches used in separation is susceptible to errors. The job content of a manager of a corner shop or a

university graduate working as a bartender might not fall under the category of knowledge work. Yet, one of them would be categorised as knowledge workers should solely occupational or only educational approach be used for this classification. The solution to minimise (but not eliminate) such misclassifications is to use both occupation and education of individuals as the categorizing factors. In line with this approach, Brinkley(2006) describes knowledge workers as individuals with high level skills indicated by higher education or equivalent qualifications who perform tasks that require expert thinking and complex communication skills with the assistance of computers. Given this definition, to operationalise the concept of knowledge work on might include an additional condition of using ICTs in everyday work to reflect the complexity the job entails. The undeniable advantage of combining the occupation and education to operationalise knowledge work is the widespread use of such approach both in the research studies and macro-level accounts. Making use of a such a common tool, allows better benchmarking and comparison of results across the studies.

Although the knowledge economy is growing, the subject of work-related well-being in the context of knowledge workers seems to be a secondary topic (Engelbrecht, 2011). However, providing sustainable working conditions, also in knowledge economy, is crucial for maintaining a fruitful working relationship with workers. Together with the shift to the knowledge economy model, the main aspects of the work nature have changed. Thus, the research on work-related well-being needs to be adapted, focusing on the aspects of well-being that are the most relevant for knowledge workers. The presented study focuses on knowledge workers as pillars of information and knowledge society and analyses aspects of work-related well-being that are relevant for this group.

2.3 Employment flexibility

Labour market flexibility can be defined as the market's ability to adapt and react to changing conditions by regulating the amount of labour either by changing the number of people employed or adjusting, among others, the working time, the number of tasks or their variation. The former type flexibility is often denoted as employment flexibility (Beatson, 1994).

Employment flexibility is reflected by the type of contracts used in employment. The three general categories of contractual arrangements are permanent contracts, temporary

contracts and self-employment. Temporary employment has been proven to be correlated with job insecurity (De Witte & Näswall, 2003). In fact, some researchers (Pearce, 1998) argue that temporary employment is inevitably associated with job insecurity and therefore may serve as its indicator. Yet, although the two are correlated, temporary employment is not inevitably characterised by job insecurity. A crucial question with respect to this issue is if the temporary nature of the contract is voluntary or imposed (De Witte & Näswall, 2003).

The analysis of predictors and components of work-related well-being in the context of employment flexibility is especially relevant in the case of Poland, the European country with one of the highest percentage of temporary workers. At the same time, statistics show that majority of temporary workers agreed to these type of employment contract as they could not find job that would offer permanent contract (European Commission, 2018). In the Polish labour market, apart from using the temporary contracts regulated by Labour code, employers often establish employment relationship with employees via civil law contracts, not regulated by Labour code. Such contracts are widely referred to as junk contracts (Wojciechowski, 2015) and are considered the most precarious form of employment in Poland. The precariousness of such contracts not only entails lack of job stability and unregulated relationship with the employer, but also the financial insecurity and risk of poverty in the future due to very low levels of pension benefits they entitle to (Oczki, 2013).

Self-employment, in particular own-account work: self-employment without employees, is another relatively popular type of flexible employment in Poland. Although it is very difficult to provide statistics on bogus self-employment, it is estimated that as much as a third (OECD, 2014) of Polish self-employed fall under the definition of bogus self-employment - employment that would usually meet the legal definition of employee, but is registered as self-employed (Hatfield, 2015). According to statistics provided by Central Statistical Office of Poland, in the end of 2014, around 7% of all workers were employed under atypical forms of employment understood as civil law contracts or bogus self-employment (Główny Urząd Statystyczny, 2016). An overwhelming majority—around 80% of them were imposed such an arrangement.

The prevalence of temporary and atypical employment in Poland and the fact that these employment forms are often imposed on the workers, leads to a conclusion that in the

case of Polish labour market, the work-related well-being predictors and components inevitably need to be analysed in the context of employment flexibility.

2.4 Job insecurity

Job insecurity has been defined in number of various ways in the last few decades of research (Shoss, 2017). Yet most, if not all of the definitions from “perceived powerlessness to maintain desired continuity in a threatened job situation” (Greenhalgh & Rosenblatt, 1984) to “employees’ perceptions about potential involuntary job loss” (Ellonen & Natti, 2015), are all based on the same underpinning factors: the subjectivity of the phenomenon and the involuntariness of the threat (Sverke & Hellgren, 2002). The job insecurity may refer to the loss of job itself (quantitative job insecurity) or to loss of job feature or impaired quality of employment relationship (qualitative job insecurity) (Hellgren & Sverke, 1999). However, majority of the studies focus on the quantitative job insecurity.

Job insecurity has been named a work stressor that could lead to negative outcomes in terms of both physical and mental health, as well as general well-being. Concretely, it is one of the important predictors of work-related well-being. In fact, it has been shown to influence both cognitive (job satisfaction) and affective (burnout, work engagement) components of work-related well-being (Witte, Pienaar, & Cuyper, 2016). Interestingly, the threat of job loss can have more severe in consequences than the certainty about the layoff (Dekker & Schaufeli, 1995).

2.5 Organizational justice

The organizational justice, refers to the perception of fairness within the organization. In the literature four distinct dimensions of organizational justice are distinguished: distributive, procedural, interpersonal and informational justice.

Initially, the considerations about fairness in the workplace limited solely to the discussion about fairness of outcomes distribution - the distributive justice. Probably the best known theory explaining the mechanisms of distributive justice is the equity theory (Adams, 1966). According to this theory, workers are primarily interested not in the

absolute value of their outcomes, but they find it important, if they are distributed in a fair manner. To determine if outcome is fair, workers compare ratio of their inputs (e.g. education, experience, intelligence, etc.) to outcome with ratio of inputs to outcome of others (usually co-workers).

A decade later, the domain of organizational justice research has been widened by the notion of procedural justice (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). The interest in procedural justice stems from the idea that workers are not only concerned with the just outcomes, but also with the transparency and fairness of the procedures in which they were established. In particular, employees consider a procedure as fair when they can control it in some way (e.g. present their arguments). If this kind of control is provided, they are willing to give up the control at the decision stage. This kind of procedure was denoted as “fair process” or “voice” effect (Colquitt et al., 2001).

The most recent addition to the concept of organizational justice is the interactional justice introduced in the 1986 (Bies & Moag, 1986). Interactional justice pertains to the aspects of the communication between the management and the recipient of the justice (Cohen-Charash & Spector, 2001). An alternative conceptualization of interactional justice was proposed by Greenberg (1993). He distinguished two separate factors within the interactional justice: interpersonal justice and informational justice. The interpersonal justice reflects the degree to which an employee is treated with dignity, courtesy and respect by authorities or third parties involved in executing procedures or determining outcomes; the informational justice focuses on the degree to which relevant information about the reasons for using certain procedures or distributing outcomes in a certain fashion is shared with employees. Although interpersonal and informational justice were initially introduced as two aspects of interactional justice dimensions, scholars began to argue they should be separated and treated as distinct dimensions of organizational justice (Colquitt et al., 2001). The four-factor model of organizational justice showed to have a better fit than the model with three dimensions.

2.6 Work-family balance

The approaches to work-family balance available in the literature can be divided into two categories. The first category defines it by one sphere influencing the other, and

vice versa (Pichler, 2008). Such influence is referred to as spill-over. One can experience both positive (enrichments) as well as negative (conflicts) spill-overs between the two spheres (Clark, 2000). The spill-over models in fact focus on work-life balance by investigating the absence thereof. The literature sources suggest that individuals are more aware of work-family balance in the case of its absence (Guest, 2002). The second category of approaches to work-family balance takes a more holistic view and focuses on overall satisfaction with how time and attention is allocated between the two spheres or effectiveness of participation in both work and family life (Wayne, Butts, Casper, & Allen, 2017).

In general, the measures of work-family balance can be divided into objective and subjective ones. Among objective measures one can distinguish: normal weekly working hours, evening and weekend work, working overtime on short notice, free time, family roles and others. The subjective indicators usually measure self-reported balance, conflict or interference between the two spheres. Often the objective and subjective measures do not converge. Although a considerable correlation between working hours and self-reported work-family balance is usually reported, it is not sufficiently high to use these two measures interchangeably. It brings a question about how well objective criteria can serve as indicators of subjective experience and whether one can rely on subjective accounts as valid indicators of balance without some evidence of others (Guest, 2002). A plausible solution to these issues is to combine objective and subjective measures. Another technique to make the measure of work-family balance more robust is to use the reports not only from the individuals in question, but also accounts of persons from their closest environment. The ideal situation would be to have opinions of persons from both realms: a family member and a co-worker or a superior.

Another issue stressed in the literature is the fact that the dichotomy assumption in relation to the subject of work-family balance is deeply flawed (Currie & Eveline, 2010). The boundaries between the work and the family zone are being constantly blurred, and with the ubiquitous information and communication technologies this process is progressing even faster.

3 Research objectives and questions

The aim of the thesis is to reveal important links between the employment flexibility, job security, organizational justice and job satisfaction, as well as to shed a light on quality of coexistence of work and family life. The goal of the study is also to uncover meaningful differences between the group of knowledge workers compared with those working in other occupations. The study is also enriched by the analysis of the macroeconomic factor, i.e. occupational unemployment and its impact on one of the focal interests of the thesis – the subjective feeling of job insecurity. To conduct the analysis, descriptive statistics and econometric modelling was deployed to capture significant relations between the variables.

The thesis, arranged in four papers, focused on answering a number of research questions, presented below:

Paper 1. *Employment flexibility and job security as determinants of job satisfaction: the case of Polish knowledge workers*

- a. Is job security, in particular financial security, a determining factor that positively impacts job satisfaction, regardless of the type of employment contract?
- b. Are knowledge workers more likely to be satisfied with a job that has a more flexible employment arrangement?
- c. Is job satisfaction of knowledge workers less influenced by a lack of job security than the job satisfaction of other workers?
 - i. Is the job satisfaction of knowledge workers less influenced by financial uncertainty than the job satisfaction of other workers?
 - ii. Is the job satisfaction of knowledge workers less influenced by work overload than the job satisfaction of other workers?
 - iii. Is the job satisfaction of knowledge workers less influenced by hostile relations at work than the job satisfaction of other workers?

Paper 2. *Job Satisfaction of Knowledge Workers. The Role of Interpersonal Justice and Flexible Employment*

- a. Is job satisfaction of knowledge workers more strongly adversely affected by lack of interpersonal justice than job satisfaction of other workers?
- b. Is job satisfaction of other workers (i) and knowledge workers (ii) with flexible working contracts less affected by interpersonal injustice?
- c. Is the negative effect of interpersonal injustice on job satisfaction mitigated by employment flexibility to a larger extent in the group of knowledge workers than the other workers?

Paper 3. *Precarious Knowledge Work? The Combined Effect of Occupational Unemployment and Flexible Employment on Job Insecurity*

- a. Does higher unemployment in occupations increase job insecurity among knowledge workers?
- b. Does high unemployment in occupations have more influence on job insecurity among flexible knowledge workers than among permanent knowledge workers?
- c. Are other workers with flexible contractual forms more likely to feel insecure due to high unemployment in their occupation than knowledge workers with flexible contracts?

Paper 4. *Work-Family Balance of Knowledge Workers In Poland*

- a. Are family problems more probable among workers who work long hours?
- b. Can the adverse impact of working long hours be mitigated by the positive work perception?
- c. Are family problems worsened by the extensive use of ICTs at home for professional reasons?

4 Methodology

4.1 Sample

Throughout the dissertation, the empirical quantitative research is conducted based on secondary data source: Social Diagnosis 2000–2013: Objective and Subjective Quality of Life in Poland (Social Monitoring Council, 2013). Social Diagnosis is a longitudinal

study supporting the analysis of the conditions and quality of life of Poles. The dataset is representative on a national and a regional level (Czapiński & Panek, 2013).

The data for the Social Diagnosis survey have been collected by the Polish Central Statistical Office. In both waves two-stage stratified sampling was applied to find households that took part in the surveys. Firstly, households were stratified by voivodeships and then within voivodeships, by the size of agglomeration. The first stage sampling units were statistical regions (covering at least 250 households), and rural strata statistic circuits. In the second stage two households within each of the layers formed in the first stage of sampling were drawn systematically from a randomly ordered list of households.

4.2 Operationalisation of the main constructs

4.2.1 Knowledge work

Throughout all the four papers, the knowledge workers variable was constructed with three conditions: Educational attainment: higher education (Bachelor's degree or higher); Occupation: working in the top three occupational classifications as defined by International Standard Classification of Occupations (ISCO) - managers, professionals or associate professionals; Use of ICTs: Use (at least once) of the Internet to collect materials necessary for education or work. Only workers fulfilling all three of the conditions were included in the category of knowledge workers.

4.2.2 Job satisfaction

Job satisfaction was measured in papers 1 and 2. In both of the papers, a global measure of job satisfaction was used (*To what extent are you satisfied with your job?*), as opposed to satisfaction from job features. A six-level variable was aggregated into two levels. Namely, levels '*Very Satisfied*' and '*Satisfied*' have been aggregated to the level '*Satisfied*', whereas levels '*Quite satisfied*', '*Quite unsatisfied*', '*Unsatisfied*', '*Very unsatisfied*' have been aggregated to the level '*Unsatisfied*'.

The rationale behind grouping the levels into two categories is that the main goal in the analysis is to focus on the strength and the sign of the correlation between the concepts of interest and the actual feeling of being satisfied, rather than to compare the influence of these factors on particular levels of the job satisfaction variable available in the dataset.

4.2.3 Job insecurity

Job insecurity is a construct dealt with in two papers of the dissertation: papers 1 and 3. In the first paper, the job insecurity is operationalised using three separate indicators: uncertainty of income source (*In the recent months, you have felt your source of income is uncertain and unstable?*); excessive workload (*In the recent months, you have felt overburdened with work duties which you have been unable to cope with?*); unjust treatment at work (*In the recent months, you have been unfairly treated by others at work?*). Initially, the variables could take one of four values: *Never*, *Sometimes*, *Often* or *Not Applicable*. These levels were aggregated into two categories: *Yes* and *No*. In the case of the first variable *Not Applicable* was treated as a missing value. In the case of the latter two measures, *Not Applicable* was aggregated together with *Never*.

None of the three variables measures perceived job insecurity per se, but three different aspects of it. The first item concerns financial insecurity. In the job insecurity framework proposed by Greenhalgh and Rosenblatt (1984), it represents the severity of the threat of job loss. In particular, it can be interpreted as the severity of the threat of losing a specific job feature, namely pay. Two other variables selected for the job security scale represent psychological aspects of job insecurity, which can be regarded as intangible symptoms of the threat of job loss. Within the mentioned framework, the second item—an overload of duties that one cannot cope with can be classified as the source of the threat. A worker overwhelmed by the number of duties may treat his or her perceived inefficiency as the potential threat of job loss. The third item - the feeling of being treated unjustly at work, represents the sense of powerlessness. According to Greenhalgh and Rosenblatt (1984), the sense of powerlessness would be intensified if there were no strong norms of fairness in the workplace and superiors were perceived as arbitrary in their evaluations.

In the third paper however, job insecurity was represented solely by the first of the indicators used in the first paper, namely the uncertainty of income source. Although the use of the two other indicators strived to provide insight in the relationship between the source of the threat and the feeling of powerlessness, the third paper deals with job insecurity as an outcome. Thus, an indicator that is the most closely associated with the threat of job loss was of the interest in this case.

4.2.4 Employment flexibility

Papers 1 to 3 deal with different dimensions or predictors of work-related well-being, depending on employment flexibility, represented by type of contractual arrangement. Three types of contracts are considered in the analysis: Permanent Contract, Temporary Contract and Own-account work. The first category applies solely to persons with permanent contracts. The second category encompasses fixed-term contracts for a period of over 1 year, part-time contracts, short-term contracts, work trial contracts, hired work with a written contract and hired work with a spoken contract or without a contract. The own-account work category includes self-employed persons without employees. The self-employed persons with employees (employers) were excluded from the analysis as the employment flexibility of this group is based on the nature of the occupation rather than is imposed by the demands of flexible labour markets.

4.2.5 Interpersonal justice

Interpersonal justice reflects the degree to which an employee is treated with dignity, courtesy, and respect by superiors or third parties. Paper 2 investigates interpersonal justice by its opposite - interpersonal injustice. It is operationalised by a single measure: unjust treatment at work (*In the recent months, you have been unfairly treated by others at work*). Although in the paper 1 this item provides the proxy to the powerlessness aspect of job insecurity, it fairly accurately represents interpersonal injustice. The measure has been dichotomised, aggregating the levels 'Often' and 'Sometimes' into one level: 'Yes', whereas levels 'Never' and 'Not Applicable' into level 'No'.

4.2.6 Work-family balance

The final paper in the dissertation tackles the issue of work-family balance, using the spill-over approach. In order to investigate the spill-overs between the work and family spheres, two separate scales were constructed, each associated with one of the spheres.

From the family life perspective, the familial problems index was constructed, with use of nine items representing self-reported issues in marriage, issues concerning children as well as issues stemming from elderly relatives care. Additionally, one item related with the problems in marriage, reported by the partner was added. The items included in the index are as follows:

	Marriage	Children	Elderly relatives
Self-reported	<p><i>In the recent months:</i></p> <p><i>Your husband's/wife's expectations towards you have been so high you have not been able to meet them</i></p> <p><i>Your husband/wife has spent your shared money in a careless manner</i></p> <p><i>Your husband's/wife's problems have worried you and made your life harder</i></p>	<p><i>In the recent months:</i></p> <p><i>You have had to listen to some complaints concerning you child/children (e.g. at school, from neighbours or other parents)</i></p> <p><i>You have incurred some costs as a result of your child's behaviour</i></p> <p><i>Your child has disregarded you and your help, advice and instructions</i></p> <p><i>You have felt you are losing control over your child/children</i></p>	<p><i>In the recent months:</i></p> <p><i>Did you feel responsible for ensuring the care and well-being of elderly relatives</i></p> <p><i>The state of health or mental state of an elderly relative concerns me</i></p>
Reported by spouse	<p><i>In the recent months your husband's/wife's problems have worried you and made your life harder</i></p>		

All of these indicators could take one of four levels: 'Often', 'Sometimes', 'Never', 'Not applicable'. The two latter levels have been equalized. The results for each individual within the family-related indicators have been summed up. Subsequently, a dichotomous variable “family problems” has been constructed, using mean of the mentioned sum as a cut-off point.

To capture work sphere, the subjective work-related problems measures were combined with the working hours. For the former, three different items were used:

- *In the recent months you have felt your work is too tiresome, dirty or dangerous*
- *In the recent months you have felt overburdened with work duties which you have been unable to cope with*
- *In the recent months you have been unfairly treated by others at work*

Similarly as in the family-related variables, measures could take one of four values: 'Often', 'Sometimes', 'Never', 'Not applicable'. Also in this case, level 'Not applicable' has been aggregated together with 'Never'. Also, in the case of the work problems indicators, the scores have been summed up. Afterwards, a binary measure has been constructed on the basis of the mean of the resulting sum.

To capture the joint impact of the long working hours and feelings about the work, a new variable has been derived, drawing on the classification presented by Peiperl & Jones (2001). The variable *worker type* has four levels 'Carefree workers' – workers who do not report problems at work and work on average 45 hours a week or less, 'Frustrated workers' – workers who report problems at work and work on average 45 hours a week or less, 'Workaholics' – workers who do not report problems at work and work on average more than 45 hours a week, and 'Overworkers' – workers who report problems at work and work on average more than 45 hours a week.

5 Papers as components of dissertation

5.1 Compendium of publications

The dissertation is arranged in a collection of four papers that have been peer-reviewed and published in journals that are indexed in international databases. First two papers engage in the analysis of job satisfaction and their antecedents, the third paper drills down to explore the impact that unemployment in different occupations has on the job insecurity. The fourth paper takes on a different aspect of work-related well-being, i.e. work-family balance.

The first paper: *Employment flexibility and job security as determinants of job satisfaction: the case of Polish knowledge workers* was published in *Social Indicators Research*, in the issue 126(2) in 2016. *Social Indicators Research*, established in 1974, is a leading journal on problems related with different areas of quality of life. The journal is indexed in Journal Citation Reports (JCR) - Social Sciences Citation Index created by Thomson Reuters. In 2016 – the year of the paper’s publication, journal was placed in the first quartile of the rank in the category *Sociology*, as well as in the category *Social Sciences, Interdisciplinary*. The journal is also indexed in the SCImago Journal Rank (SJR). In the SJR index *Social Indicators Research* was ranked in the first quartile in the following categories: *Sociology and Political Science*; *Social Sciences (miscellaneous)*; *Arts and Humanities (miscellaneous)* and in the second quartile in the category: *Developmental and Educational Psychology*. *The Employment flexibility and job security as determinants of job satisfaction: the case of Polish knowledge workers* draws on the discrepancy theory of job satisfaction (Locke, 1976) and its derivative – the experienced preference theory (Lévy-Garboua & Montmarquette, 2004). According to the discrepancy theory the level of job satisfaction can be in brief described as the measure of (the reverse of) the gap between at theoretical, ‘ideal’ job and the actual job of an individual. The experienced preference theory augments its predecessor slightly, taking the past job experience, rather than a hypothetical concept, as a point of reference. The key finding of the paper is that job insecurity negatively impacts job satisfaction of both knowledge workers and other workers. Thus, providing employees with a basis for feeling secure is vital for their satisfaction.

The second paper: *Job Satisfaction of Knowledge Workers. The Role of Interpersonal Justice and Flexible Employment* was published in *Polish Sociological Review*, issue 3(199) 2017. The journal is indexed both in JCR (quartile four in the category *Sociology*) and SJR (quartile four in the category *Social Sciences (miscellaneous)*). The journal provides contributions from different areas of sociology. The article *Job Satisfaction of Knowledge Workers. The Role of Interpersonal Justice and Flexible Employment* strives to provide insights on how interpersonal justice impacts job satisfaction. An interesting result obtained during the analysis of the data is that the temporary knowledge workers are affected to a lesser extent by adverse atmosphere at work than knowledge workers with permanent contracts.

The third paper: *Precarious Knowledge Work? The Combined Effect of Occupational Unemployment and Flexible Employment on Job Insecurity* was published in *Journal of the Knowledge Economy* indexed in SJR (quartile 2 in the category *Economics and Econometrics*). The journal is focused on exploring the many facets of the knowledge-based economy, including social, technological and economic aspects of knowledge and innovation. *Precarious Knowledge Work? The Combined Effect of Occupational Unemployment and Flexible Employment on Job Insecurity* tackles the issue of external macroeconomic factors, in this case the occupational unemployment as being influential in shaping of the perception of job security. The analysis showed that in the case of knowledge workers, the job security is affected by higher unemployment in occupations only among the temporary workers, while the own-account and permanent workers are not significantly affected by this macroeconomic circumstance. On the other hand, the job security of all the other workers, regardless of their type of contract, was proven to be negatively influenced by unemployment in their occupations.

Finally, the fourth paper: *Work-Family Balance of Knowledge Workers In Poland* was published in *Mediterranean Journal of Social Sciences* indexed in SJR (quartile 4 in the category *Economics, Econometrics and Finance (miscellaneous)*; quartile 4 in the category *Social Sciences (miscellaneous)* and quartile 3 in the category *Arts and Humanities (miscellaneous)* in the year of paper's publication: 2014). The journal publishes original research in various fields of social science, including psychology, sociology and economics. *Work-Family Balance of Knowledge Workers In Poland* deals with the issue of dynamics between work and familial life of the knowledge workers. The prior research on the topic shows that the amount of time spent at work increases with earnings (Guest, 2002; OECD, 2011). Also, the probability of facing work-life balance problems grows together with the educational status (OECD, 2011; Pichler, 2008). One of the occupational groups that reports the most problems with work-life balance are managers and certain groups of professionals (Ford & Collinson, 2011; Guest, 2002; Shanafelt et al., 2012). For this, the topic is especially relevant for the group of knowledge workers, whose work-life boundaries can be even more blurry as the solutions brought by the ICTs enable constant connection with the work milieu. The research showed that the relation between the working hours and familial problems is ambiguous and can depend on the work perception – positive work perception mitigates

the negative effect of working long hours. Additionally, the study showed that working from home using the ICTs can worsen the family-related problems.

5.2 Justification of the thematic unity

The thesis engages in the extensive analysis of various aspects of work-related well-being of one specific group: the knowledge workers in Poland. Each of the papers included in the below compendium takes a different angle at this broad topic. The analysed measures have been selected to explore aspects of work-related well-being the most relevant for Polish knowledge workers. The analyses have been made taking into consideration various employment arrangements, a factor that is of high importance in the case of Polish labour markets, and, in fact, in the changing labour markets in general. In the first two papers, the focus is made on the levels of job satisfaction and their antecedents, namely job security and interpersonal justice at work. Exploring those two factors is especially insightful when looking at labour market characterised by high rate of temporary work and bogus self-employment. In the third paper, job security of the target group is analysed in further detail. The fourth paper engages in the discourse regarding the relation between the work and the family life. With the omnipresent ICTs there are often no strict boundaries between work and private life of knowledge workers. All four papers follow a similar structure, comparing the group of knowledge workers with the remainder of the workforce.

The analyses conducted for each of the presented papers were based on the same data source, i.e. Social Diagnosis 2000–2013: Objective and Subjective Quality of Life in Poland (Social Monitoring Council, 2013) – a longitudinal study supporting the analysis of the conditions and quality of life of Poles. The use of the same data source in all the papers provides not only thematic, but also structural unity, providing measurement equivalence between the same concepts used in across the papers, e.g. the operationalisation of knowledge workers.

5.3 Summary of dissertation

The presented dissertation is a collection of papers that tackle the issue of work-related well-being in Poland. The four papers are summarised in the table below:

TITLE	JOURNAL	PUBLISHER	ISSUE	INDEXES:(most recent/ year of publication)
Employment flexibility and job security as determinants of job satisfaction: the case of Polish knowledge workers	<i>Social Indicators Research</i>	Springer Netherlands	126(2), 2016	JCR 2016:1.743 SJR 2016: 1.02
Job Satisfaction of Knowledge Workers. The Role of Interpersonal Justice and Flexible Employment	<i>Polish Sociological Review</i>	Polskie Towarzystwo Socjologiczne [Polish Sociological Association]	199, 2017	JCR 2017: 0.103 SJR 2017: 0.103
Precarious Knowledge Work? The Combined Effect of Occupational Unemployment and Flexible Employment on Job Insecurity	<i>Journal of the Knowledge Economy</i>	Springer US	Not yet assigned to an issue, 2018	SJR 2018: 0.48
Work-Family Balance of Knowledge Workers In Poland	<i>Mediterranean Journal of Social Sciences</i>	Mediterranean Center of Social and Educational Research	5(22), 2014	SJR 2014: 0.131

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CHAPTER II

EMPLOYMENT FLEXIBILITY AND JOB SECURITY AS DETERMINANTS OF JOB SATISFACTION: THE CASE OF POLISH KNOWLEDGE WORKERS

Employment Flexibility and Job Security as Determinants of Job Satisfaction: The Case of Polish Knowledge Workers

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Abstract A number of empirical studies have shown a positive influence of employment stability on job satisfaction. Employment stability, usually measured by the type of contract an individual has, may affect one's job satisfaction directly, as well as through its impact on other relative variables, such as job security, since a stable position seems to bring individuals a sense of security. The aim of our research is to investigate the relationships between job security, employment stability and job satisfaction of workers in Poland. In the study, we strive to show how these factors impact knowledge workers and other workers differently. In order to conduct analysis, we propose two logistic models, separate for these two groups, with job satisfaction as a dependent variable and type of contract and three items denoting different dimensions of job insecurity: an insecure source of income, too many duties to cope with and being treated unjustly at the workplace, as independent variables. The robustness of the models has been defended by the introduction of the time dimension. The results show that job insecurity is the most influential factor in the model of job satisfaction for all employees. However, this impact differs depending on the employment arrangements. Flexible workers are much more vulnerable to job insecurities in terms of job satisfaction. Another finding is that the job satisfaction of knowledge workers is more influenced by job security.

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Keywords Knowledge workers · Job satisfaction · Employment flexibility · Job security · Flexicurity · Poland

1 Introduction

Contrary to common opinion, the numerous replicated empirical studies show no direct influence of job satisfaction on productivity (Judge et al. 2001; Locke 1976; Wright and Cropanzano 2000). However, job satisfaction remains an important and influential factor that needs to be studied and analysed.

First of all, job satisfaction is related to life satisfaction. Although some research shows otherwise (Rode 2004), there seems to be a reciprocal relationship between job satisfaction and life satisfaction (Judge and Watanabe 1993; Rain 1991). That is to say that individuals with higher life satisfaction are more satisfied with their jobs, and persons satisfied with their jobs will be in turn more satisfied with life in general.

Furthermore, job satisfaction, or more precisely job dissatisfaction, may have adverse impacts on individuals' physical and mental health and attitudes. The consequences of job dissatisfaction may also include absenteeism and grievances (Locke 1976). Some studies suggest that the residual of the job satisfaction equation represents individuals' propensity to quit their present job position (Lévy-Garboua et al. 2007). This suggests that analysis of this variable may help to get insights into workers' behaviour.

Analysis of job satisfaction includes not only its consequences, but also its causes. Over the years, an extensive number of variables have been proposed as potential determinants of job satisfaction (e.g. Herzberg 1964; Locke 1976; Clark 1997; Clark et al. 1996). Among others, the growing body of research shows a prominent influence of job security (e.g. Origo and Pagani 2009; Fullerton et al. 2011). In times of precarity and uncertainty, job security has become a sought after job feature.

On the other hand, the dynamic changes present in labour markets require flexible solutions, for example flexible employment contracts, often associated with a precarious, insecure job situation—the opposite of job security. In recent years, as an answer to these two conflicting demands, the concept of *flexicurity* has emerged. Flexicurity is a policy that strives to enhance labour market flexibility, ensuring at the same time workers' employment and social security (European Commission 2007). The question is—is flexicurity a feasible policy and if so, is it better, from the point of view of workers, than rigid, secure employment?

The paper investigates the relationships between job security, employment stability and job satisfaction of workers in Poland—the country with the highest percentage of temporary contracts in Europe (European Commission 2013b) and with one of the highest percentage of self-employed persons (European Commission 2013a). In particular, in the analysis we strive to explore how workers with different employment contracts are influenced by job insecurity in terms of job satisfaction. The group of main interest are knowledge workers. Analyses are conducted for this group and compared with the results for the rest of the workers.

It has been proven (e.g. Burón 2007) that the influence of predictors of job satisfaction varies between different groups of workers. Therefore, it is worth disaggregating the analysis of job satisfaction to subgroups of workforce and focusing research on a specific group. Knowledge sector is a relatively new, yet dynamically expanding, element of the

economy. Thus, it seems to be of growing importance to present an analysis focused on the interplay of employment flexibility and job security and how it impacts the job satisfaction of this particular group. Yet, the existing literature on the subject of job satisfaction of knowledge workers—especially in the context of Eastern European countries—remains scant, and none focuses on the subject of flexicurity. The presented paper contributes to the existing body of research by explaining the relationships between employment flexibility, job security and job satisfaction among knowledge workers.

The remainder of the paper is organized as follows. Section 2 presents the theoretical background of the analysis together with the theoretical model. In Sect. 3 research hypothesis are presented. Section 4 describes the data used in the analysis. Section 5 reports empirical model and Sect. 6 gives conclusions.

2 Job Satisfaction: Theoretical Background

2.1 The Discrepancy Model of Job Satisfaction

Job satisfaction has been widely studied for many years. Although the tradition of analysing job satisfaction as such began in the 1930s, the study of attitudes and their influence on productivity goes back to the beginning of the twentieth century (Locke 1976). Since then various theories concerning the meaning of job satisfaction as well as different groups of factors influencing it have been developed.

The trends in the literature have varied throughout the years, giving superiority to different determinants of job satisfaction. Many types of factors, from physical working conditions, such as noise or illumination, through social relations between co-workers and management, and finally to work itself (i.e. the challenge and achievement it brings) have been thought to be the most significant determinants of job satisfaction.

Some theories, such as Herzberg's Motivator Hygiene Theory, divide determinants into psychological factors called *motivators*, which bring job satisfaction, such as achievement, personal growth or recognition, and physical factors, called *hygiene*, which cause job dissatisfaction (Herzberg 1964). Although Herzberg's theory has been acknowledged for stressing the importance of psychological aspects of work, there is little evidence supporting the theory of the dichotomy of the physical and psychological factors (Hackman and Oldham 1976), while some empirical evidence even proves the opposite (Locke 1976).

An appealing view on job satisfaction is the discrepancy theory proposed by Locke (1976). According to his definition, job satisfaction is a: "pleasurable emotional state resulting from the perception of one's job as fulfilling or allowing the fulfilment of one's important job values, providing these values are compatible with one's needs. (Values refer to what one considers beneficial, whereas needs are conditions actually required for one's well-being.)" (Locke 1976, p. 1342). This theory treats job satisfaction as a measure of the gap between an individual's ideal job, where all his or her values and needs are fulfilled, and the actual job position that he or she has. The bigger the discrepancy between the reference and the real job is, the less job satisfaction an individual achieves.

An important aspect of this theory is that individuals differ in valuing various job facets, giving them different importance. The effect of the discrepancy between the ideal level of a certain job aspect (e.g. number of working hours) and its actual level on job satisfaction is larger if that aspect is more important for an individual. Also, the influence of discrepancies within job facets on job satisfaction may differ in nature. That is to say that the relationship between some values and job satisfaction is linear. A good example of this

kind of value is pay. Usually, the bigger one's salary, *ceteris paribus*, the more satisfied he or she is. On the other hand, it is claimed that for some job facets the relationship with job satisfaction is bell-shaped. The bigger the discrepancy between the ideal scenario and reality, no matter if it is a deficit or surplus, the lower the job satisfaction (Locke 1969).

In the discrepancy theory, values are explicitly separated from expectations. Expectations are what one thinks will occur in the future. These might, but not necessarily do coincide with what is wanted (Locke 1969). A concept similar to the discrepancy theory, but one that focuses rather on expectations is the experienced preference theory (Lévy-Garboua and Montmarquette 2004). This takes past employment as a job of reference rather than the ideal job. In this paper we combine the two approaches. As in the experienced preference theory, we allow expectations to be a factor shaping the reference levels of job characteristics. However, we do not require expectations to be shaped by past job experience. Our approach coincides with the discrepancy theory, in the sense that the level of job reference is a theoretical concept. The discrepancy theory, however, refers to an ideal job, whereas we refer to an *expected* job. For simplicity, we will refer to our approach as to the discrepancy theory.

2.2 Theoretical Model

The formal notation of the discrepancy theory is as follows (Burón 2007). Let us assume that the employment e of individual i can be described by K job characteristics:

$$\mathbf{e}_i = \{z_{ik}\}, \quad k = 1, \dots, K$$

Similarly, the job expectations of individual i (\mathbf{e}_i^*) can be characterized by the expected values of K job facets:

$$\mathbf{e}_i^* = \{z_{ik}^*\}, \quad k = 1, \dots, K$$

As explained before, according to the discrepancy theory, job satisfaction is the function of the *expected* job and *actual* job,

$$JS_i = f(\mathbf{e}_i, \mathbf{e}_i^*)$$

In particular, this can be presented as the difference between the utility an individual gets (or expects to get) from real and hypothetical jobs:

$$JS_i = U(\mathbf{e}_i) - U(\mathbf{e}_i^*),$$

where utility function $U(\cdot)$ has a linear form. In the model we assume that the utility function does not differ between individuals, thus $U(\cdot)$ rather than $U_i(\cdot)$. This assumption coincides with the original form of the model. However, in the paper we partially test the assumption, presenting separate models for different groups of individuals: knowledge workers and other workers. Let us denote the difference in utilities between particular job facets v_{ik} , where

$$v_{ik} = U_k(z_{ik}) - U_k(z_{ik}^*)$$

Then, we can present job satisfaction as a weighted sum:

$$JS_i = \beta_1 v_{i1} + \beta_2 v_{i2} + \dots + \beta_K v_{iK} + \varepsilon_i, \quad \varepsilon_i \sim N(0, 1)$$

$$JS_i = \beta \mathbf{v}_i + \varepsilon_i,$$

where ε_i is normally distributed random error with expected value 0, independently and identically distributed (*iid*) between individuals. Job satisfaction is assumed to be a latent continuous value that cannot be measured directly. Instead, binary variable js_i is used, which takes value 0 if the utility from the actual job of an individual is lower than the utility from the hypothetical, expected job and value 1 otherwise:

$$js_i = \begin{cases} 1 & \text{if } JS_i > 0 \\ 0 & \text{if } JS_i \leq 0 \end{cases}$$

According to the model we report job satisfaction if the job meets our expectations or the difference between expectations and reality produces a surplus of utility. For example, if the salary is higher than expected, the utility from the job will exceed the salary from the expected employment. Thus the value of the latent variable js_i will be higher.

2.3 Job Satisfaction and Employment Flexibility: Job Security Mix

An interesting factor that draws growing attention in the analysis of job satisfaction is *employment flexibility*. Labour market flexibility, in the most general terms, is concerned with the market’s ability to adapt and react to changing conditions (Beatson 1994). There are a number of kinds of flexibilities recognized by scholars. Among others, the basic division separates external flexibility (also called external market flexibility or extensive margin flexibility) and internal flexibility (also called internal numerical flexibility or intensive margin flexibility). External flexibility refers to regulating the amount of labour by changing the number of people employed. Internal flexibility is controlling the amount of labour through adjusting the working time or number of tasks of already-employed workers. The first type of labour market flexibility is often denoted as employment flexibility, whereas the latter is referred to as work-time flexibility (Beatson 1994).

Employment flexibility, usually measured by a proxy, i.e. type of contract, may affect one’s job satisfaction directly, as well as together with the impact of other relative variables such as job security. However, some macro-level research shows that in fact a lack of flexibility of contracts (e.g. part-time employment, temporary employment) on a labour market is related to high levels of job insecurity, which is especially prominent among post-socialist EU member states (Fullerton et al. 2011). This could be interpreted as evidence in favour of the flexicurity hypothesis (Origo and Pagani 2009).

Flexicurity is an open concept without strictly designated boundaries. According to the most commonly used definition, flexicurity is a “policy strategy that attempts, synchronically and in a deliberate way, to enhance the flexibility of labour markets, work organization and labour relations on the one hand, and to enhance security of employment and social security—notably for weaker groups in and outside the labour market, on the other hand” (Burroni and Keune 2011). The concept is ambiguous and underspecified which raises doubts about its validity. However, for academic purposes, the flexicurity concept should be used to untangle the merits of the various types of flexibility and security nexuses (Burroni and Keune 2011). One interesting example of the flexibility-security mix is the interplay between employment flexibility and job security.

Job security can be defined as the probability that an individual will keep his or her job. Often, instead of job security, job insecurity is measured. Job insecurity in most general

terms can be defined as the “threat of unemployment” (Witte 2005). Systematic research on the subject of job insecurity, pioneered in the 1980s, suggests that the concept should be operationalised by multidimensional, rather than global, measures. The numerous approaches to the analysis of job insecurity investigate various factors as a part of the concept. The common denominators are two factors: the subjectivity of the phenomenon and the involuntariness of the threat (Sverke and Hellgren 2002). In the first conceptual work on the topic of job insecurity (Greenhalgh and Rosenblatt 1984), a distinction between the *severity of the threat* and *powerlessness*, as dimensions of job insecurity, is proposed. The severity of the threat depends on importance of the loss of a job or a job feature and the subjective probability of the loss occurring. It also encompasses the sources of the threat. The sense of powerlessness, which can exacerbate the perceived threat, can take four forms: a lack of protection, unclear expectancies, an authoritarian environment and the organization’s dismissal procedures.

It is important to understand whether seemingly contradictory job characteristics such as job security and employment flexibility can coexist and how they jointly affect job satisfaction. The literature about the direct influence of employment stability on job satisfaction shows that indeed, a lack of employment stability (seasonal contracts) adversely affects workers’ job satisfaction (Bardasi and Francesconi 2004; Booth et al. 2002). Job security, on the other hand, has been proven to be a significant factor, strongly determining the job satisfaction of workers (Silla et al. 2008). The joint effect of those variables is ambiguous and interesting to investigate.

Microeconomic studies on the joint effects of employment flexibility and job security give empirical evidence proving the significance of self-perceived flexicurity. It has been shown that the negative impact of instability, which is implied by flexible employment, can be compensated for by the high level of job security. A flexible employment-secure job has been proven to be favoured over a permanent insecure job, while no significant differences have been shown between job-secure permanent and job-secure temporary workers (Origo and Pagani 2009).

2.4 Knowledge Work and Job Satisfaction

It has been shown that the influence of employment stability is not equal among different groups of individuals. For instance, in an empirical study conducted on Spanish workers, although the type of contract turned out to be a significant explanatory variable in a regression of job satisfaction, the results lost their significance, when the regression was run only for women (Burón 2007). This finding raises a question about differences between individuals divided into subgroups. Working individuals may be distinguished by individual characteristics (such as age, place of living, marital status), job characteristics (such as economic sector, industry classification) and many others. It is worth disaggregating the analysis of job satisfaction and having a closer look at a specific workforce group. The group discussed in this paper are knowledge workers.

In modern economies the knowledge sector is constantly expanding and the post-industrial model of the knowledge economy is becoming the norm within the more developed countries. Thus, it seems reasonable to divide the analysis of job satisfaction and its determinants between the workers of the relatively new, yet dynamically enlarging sector and individuals working in more traditional occupations.

The differences encountered in the analysis of job satisfaction of men and women seem to evanesce in the case of females with attributes matching the characteristics of knowledge workers. This suggests that this particular group of individuals has specific

expectations diverging from the expectations of other workers. In terms of the discrepancy theory, we can assume that the importance knowledge workers give to various aspects of work does not vary within this group, but differs substantially from the values appreciated by the rest of the workers.

To analyse the job satisfaction in the context of knowledge economy, it is crucial to establish a definition of a knowledge worker. However, a precise and straightforward definition of a knowledge worker does not exist. An occupational approach defines knowledge workers as “professional, managerial and technical people” (Drucker 1993). Another way to define knowledge workers is to specify the content of their job, describing them as individuals whose work requires high levels of creativity, intellectual skills and theoretical rather than purely contextual knowledge (Warhurst and Thompson 2006).

However, this type of conceptualisation is difficult to operationalise due to the scarcity of data about the actual character of the activities individuals carry out at work. For that reason, the occupation-based approach, which is closer to Drucker’s definition of knowledge workers, is often used to operationalise this concept. According to this classification, knowledge workers are persons who work in the top three ISCO occupational classifications (managers, professionals, associate professionals), have high level skills indicated by higher education or equivalent qualifications and perform tasks that require expert thinking and complex communication skills with the assistance of computers (Brinkley 2006). The categories are not exclusive and may overlap.

This occupation-based classification, as well as education-based classification is vulnerable to mistakes, as many of the workers that would be included in these categories usually would not be regarded as knowledge workers (i.e. managers of small firms, higher education graduates not working in the knowledge sector, etc.). The way to minimise the error margin is to classify persons as knowledge workers if and only if they fulfil all three of the above-mentioned classification conditions. The term “knowledge worker” differs conceptually from high-skilled workers in the sense that the latter has a much broader range. According to both presented approaches, knowledge workers are high-skilled by definition. This is a necessary, but not sufficient condition in order to be classified as part of this group. Knowledge workers not only possess certain skills, they also use them to produce, distribute and use knowledge (Davenport 2005).

The advantage of using the occupation-based approach together with the education-based approach is that it is a standard, used in most of the studies, as well as in the macro-level accounts. Thus, applying the three above-mentioned conditions in the study will allow the results to be comparable with outcomes of other studies of similar interest. Due to this, the standard for defining the knowledge workers group has been used in this study. The reference group of workers who do not comply with the characteristics of knowledge workers are referred to as “other workers” throughout the rest of the paper.

2.5 Employment Structure in Poland

The structure of employment in Poland in terms of employment flexibility differs considerably from other EU countries. It is a country with the largest percentage of temporary workers in Europe. Almost 27 % of all employed individuals worked under a temporary contract in the years 2011 and 2013. The EU average for these periods is significantly lower, equal to 14 %. This statistic seems surprising, taking into account that in other post-communist countries temporary employment constitutes a significantly smaller part of total employment (European Commission 2013b).

Poland also has a high percentage of self-employed individuals. With 18.5 % of workers being self-employed, it exceeds the European average by 4 pp and is the state with the fourth highest percentage of self-employed individuals in Europe. This difference stems from the high percentage of own-account workers (self-employed persons without employees) in Poland—14.4 % in 2011 and 13.9 % in 2013, compared to other European countries—the EU average for 2011 and 2013 equals to 9.7 % (European Commission 2013c). The relative number of employers (self-employed workers with employees) in Poland is close to the EU average—4.1 and 4.2 %, respectively (European Commission 2013a). One can conclude that Poland is a country with a relatively low percentage of permanent workers, despite its history. The macro-level data show the Polish labour market is structured in a very flexible way. For that reason the concept of flexicurity of the labour markets, as promoted by the European Commission, is especially relevant in the Polish milieu. In particular, in the case of high employment flexibility it is vital to ensure job security, and, in more general terms, employment security, including the ease of transition between jobs.

Macroeconomic measures are informative, however they do not accurately reflect the actual state of the labour market in terms of flexibility, security and above all their interplay. The study of the flexibility and security nexus, or, in other words, flexicurity, needs to be complemented by microeconomic level analysis. According to the statistics from 2006, Poland is the third least job secure country in Europe (Fullerton et al. 2011). The presented measures suggest a failure to meet flexicurity conditions in Poland. However, little is known about the flexibility-security mix on an individual level in this country. Investigating flexicurity and its effects on job satisfaction at the microeconomic level in a Central European (CEE) country gives a new contribution to already existing literature, which has so far focused mainly on the Western European countries.

3 Hypotheses

The goal of the presented paper is to examine under what conditions workers are more likely to feel satisfied with their jobs and how these conditions differ between knowledge workers and other workers. The main focus of the study is the effect of employment flexibility and job security on job satisfaction. In particular, the objective of the analysis is to verify the following hypotheses:

- H1** Job security, in particular financial security, is a determining factor that positively impacts job satisfaction, regardless of the type of employment contract.
- H2** Unlike other workers, knowledge workers are more likely to be satisfied with a job that has a more flexible employment arrangement.
- H3** The job satisfaction of knowledge workers is less influenced by a lack of job security than the job satisfaction of other workers.
 - a. The job satisfaction of knowledge workers is less influenced by financial uncertainty than the job satisfaction of other workers.
 - b. The job satisfaction of knowledge workers is less influenced by work overload than the job satisfaction of other workers.
 - c. The job satisfaction of knowledge workers is less influenced by hostile relations at work than the job satisfaction of other workers.

One of our goals is to analyse the popular idea of flexicurity and its practical application in the labour market in Poland. In the 2000s, one Polish objective in terms of job market development was to introduce the flexicurity model, as part of the Lisbon Strategy (European Commission 2007). Flexicurity combines the regulations concerning employment flexibility and the social security system that would provide a warranty of employment security. Compared to other European countries, Poland is a country with a high percentage of flexible employment arrangements. There is even a greater difference between Poland and other transition economies.

An interesting question with regards to these macroeconomic statistics is whether the high percentage of temporary and own-account workers is the result of the effective implementation of the flexicurity model or if it is a manifestation of the high rate of precarious work in Poland. Existing empirical evidence, presented by Origo and Pagani (2009) shows that employment flexibility and job security may coexist. In the same study, the authors show that job security, rather than the type of contract, is the determining factor of job satisfaction. They show that there are no statistically significant differences between flexicure workers and permanent (secure) workers. At the same time, they found that the permanent workers at risk—the ones feeling insecure about their jobs, are less satisfied than workers with temporary contracts who feel secure about their positions.

In this paper that outcome is verified using data from a Polish survey, and the hypothesis that in the flexibility-security nexus, the security ingredient is predominant is tested. We hypothesise that there is no difference in job satisfaction between permanent secure workers and flexible secure workers. (**H1:** Job security, in particular financial security, is a determining factor that positively impacts job satisfaction, regardless of the type of employment contract).

Another objective of the paper is to compare the influence of employment flexibility on job satisfaction for the two analysed groups. We want to show how these two job facets influence workers' satisfaction differently, dependently on the type of work they are involved in. We assume that knowledge workers value the possibility of mobility more than other workers. Thus, we believe that flexible employment will be more satisfying for knowledge workers than stable employment (**H2:** Unlike other workers, knowledge workers are more likely to be satisfied with a job that has a more flexible employment arrangement).

The last hypothesis (**H3:** The job satisfaction of knowledge workers is less influenced by a lack of job security than the job satisfaction of other workers) concerns job security and its influence on the job satisfaction of the analysed groups. According to the discrepancy theory, job satisfaction reveals the difference between the expectations based on the different job facets and their actual values. Yet, these differences matter only if the given job facet is valued by an individual (Locke 1976). In the context of job security, a recent study on job insecurity and employment of entry-position workers in the creative industry shows that young creative workers do not feel less satisfied with their jobs due to low job security, as it matches their expectations associated with the chosen job. Also, even more significantly, some young creative workers see low job security as an advantage, as they value job mobility and want to depart from the Fordist job-for-life paradigm (Morgan et al. 2013).

We assume that, similarly to young creative workers, established knowledge workers value more mobility than job stability and have a sense of high employment security on the job market. Thus, they do not value security in a certain job as highly, and it therefore has little impact on their job satisfaction. On the contrary, even though other workers might not have great expectations with regards to their job security, they value it more and, therefore

even small discrepancies between expectations and actual security have a great influence on their job satisfaction. We pinpointed three specific aspects of job insecurity that we take under consideration in the analysis: **H3a**, financial uncertainty, **H3b**, work overload and **H3c**, hostile relations at work. We believe the three variables are complementary and add a new angle to the concept of job security.

4 Data and Descriptive Statistics

4.1 Sample

The analysis employs secondary data from *Social Diagnosis 2011* (Czapiński and Panek 2011) and *Social Diagnosis 2013* (Czapiński and Panek 2013). The Social Diagnosis project, initiated in the year 2000, is a diagnosis of the conditions and quality of life of Poles. The datasets from the years 2011 and 2013 are part of the panel comprising seven waves. In the context of the analysed issues, the macroeconomic situation in Poland has been relatively stable for a number of consecutive years, including 2011 (European Commission 2013a, b). For this reason, the cross-sectional study for this period holds face validity. Yet, as the used data enable comparisons between years, two consecutive waves have been introduced in the analysis to verify the robustness of the presented outcomes. The previous waves have been disregarded as they do not contain all the variables relevant for the analysis and are considerably smaller.

The Social Diagnosis 2011 and 2013 datasets contain vast amounts of data from a large and representative sample. The data have been collected by Polish Central Statistical Office. In both waves two-stage stratified sampling was applied to find households that took part in the surveys. Firstly, households were stratified by voivodeships and then within voivodeships, by the size of agglomeration. The first stage sampling units were statistical regions (covering at least 250 households), and rural strata statistic circuits. In the second stage two households within each of the layers formed in the first stage of sampling were drawn systematically from a randomly ordered list of households.

The wave from 2011 comprises data from 12,383 households and 26,445 individuals (Czapiński and Panek 2011). After reducing the dataset by removing observations not appropriate for the analysis and incomplete cases, 8,297 observations were used in the analysis. This drastic reduction in the number of observations is related to selecting the target group for our research. As we are interested in the job satisfaction of workers, we excluded from the analysis all unemployed persons and people outside the labour market. Additionally, we eliminated farmers from the analysis, as the work performed by this group has a profoundly different nature than the type of work relevant to our research. Analysing farmers as a separate group is beyond the scope of this paper. Employers—self-employed persons with employees were also excluded from the analysis due to the difference in the nature of work. As a result of the data reduction process 10,253 cases remained. The exercise of data cleaning was repeated for the wave of 2013. Out of 26,307 cases available in this wave, 9,875 were classified as relevant for the analysis.

Finally, incomplete cases were excluded from the analysis. There were 1,956 incomplete cases in the wave from 2011. This large number is mostly due to the income variable, which had over 1,400 missing values. In the wave of 2013, after a reduction of the dataset by 1,918 incomplete cases (of which 1,218 were due to missing values in the income variable), 7,957 observations remained. Although we intended to omit the income variable, the fit of the models without income was highly unsatisfactory. Apart from that, income is

one of the crucial factors of job satisfaction and there is a need for a control factor measuring it. For that reason, the variable was kept in the analysis at the cost of sample shrinkage.

Alternatively, relative income (i.e. the change between present income and income from previous waves), instead of, or next to, the income level could have been used in the models. In the literature there is no agreement on the subject of the long-term influence of income increase on subjective well-being. The well-known Easterlin (1974) paradox suggests that, in macroeconomic terms, in the long run the average level of happiness in a country does not change in spite of fluctuations in GDP. The conclusions may be translated to micro scale, suggesting that the change in the income level of individuals influences their subjective well-being only for a short period. Some empirical research has undermined this claim showing an association between income increase and increased happiness (Stevenson and Wolfers 2008). It is also not clear what can be treated as long term (Easterlin et al. 2010). The reassessment of these not clarified issues is beyond the scope of the presented article. For that reason, relative income has been not introduced to the model. From the technical point of view, as in Social Diagnosis not all the respondents took part in all waves, including this variable would reduce the sample even further, which could have an adverse impact on the validity of the analysis.

4.2 Dependent Variable: Job Satisfaction

Originally, the variable concerning job satisfaction consisted of 6 levels: Very Satisfied, Satisfied, Quite Satisfied, Quite Unsatisfied, Unsatisfied and Very Unsatisfied, presented in Table 1. However, the distribution of this variable was significantly positively skewed; that is to say that most of the responses accumulated around Satisfied and Quite Satisfied. For that reason, the levels were aggregated to group the responses equally between the two levels.

As a result, the levels Very Satisfied and Satisfied which constituted over 46 % of the responses in 2011 and 43.5 % of the responses in 2013, were accumulated into one level: Very Satisfied and Satisfied, whereas the remaining four levels of the original variable, Quite Satisfied, Quite Unsatisfied, Unsatisfied and Very Unsatisfied, were accumulated into the Not Satisfied level.

Table 1 Job satisfaction (6 levels)—distribution

	2011			2013		
	Frequency	Percentage	Cumulative %	Frequency	Percentage	Cumulative %
Very satisfied	633	7.6	7.6	549	6.9	6.9
Satisfied	3190	38.4	46.1	2910	36.6	43.5
Quite satisfied	3043	36.7	82.8	3067	38.5	82.0
Quite unsatisfied	775	9.3	92.1	780	9.8	91.8
Unsatisfied	483	5.8	97.9	472	5.9	97.8
Very unsatisfied	173	2.1	100.0	179	2.2	100.0
Total	8297	100.0		7957	100.0	

Source: Own elaboration based on Rada Monitoringu Społecznego (2011) and Rada Monitoringu Społecznego (2013)

Another attempt at reorganising the variable was to divide it into three levels, making Quite Satisfied—the most common answer among the respondents—a separate level. The ordered logit models were estimated for the groups of knowledge workers and other workers. However, the results were unsatisfactory, as no significant differences between the second (Quite Satisfied) and the third (Not Satisfied) groups were detected.

Furthermore, the objective of the presented analysis is to investigate how the factors of interest contribute to, or hinder, achieving the feeling of being actually satisfied with a job, rather than to compare the influence of these factors on particular levels of the job satisfaction variable available in the dataset. Thus, we believe that aggregating the two top levels of the variable into one category and the remaining four into the reference category is an adequate approach to reach the research goal.

4.3 Job Insecurity Variables

Job insecurity is measured by three indicators: Income Source Uncertain; Too Many Duties to cope with; Treated Unjustly at Work. Initially, the variables could take one of four values: Never, Sometimes, Often or Not Applicable. We aggregated these levels into two categories: Yes and No. In the case of the first variable we treated Not Applicable level as missing case, as we assume that all respondents from our sample gain some income from their job. In the case of the latter two categories, we aggregated the Not Applicable level together with Never, as we assume that there are kinds of workers to whom situations of being treated unjustly at the workplace or having too many duties do not apply.

Each of the items has a slightly different dimension and strength. The distances between the levels of these variables are also not equal. None of the three variables measures perceived job insecurity *per se*, but three different aspects of it. The first item concerns financial insecurity. It refers to the source of income, which is not necessarily the job. It can also refer to, for instance, financial continuity after losing a job, provided by unemployment benefits. In that sense this variable is semantically the closest to the notion of employment security. In the job insecurity framework proposed by Greenhalgh and Rosenblatt (1984) it represents the severity of the threat of job loss. In particular, it can be interpreted as the severity of the threat of losing a specific job feature, namely pay.

Two other variables selected for the job security scale represent psychological aspects of job insecurity, which can be regarded as intangible symptoms of the threat of job loss. Within the mentioned framework, the second item—an overload of duties that one cannot cope with can be classified as the source of the threat. A worker overwhelmed by the number of duties may treat his or her perceived inefficiency as the potential threat of job loss. The third item—the feeling of being treated unjustly at work, represents the sense of powerlessness. According to Greenhalgh and Rosenblatt (1984), the sense of powerlessness would be intensified if there were no strong norms of fairness in the workplace and superiors were perceived as arbitrary in their evaluations.

4.4 Employment Flexibility: Type of Contract

Employment flexibility is measured by the type of contract proxy variable. In the analysis we distinguished between three types of contracts: Permanent Contract, Temporary Contract and Self-Employment. The second category includes fixed-term contracts for a period of over 1 year, part-time contracts, short-term contracts, work trial contracts, hired work with a written contract and hired work with a spoken contract or without a contract. The third category is for own-account workers—self-employed persons without employees.

The self-employed persons with employees (employers) were excluded from the analysis as the employment flexibility of this group is based on the nature of the occupation rather than is imposed by the demands of flexible labour markets. The first category applies solely to persons with permanent contracts. However, the group of permanent workers is much more sizeable than the other categories, representing over 65.5 % of the sample. The percentage of individuals with temporary contracts equals to 28.1 % and own-account workers is around 6.3 %.

4.5 Type of Worker

The type of worker variable was constructed in two steps. First, all individuals that have a job were selected with the use of four variables: Any paid work or a helper without pay in the family business performed during the last 7 days; An employee, self-employed person or helper without pay in the family business who has temporarily not performed his/her work during last 7 days; Main source of income; Secondary source of income.

The first two variables determine if an individual performs any job (paid or unpaid). The latter two help to restrain the dataset to the observations from respondents who gain any profit from their work activities. In the second stage the dataset is divided into two groups: Knowledge Workers and Other Workers. Knowledge workers are determined through the educational level of the worker, the ISCO occupational classification and if the workers use computer.

According to the used operationalisation of the concept of knowledge worker and given the mentioned variable-setting criteria, the persons that belong to the group of main interest are individuals with higher education (Bachelor's degree or higher), working in the top three occupational classifications (according to the ISCO classification)—managers, professionals or associate professionals and use a computer. With the described criteria 3,821 knowledge workers were selected from the whole sample.

4.6 Type of Worker: Characteristics

One of the main focuses of the paper is to recognise the differences in job satisfaction between two groups—knowledge workers and other workers, in particular, to recognise if various factors influence the job satisfaction of workers from these two groups differently. Table 2 presents the means and frequencies of the variables used in the model for the two groups of workers for the years 2011 and 2013. There are only small differences in the results between the 2 years. In the group of other workers, the differences in personal income, age and years of study have turned out to be significant; yet the differences are marginal. Significant percentage change was also noted in the following variables: Manager, Income Source Uncertain, Too Many Duties, Treated Unjustly at Work and Job Satisfaction. In the group of knowledge workers, the difference in income has turned out to be significant, although yet again the change is marginal.

What is more, between 2011 and 2013 two significant changes have taken place: a rise in the percentage of workers with insecure income and a simultaneous drop in job satisfaction. In both groups the greatest change was noted in the percentage of income insecure workers. In the group of other workers it grew by almost 5 pp, whereas in the group of knowledge workers it increased by 8 pp. The group of other workers in 2013 has also notably higher percentage of workers who feel they have too many duties (2.8 pp) and those who feel that they are treated unjustly at work (2.2 pp). The higher job insecurity seems to translate into a lower percentage of satisfied and very satisfied workers, in both

Table 2 Characteristics of knowledge workers and other workers

	2011		2013	
	Other worker		Knowledge worker	
	Mean	%	Mean	%
Personal income	1827		2935	
Age	42		41	
Years of study	12		17	
Sex				
Male		56.6		36.0
Female		43.4		64.0
Manager		7.3		24.0
Income source uncertain		64.2		46.6
Too many duties		56.5		57.3
Treated unjustly at work		47.8		48.0
Type of contract				
Permanent		62.1		78.0
Temporary		31.3		16.9
Own-account		6.6		5.2
Job satisfaction				
Not satisfied		56.7		44.6
Satisfied and very satisfied		43.3		55.4

Source: Own elaboration based on Rada Monitoringu Społecznego (2011) and Rada Monitoringu Społecznego (2013)

^a For these variables the t-tests for equality of means showed significant differences between 2011 and 2013 at the level of significance $\alpha = 0.05$

^b For these variables the χ^2 test for independence of samples showed significant differences between 2011 and 2013 at the level of significance $\alpha = 0.05$

groups: other workers (2.3 pp) and knowledge workers (4.1 pp). The decrease in job satisfaction and the rise of income insecurity may reflect the general downturn in Polish economy in 2013, compared to the year 2011. Although Poland did not suffer from the economic crisis as strongly as most of the European countries, the growth of its economy notably slowed down. The GDP growth rate (in constant prices) has diminished by 2.9 pp (Central Statistical Office of Poland 2014). Another indicator of the slowdown in Polish economy is a slight increase (0.6 pp) in unemployment rate that occurred in Poland between 2011 and 2013 (European Commission 2013c). Worsening conditions on the labour market might have a reflection in job insecurity.

One of the biggest differences between the group of knowledge workers and the group of other workers is their level of income. Other workers on average earn almost 40 % less than knowledge workers. Knowledge workers earned on average 2,935 zlotys (731€) per month in 2011 and 2,992 zlotys (720€) per month in 2013, while the monthly wage of the other workers in these periods was equal to 1,827 zlotys (455€) per month and 1,937 zlotys (466€) per month, respectively. The Euro equivalents were calculated using the average

exchange rate from March 2011 and March 2013—the months in which the data were gathered (Narodowy Bank Polski 2014).

In both waves, knowledge workers on average studied for 17 years, whereas the other group spent on average 5 years less on education. This outcome is not surprising, because of the design of the knowledge worker category. As explained before, one of the conditions for being classified as a member of this category was a higher education. Although in general the majority of employed persons are males, this proportion is reversed in the case of knowledge workers. In this group females constitute over 64 % (64.8 % in 2013) of the whole group. The percentage of individuals with supervisor positions is much higher among knowledge workers. Almost a quarter of them are managers (21.8 % in 2013), whereas just under 7 % (5.8 % in 2013) of the other workers have a managerial position. This great difference is also the result of the design of the type of worker variable. The variable is controlled for in the causal model.

The majority (64.2 % in 2011 and 69.1 % in 2013) of other workers feel that their income source is precarious and insecure. The knowledge worker group is more secure with 46.6 % (54.6 % in 2013) of individuals feeling uncertain about their income source. In both groups, most of the respondents at least sometimes feel that they have too many duties to cope with. In both groups almost half of the individuals feel or have felt treated unjustly at work. For the group of other workers this rate has increased to 50 % in 2013.

Surprisingly, there are relatively more other workers with high employment flexibility (i.e. workers with temporary contracts or own-account workers). This finding seems to be counter-intuitive, as one of our assumptions is that knowledge workers value job flexibility and the mobility possibilities. Yet, around 78 % of knowledge workers have a permanent contract, which is a high rate, especially compared to only 62.1 % (61.3 % in 2013) of other workers with permanent contracts. Finally, we can see that around half of the knowledge workers (55.4 % in 2011 and 51.3 % in 2013) feel very satisfied or satisfied with their jobs. For other workers this percentage is considerably lower (43.3 % in 2011 and 41 % in 2013).

One of the main focuses of this paper is to investigate the interplay between employment flexibility and job security among the groups of knowledge workers and other workers. To have a better insight into the issue of job insecurity in the case of the two analysed groups, the sample (presented separately for wave 2011 and 2013) has been described with respect to job insecurity and employment flexibility in Table 3. It needs to be taken into account that the group of flexible workers is substantially smaller than the group of permanent workers—especially among knowledge workers, where flexible

Table 3 Employment flexibility and income source security

	2011				2013			
	Other worker		Knowledge worker		Other worker		Knowledge worker	
	Income source uncertain		Income source uncertain		Income source uncertain		Income source uncertain	
	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)	No (%)	Yes (%)
Permanent	42.6	57.4	58.1	41.9	37.0	63.0	49.0	51.0
Temporary	25.0	75.0	39.3	60.7	21.7	78.3	34.1	65.9
Own-account	23.2	76.8	28.6	71.4	19.7	80.3	26.9	73.1

Source: Own elaboration based on Rada Monitoringu Społecznego (2011) and Rada Monitoringu Społecznego (2013)

workers constitute fewer than a quarter of all respondents. Among other workers this percentage is higher, with almost 40 % of workers being under flexible employment arrangements. In the knowledge worker and other worker groups, own-account workers group constitutes only around 7 and 5 %, respectively, of all employment.

For all workers from both groups, the percentage of financially insecure persons grew between 2011 and 2013. The greatest increase can be noted in the group of permanent knowledge workers (9.1 pp) and other permanent workers (5.6 pp). Also, a significantly bigger percentage (a 5.2 pp increase in 2013) of temporary knowledge workers has reported financial insecurity in 2013. Among the groups of temporary knowledge workers and own-account other workers the relative drop in number of income secure individuals in 2013 was similar (3.3 pp and 3.5 pp, respectively). The smallest change was reported in the group of own-account knowledge workers (1.7 pp).

The groups of knowledge workers and other workers differ considerably in the percentage of income insecure employees (41.9 and 57.4 % in 2011 and 51 and 63 % in 2013, respectively). However, in both groups we can see a large gap between permanent workers and flexible workers. In the case of knowledge workers, the percentage of insecure individuals is especially high for own-account workers. Less than a third of own-account knowledge workers do not struggle with the problem of income source insecurity. In contrast, almost 60 % of permanent knowledge workers (51 % in 2013) feel secure. Indeed in most cases, flexible employment can be characterised by job insecurity.

5 Estimation and Results

Two separate models for the knowledge workers and other workers have been considered in the analysis. This approach enables the comparison of the significance of each factor and strength for both groups. We argue that it is a preferable solution over estimating a single model with a set of interactions, as it produces a less complex outcome, more convenient for interpretation. The Age Squared variable has been added to the independent variables initially used in the models. The nonlinear relationship between age and job satisfaction has been empirically proven (Clark et al. 1996). In particular it has been shown that there is a U-shaped relationship between job satisfaction and age. This result has been also widely replicated in other empirical research, e.g. Lange (2009); Lévy-Garboua and Montmarquette (2004); Millán et al. (2011).

Table 4 and Table 5 present final models for both groups. In order to verify the robustness and stability of the model, the significance of the differences between the results in two waves—the years 2011 and 2013 has been tested. Namely, to estimate the model, observations from 2011 and 2013 have been used, treated as separate cases. Additionally, a dummy variable indicating the wave a given observation comes from has been introduced. To test the significance of differences between the two periods for every variable, interactions between the dummy variable and every variable present in the model (including interaction terms) have been included. Coefficients of these interactions, presented in column 2 of Table and Table 5, represent differences between the value of the coefficient in 2011 and 2013. Their statistical significance indicates if the differences between results in 2011 and 2013 are significant.

The models comprise a number of socio-demographical variables such as Logged Income (logarithm with base of 2), Age and Age Squared, sex (Male) and Years of Study. Another group of factors are work-related variables: managerial position (Manager), Temporary contract, Own-Account workers and job insecurity variables: Income Source

Table 4 Logit model for group of knowledge workers

	2011			Change between 2011 and 2013		
	B	SE	EXP(B)	B	SE	EXP(B)
Logged income	.194***	.068	1.214	.097	.099	1.102
Age	.029	.031	1.029	-.121***	.047	.886
Age squared	.000	.000	1.000	.001***	.001	1.001
Male	-.263***	.097	.769	-.144	.135	.866
Years of study	.021	.027	1.021	.013	.036	1.013
Manager	.209	.112	1.233	.066	.160	1.068
Temporary	.143	.199	1.153	-.053	.279	.949
Own-account	2.037**	.857	7.669	-1.154	.986	.315
Income source uncertain	-.965***	.104	.381	.147	.145	1.159
Too many duties	-.199**	.099	.819	-.115	.137	.891
Treated unjustly at work	-1.071***	.096	.343	.023	.135	1.023
Temporary × income source uncertain	.134	.249	1.144	.115	.345	1.122
Own-account × income source uncertain	-1.798**	.883	.166	1.026	1.036	2.790
Constant	-1.984	.950	.138	.818	1.389	2.266
N	3821					
	(1887 in 2011 and 1934 in 2013)					
Log likelihood	-2977.018					
Akaike Inf. Crit.	6010.035					

Source: Own elaboration based on Rada Monitoringu Społecznego (2011) and Rada Monitoringu Społecznego (2013)

B coefficient, SE standard error, Exp(B) exponentiated coefficient

** $p < 0.05$; *** $p < 0.01$

Uncertain, Too Many Duties to cope with and Treated Unjustly at Work. The permanent contract is not included in the model as it is chosen to be a baseline category. Finally, included in the model are interactions between employment flexibility and financial insecurity that will help verify the research hypothesis H1.

Table 4 and Table 5 report estimates, standard errors and exponentiated estimates from the two estimated models. The exponentiated estimates in most cases are equal to the odds ratios (OR), yet the exponentiated coefficient of interaction is the ratio of OR, whereas exponentiated constant is the baseline odds. The OR might seem hard to interpret, yet they come in handy as, unlike coefficients of logit models, they are independent from the values of other variables, thus possible to interpret separately for each variable. Odds ratio shows how the odds of a given outcome will change under a given condition compared to odds of the outcome when a condition is not satisfied.

In the case of the logit model estimated for knowledge workers (Table 4), the sole significant difference between 2011 and 2013 was detected in the variables Age and Age Squared. Surprisingly, it is not only a quantitative but also a qualitative difference. In 2011, the variables Age and Age Squared were shown to have no influence on the analysed dependent variable. In 2013 on the other hand, Age Squared was shown to have significant positive influence on job satisfaction, whereas the relationship between age and job satisfaction was shown to be significantly negative, which would prove a U-shaped

Table 5 Logit model for group of other workers

	2011			Change between 2011 and 2013		
	B	SE	EXP(B)	B	SE	EXP(B)
Logged income	.334***	.041	1.397	.107*	.060	1.113
Age	-.061***	.017	.941	-.009	.024	.991
Age squared	.001***	.000	1.001	.000	.000	1.000
Male	-.215***	.055	0.807	.057	.080	1.058
Years of study	-.055***	.012	.946	.025	.018	1.026
Manager	.514***	.099	1.672	-.303**	.151	.739
Temporary	-.074	.102	.929	-.152	.152	.859
Own-account	.231	.208	1.260	.032	.324	1.033
Income source uncertain	-.505***	.067	.604	-.065	.098	.937
Too many duties	-.545***	.057	.580	-.042	.082	.959
Treated unjustly at work	-.630***	.057	.533	-.146	.082	.864
Temporary × income source uncertain	-.110	.122	.896	.184	.180	1.203
Own-account × income source uncertain	-.108	.238	.898	.185	.363	1.203
Constant	-.504	.556	.604	-1.396	.775	.248
N	12433					
	(6410 in 2011 and 6023 in 2013)					
Log likelihood	-8336.012					
Akaike Inf. Crit.	16,728.030					

Source: Own elaboration based on Rada Monitoringu Społecznego (2011) and Rada Monitoringu Społecznego (2013)

B estimate, SE standard error, Exp(B) exponentiated coefficient

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

relationship between age and job satisfaction. However, the nature and significance of this relationship is not the subject of interest in the presented analysis.

In the case of the model for other workers, more significant differences between the 2011 and 2013 waves have been identified. According to the conducted test, the model results for the: Logged Income and Manager variables are significantly different in 2011 and 2013. Yet, for this group, the difference occurred only in the strength of relationships. In the model for 2013 income has turned out to have a stronger positive impact on probability of being satisfied or very satisfied with a job. On the other hand, having a managerial position has a weaker, yet still positive, influence on the dependent variable.

As expected, income has a positive impact on job satisfaction, meaning that the more someone earns, the more probable it is that they are satisfied with their jobs. The impact of income is stronger in the case of other workers. According to the model for this group, doubling the income—as variable Logged Income is a logarithm of income with base of two—would result in a 1.4 effect on the OR. That is to say that it would raise the odds of being satisfied versus being not satisfied by 40 % (OR 1.397). Knowledge workers, by doubling their income, would on average increase the odds of being satisfied with their jobs by 20 % (OR 1.214). The smaller influence of financial aspects on the job satisfaction of knowledge workers might be explained by the different priorities of the groups of interest. However, it may also be because the marginal utility of money diminishes. This is to say

that other workers on average earn substantially less than knowledge workers, therefore they benefit from a rise in income more.

Age has been proven to be a significant variable for other workers. The U-shaped function of job satisfaction in age has been confirmed, as the Age Squared is significant in the model for this group. As mentioned before, in the case of knowledge workers, the nature of the relationship between age and job satisfaction is ambiguous, as the results differ significantly between the waves.

Another finding replicates the results of many previous studies, e.g. Burón (2007); Clark (1997), namely that, according to both estimated models, men are less satisfied with their jobs than women. The odds of being satisfied with a job are 20 % lower for male other workers (OR 0.807) and 23 % lower for male knowledge workers (OR 0.769), than for females from the same groups. The discrepancy theory brings a plausible explanation for this result. As men have higher expectations towards their job, the difference between the expectations and reality is greater than in case of less demanding women.

Surprisingly, the time other workers have devoted to education, measured by the years individuals have spent studying, adversely affects their probability of achieving job satisfaction. According to the model, the odds of being very satisfied or satisfied with one's work decrease by almost 5 % (OR 0.946) with each additional year of study. The variable does not influence the job satisfaction of knowledge workers. These findings can also be explained by the discrepancy theory. A person who spent more years in education would most probably have more expectations towards their job. However the expectations exceed the labour market offers, thus creating a bigger gap between "dream job" and the actual job. The not satisfied other workers may be, for example, higher education graduates who did not manage to find employment in the desired sector and thus got low or negative return from the investment they made in education.

Having a managerial position significantly increases the chances of being satisfied with a job, especially among the group of other workers. In the proposed model, the odds of being satisfied for other workers with managerial positions are over 67 % higher than for the rest of the workers from this group (OR 1.672). This relationship has already been shown in previous research (Clark 1997). The feeling of being in charge and having a certain amount of power may be desirable in a job. Thus, once achieved, this may increase the probability of job satisfaction. In the model designed for knowledge workers, the variable turned out to be insignificant at the significance level of 5 %.

The variables denoting employment flexibility—temporary contracts and self-employment without employees—turned out to be insignificant for the group of other workers. On the other hand, the odds of own-account knowledge workers being satisfied are almost eight times higher than the odds of knowledge workers with permanent contracts being satisfied (OR 7.669). This confirms hypothesis H2 that, unlike other workers, knowledge workers are more satisfied under more flexible employment arrangements. Yet, this relationship is only true for knowledge workers who feel safe regarding their income.

The interaction term between own-account workers and an uncertain income source turned out to be significantly negative. This suggests that the OR between own-account and permanent knowledge workers, who feel their income source is precarious, is lower. In particular, the odds of an own-account knowledge worker who is insecure are only 27 % higher than the odds of a permanent knowledge worker who feels the same about his or her job (OR 1.273). The exponentiated estimate of the interaction term in the model represents the ratio between the OR in a situation when both of the conditions included in the interaction term occur and when one of them does not. In this case the exponentiated coefficient of interaction term Own-Account \times Income Source Uncertain [$\text{Exp}(B) = 0.166$] in the

model for knowledge workers represents the ratio between the OR of own-account versus permanent workers when income insecurity occurs and in the case when it does not. The latter ratio can be directly read from Table 4 (OR 7.669). In order to obtain the OR of insecure self-employed knowledge workers, the two numbers need to be multiplied, therefore $0.166 \times 7.669 = 1.273$. The difference in odds is much smaller under the condition of insecurity. However, it is still in favour of self-employment. Taking into account that the vast majority of own-account knowledge workers feel insecure about their income while the majority of permanent knowledge workers do not share this fear, a comparison should be made between these two groups in the context of job satisfaction.

In logistic regression, the probability of attaining job satisfaction is dependent from all the variables. Therefore, the comparison of the probability of job satisfaction for four groups of knowledge workers: permanent secure, permanent insecure, own-account secure and own-account insecure is presented for individuals with certain characteristics.

As presented in Fig. 1, the probability of job satisfaction is indeed higher for insecure own-account knowledge workers than for permanent workers with the same perception of their income source insecurity. However, permanent knowledge workers who are secure about their income are more likely to be satisfied than own-account knowledge workers who feel their income is uncertain. This finding shows that the knowledge workers' preference for employment mobility is conditioned by job security. Own-account work is only favoured over permanent secure positions, if, *ceteris paribus*, it also gives a guarantee of job security.

All the variables denoting job insecurity have significant negative influence on the job satisfaction of other workers. Individuals from this group who feel their income source is insecure are 40 % less likely to be satisfied with their jobs than the other workers who do

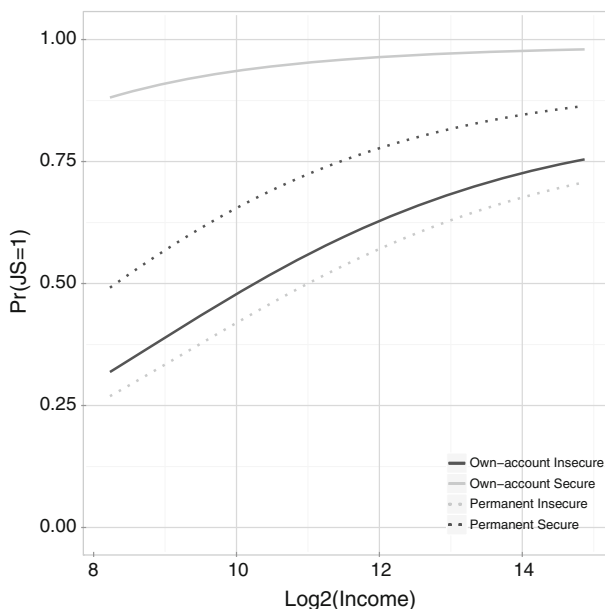


Fig. 1 Probability of attaining top levels of job satisfaction as a function of logged income (The functions are estimated for individuals with following characteristics: Knowledge worker, 41-years old, Studied for 17 years, Male, Non-manager, Does not feel work overload, Does not feel treated unjustly)

not feel this way (OR 0.604). Having an overwhelming amount of duties and being treated unjustly at work have an even stronger effect on this group, decreasing their odds of achieving job satisfaction almost by half (OR 0.580 and 0.533, respectively).

In the case of knowledge workers, a precarious income source, an overload of duties and unfair treatment are strongly influential variables. Permanent knowledge workers who consider their income to be uncertain have over 60 % (OR 0.381) lower odds of obtaining satisfaction than the ones who do not feel this way. The odds of being satisfied or very satisfied for income insecure own-account knowledge workers are lower by almost 95 % in comparison to own-account workers who feel financially secure (OR 0.063)—the OR for income insecure own-account knowledge workers was obtained by multiplying the exponentiated estimate of Income Source Uncertain (OR 0.381) and interaction term Own-Account \times Income Source Uncertain [$\text{Exp}(B) = 0.166$]. Knowledge workers who believe they are treated unjustly are even less likely to be satisfied with their jobs (OR 0.343). The sense of powerlessness, represented by having too many duties to cope with also impacts the job satisfaction of knowledge workers, but the strength of the impact is lower. Knowledge workers who struggle with this issue are almost 20 % (OR 0.819) less likely to be satisfied or very satisfied with the job than the individuals from this group who do not deal with this problem.

6 Conclusions

The hypothesis H1, stating that job security positively impacts job satisfaction, regardless of the type of contract, has been rejected. Individuals with flexible employment contracts, in particular own-account workers, are more sensitive to job precarity. Interestingly, the employment flexibility effect is only present in the group of knowledge workers. Thus, it is especially important to guarantee legislative and job security to persons from the knowledge sector. Together with the finding that own-account knowledge workers are more likely to be satisfied with their jobs than the permanent workers under the condition of income source security, it could be an argument in favour of flexicurity. However, a huge emphasis should be put on the security dimension, especially that great majority of own-account workers reports financial insecurity. As it is difficult for authorities to manage job security, even more efforts should be made to guarantee employment security. In the analysis we showed that a sense of income source precarity, which is semantically the closest to employment insecurity, is a distressing aspect for workers with flexible working arrangements. Flexible employment is a favourable option for knowledge workers if and only if job and employment security are assured.

Austerity measures, on the other hand, aiming to limit security of flexible employment arrangements, would come against the idea of flexicurity and would make flexible employment inferior to permanent positions. The analysis has shown that in the case of knowledge workers, the insecure self-employed are still better off, in terms of job satisfaction, than the permanent workers with the same problem. However the insecure own-account workers are worse off than permanent secure workers. Taking into account that over 70 % of own-account knowledge workers feel insecure compared to 40 % (50 % in 2013) of permanent knowledge workers, reassuring employment security in flexible employment is a vital issue for the well-being of knowledge workers. For that reason an important aspect of government policy with respect to the labour market is keeping legislative security at a satisfying level.

The derived model confirms hypothesis H2 concerning the higher job satisfaction of knowledge workers with more flexible job contracts. Knowledge workers are more likely to attain job satisfaction working on their own account instead of having a permanent contract. This finding proves that, despite the common view, flexible employment is not necessarily worse than the permanent contract. Therefore, temporary contracts and self-employment play an important role in employment policy and should not be disregarded as inferior. More detailed analysis on subgroups of workers could possibly show which occupational groups in fact feel more comfortable with more flexible arrangements and which groups are facing the problem of precarity. It is an important idea for future research as it would help policy-makers tailor their employment policies.

Own-account knowledge workers have been proven to be more likely satisfied than permanent workers. This kind of working arrangement provides more liberty and job flexibility to the workers. The realisation of one's goal as an own-account worker is easier than under other employment arrangements. If one has more freedom to determine the various aspects of one's job, the gap between job expectations and the reality may be smaller, than in the case of other employed individuals. However own-account workers are also the group which is affected by financial insecurity the most.

Hypothesis H3 stating that the job satisfaction of knowledge workers is less influenced by a lack of job security than job satisfaction of other workers, has been only partly confirmed. The job satisfaction of knowledge workers is less influenced by an overload of duties than the group of other workers, as hypothesised in H3b. However, the other symptoms of job insecurity (financial uncertainty and hostile relations at work) affect knowledge workers with more strength than the other group, thus H3a and H3c have been rejected. The explanation behind the stronger influence of job insecurity on the satisfaction of knowledge workers may be sought in the discrepancy theory. We can interpret the results as the difference in expectations with regards to the job security among the analysed groups. Other workers, especially precarious temporary workers, *expect* their work to be insecure, so this factor does not change the difference between their job expectations and the actual job. Knowledge workers on the other hand may have higher expectations towards their security. According to the discrepancy theory, a factor highly valued by an individual is more likely to affect his or her job satisfaction. Hence, the result shows that knowledge workers not only expect their job security to be higher but also greatly value this psychological comfort at work. The lack of it affects their job satisfaction to a great extent. Also in this case, analysis on disaggregated data could give an interesting insight into the issue. It is possible that the importance of job security concerns only some subgroups of knowledge workers, whereas others, such as the ones that appreciate mobility more, do not pay much attention to it.

The analysis has shown that job security is a crucial factor in determining job satisfaction for both knowledge workers and other workers. It is also the key ingredient in the flexicurity mix. The type of contract should not depreciate the job satisfaction of an individual, provided he or she does not feel that their position is at risk. Job security is also very important for seemingly indifferent knowledge workers, who, one would assume, can easily find alternative employment. Thus, providing employees with a basis for feeling secure is vital for their satisfaction. Although job satisfaction has not been proven to improve workers performance, it brings a number of other benefits (e.g. lower rates of grievances, absenteeism and quits) that are undoubtedly valuable for employers.

An important further step in the analysis of employment flexibility and job security and their impact on job satisfaction is to investigate changes in time on the individual level, with the inclusion of macroeconomic factors as potential determinants. Also, a fruitful area

for future research would be to investigate other types of flexibility-security nexuses. In particular, the employment flexibility and employment security nexus should be an important consideration for future research, as it is a factor that may be influenced by government policies. Another significant factor in the context of knowledge workers is work-time flexibility and its influence on job and life satisfaction. It would be an interesting development of the topic to investigate how flexible working hours and other work arrangements impact the job satisfaction of different types of workers.

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CHAPTER III

JOB SATISFACTION OF KNOWLEDGE WORKERS. THE ROLE OF INTERPERSONAL JUSTICE AND FLEXIBLE EMPLOYMENT

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Job Satisfaction of Knowledge Workers. The Role of Interpersonal Justice and Flexible Employment

Abstract: Organizational justice is a crucial aspect of good management. It has been shown numerous times that an unjust work environment has an adverse impact on employees in terms of job satisfaction. Yet is this effect homogeneous in all groups of workers? In this paper we strive to provide an explanation for this question, presenting a study concerning the impact of one of the dimensions of organizational injustice—interpersonal injustice, on the job satisfaction of knowledge workers in Poland. In particular, we demonstrate how perceived injustice at work influences their job satisfaction compared with other workers. We also analyse whether flexible employment has a mitigating effect on this relationship. Logistic regressions estimated using sample of 23,942 workers surveyed between 2009 and 2013 showed that in both groups interpersonal injustice significantly diminishes job satisfaction. However, in the case of knowledge workers, this effect is significantly smaller among employees with temporary contracts. The mitigating effect of temporary employment is not present among other workers. The results suggest that permanent knowledge workers, are more vulnerable to interpersonal injustice.

Keywords: interpersonal justice, knowledge workers, employment flexibility, job satisfaction.

Introduction

Attaining job satisfaction is important both from the point of view of the employee and the employer. First of all, in the literature there is an indication of reciprocity between job satisfaction and life satisfaction. That is to say that persons who are satisfied with their jobs tend to have higher subjective well-being and *vice versa* (Judge & Watanabe 1993). Diminished job satisfaction may also adversely impact the mental and physical health of workers (Locke 1976). From the employer's perspective, guaranteeing job satisfaction among employees is important for a variety of reasons, including the prevention of high turnover and absenteeism within organizations (Lévy-Garboua, Montmarquette, & Simonnet 2007; Locke 1976).

For these reasons job satisfaction has been widely studied since the beginning of the last century (Locke 1976). Many factors were studied and analysed as potential predictors of job satisfaction, including organizational justice. The definition of organizational justice evolved in the last few decades. In its present form it is thought to be constructed from four dimensions: distributive justice, procedural justice, interpersonal justice and informational

justice (Colquitt 2001; Greenberg 1990). The impact of distributive justice and procedural justice on job satisfaction is broadly discussed in the literature, e.g. Blader and Tyler (2009); De Cremer (2005); Wiesenfeld, Swann, Brockner and Bartel (2007). On the other hand, the influence of informational and interpersonal justice is often disregarded.

Therefore in this study we propose an analysis of job satisfaction with the focus on interpersonal justice, which reflects to what extent an employee is treated with dignity and respect by superiors or third parties at work. In particular we strive to show how interpersonal justice influences workers with different types of contracts. We distinguish among persons with permanent contracts, temporary contracts and own-account workers. Our aim is to demonstrate whether the reaction to interpersonal justice differs between groups of knowledge workers and other workers.

In the study we also focus on demonstrating the important differences between the group of knowledge workers and the remainder of the workforce in terms of the influence of interpersonal justice and employment flexibility on job satisfaction. Knowledge workers represent an expanding sector of the economy. In the European Union employment in knowledge intensive activities constitutes over 35 percent of all employment (European Commission 2013a). With over one third employed in the knowledge sector it is worthwhile to focus on this group, and to determine the significant differences of this group in comparison with the other workers. In particular our study focuses on Polish workers. The analysis in relation to employment flexibility is especially relevant in the context of Poland, the country with the highest percentage of temporary contracts in Europe (European Commission 2013d) and a considerable percentage of own-account workers (European Commission 2013c).

First of all, we hypothesise that knowledge workers in general value being treated in a fair and friendly manner more so than other workers. One can also expect that knowledge workers would value horizontal rather than vertical organizational structures and partnership relationships with superiors. If these elements are lacking, it might be adversely reflected in their job satisfaction.

H1: Job satisfaction of knowledge workers is more strongly adversely affected by lack of interpersonal justice than job satisfaction of other workers.

Secondly, we expect the workers with flexible employment arrangements to be less affected by interpersonal injustice in terms of job satisfaction than permanent workers.

H2: Job satisfaction of other workers (H2a) and knowledge workers (H2b) with flexible working contracts is less affected by interpersonal injustice.

The rationale behind this hypothesis comes from the nature of temporary and own-account work. The job is temporary and the relationships with the immediate superiors or other authorities within the organization are usually short-lived. For this reason workers with flexible contracts may pay less attention to unfriendly relationships at work. On the other hand, permanent workers may be more affected by a hostile atmosphere and particularly interpersonal injustice as they may suspect it will prevail in the long-run. The unfair treatment may be a symptom of violating the psychological contract established between the permanent workers and the employers, which significantly diminishes workers' job satisfaction (Robinson & Rousseau 1994).

Finally, we suspect that the mitigating effect of flexible employment as hypothesised in H2 is stronger in the group of knowledge workers.

H3: The negative effect of interpersonal injustice on job satisfaction is mitigated by employment flexibility to a larger extent in the group of knowledge workers than the other workers.

We expect the job of own-account knowledge workers to be more independent from authorities and organizational structures. Therefore, the ill effects of interpersonal injustice should impact them to a lesser extent. However, one has to take into account the possibility of so called bogus self-employment. It is estimated that approximately 30 percent of self-employment in Poland is bogus self-employment (OECD 2014b)—in which the self-employed worker provides services for an employer, but de facto their relationship is one of subordination (Kwiatkiewicz 2008). In the case of the own-account workers, we suspect that in some instances the flexible arrangement was imposed on the workers. Such a solution reduces costs of human capital from the point of view of the employer, but at the same time it limits the employment and job security of the employee. As De Witte & Näswall (2003) point out, it is important to discuss employment flexibility in the context of voluntariness of such arrangements. The imposed, involuntary nature of relationship between the employer and the worker, be it in form of bogus self-employment of temporary, not regulated contracts, might in fact adversely impact the feeling of interpersonal injustice.

Our hypothesis draws on the assumption that bogus self-employment, although prevailing across different sectors and occupations, is more characteristic for the group of the other workers than the knowledge workers. The other workers may deal with precarious employment to a greater extent than the knowledge workers, which is further intensified by interpersonal injustice. We also believe that temporary knowledge workers in this context not only have the benefit of short-lived relationships, in which unfair treatment plays a smaller role, but they also have higher level of employability—they are more confident about finding other employment of a similar or better standard.

This paper is organized as follows: Firstly, the related literature is reviewed; the following section introduces the methodology used in the analysis and presents the dataset; subsequently, the results are presented and discussed; the final Section gives the conclusions.

Literature Review

Organizational Justice

In the last few decades organizational justice has increasingly drawn the attention of scholars. Considerations about fairness in the workplace were initially limited solely to the discussion about fairness of outcomes distribution—distributive justice. The well known theory explaining the mechanisms of distributive justice is the equity theory (Adams 1966). According to Adams workers are primarily interested not in the absolute value of their outcomes, but do find it important if they are distributed in a fair manner. To determine if an outcome is fair, workers compare the ratio of their inputs (e.g. education, experience, intelligence, etc.) to outcome with ratio of inputs to outcome of co-workers.

A decade later the domain of organizational justice research has been widened by the notion of procedural justice (Colquitt, Conlon, Wesson, Porter, & Ng 2001). The interest

in procedural justice stems from the idea that workers are not only concerned with just outcomes, but also with the transparency and fairness of the procedures in which they were established. In particular, employees consider a procedure as fair when they can control it in some way (e.g. present their arguments). If this kind of control is provided they are willing to relinquish control at the decision stage. This kind of procedure has been denoted as “fair process effect” or “voice effect” (Colquitt et al. 2001).

The most recent addition to the concept of organizational justice is the interactional justice—idea introduced in 1986 (Bies & Moag 1986). Interactional justice pertains to the aspects of communication between the management and the recipient of justice (Cohen-Charash & Spector 2001). An alternative conceptualization of interactional justice was proposed by Greenberg (1993). He distinguished two separate factors within interactional justice: interpersonal justice and informational justice. Interpersonal justice reflects the degree to which an employee is treated with dignity, courtesy and respect by authorities or third parties involved in executing procedures or determining outcomes. Informational justice focuses on the degree to which relevant information about the reasons for using certain procedures or distributing outcomes in a certain fashion is shared with employees (Colquitt et al. 2001).

One of the motives for analysing interpersonal justice in particular, is the potential positive effects it may bring to organizations. Indeed, fair treatment has a positive impact on workers in terms of commitment, performance, trust, loyalty and others. Also, it proved to have a significant influence on job satisfaction (Colquitt et al. 2001). Thus, we can conclude that interpersonal justice is an important factor in the analysis of job satisfaction.

Job Satisfaction

Among different theories trying to explain the underlying mechanisms leading to job satisfaction is the discrepancy theory proposed by Edwin Locke (Colquitt 2001). According to this theory, job satisfaction is a state that can be acquired when the characteristics of the job fulfil one’s important job *values*, providing they are compatible with one’s *needs*. Values refer to what one considers beneficial, whereas needs are necessary conditions to achieve one’s well-being. In other words, according to the discrepancy theory workers compare their actual job with a reference job—a hypothetical job that fulfils all the important job values. The discrepancy between the values in the reference job and the values in the actual job represents the level of job satisfaction. Depending on the values, their relationship with job satisfaction may be linear—the more the better (e.g. pay), or non-linear, for example bell-shaped. Any discrepancy from the preferred level of the value decreases job satisfaction (Locke 1969).

Another aspect of the theory is that individuals differ in assigning importance to various job facets. For some, a given job facet is very important, therefore its lack has a strong adverse impact on their level of job satisfaction. For others the same job aspect has little importance, so its insufficiency should not affect job satisfaction. We could expect that the workforce is very diverse in this sense—different people value distinct job facets. Taking that into consideration, analyzing the factors of job satisfaction on a disaggregated data could help obtain more homogenous groups of workers and, consequently, to in-

crease the accuracy of the results. In this paper we focus on the group of knowledge workers.

Knowledge Workers

The knowledge sector is an expanding part of modern economies. In more developed countries the knowledge model of economy is the norm. For this reason, concentrating the analysis on the central element of this model, i.e. knowledge workers, is increasingly significant in the present day. For the purpose of the analysis we use combined occupation-based and education-based operationalization of this group. According to this classification, knowledge workers are persons who work in the top three levels of International Standard Classification of Occupations (ISCO-08): managers, professionals as well as technicians and associate professionals (ILO 2012). They have high-level skills indicated by higher education or equivalent qualifications and perform tasks that require expert thinking and complex communication skills with the assistance of computers (Brinkley 2006).

This operationalization is closest to Drucker's definition of knowledge workers. According to him, knowledge workers are simply "professional, managerial and technical people" (Drucker 1993). At the same time, it is important to recognize the internal variability of such defined group of knowledge workers, especially in context of employment flexibility, job satisfaction and organizational justice. Workers classified in the third ISCO-08 group are more susceptible to the involuntary flexible forms of employment.

Another definition of knowledge workers specifies the job content, describing them as individuals whose work requires high levels of creativity, intellectual skills and theoretical rather than purely contextual knowledge (Warhurst & Thompson 2006). The latter definition draws on the core of the idea of the knowledge economy. Yet at the same time it is more difficult to operationalize, due to the scarcity of data about the actual character of the activities individuals carry out at work. On the other hand, our approach is widely used in other studies, which guarantees its comparability. The reference group of workers who do not comply with the characteristics of knowledge workers are referred to as other workers throughout this paper.

Employment Flexibility

Labour market flexibility is concerned with the market's capacity to adjust and respond to evolving conditions (Beatson 1994). There are a variety of flexibilities recognized by scholars. The basic classification distinguishes between external and internal flexibility. External flexibility refers to regulating the amount of labor by changing the number of people employed, whereas internal flexibility is used to control the amount of labour by adjusting, among others the working time or number or variation of tasks. The former type flexibility is often denoted as *employment flexibility* (Beatson 1994). It is common practice to use type of contract as a proxy for employment flexibility.

The analysis of job satisfaction in the context of employment flexibility is especially relevant in the case of Poland, the European country with the highest percentage of temporary workers. For the last few years this percentage remained around 27 percent (26.4 percent

in 2009 and 26.8 percent in 2011 and 2013), whereas the EU average was about 14 percent (European Commission 2013d). However, only a small part of temporary workers (9.8 percent in 2009, 15.3 percent in 2011 and 14.4 percent in 2013) did not desire a permanent job and for the majority of them (72.6 percent in 2009, 61.6 percent in 2011 and 66.8 percent in 2013) the reason for temporary employment was that they could not find a permanent job, considerably higher (12.2 percentage points in 2009, 1.6 percentage points in 2011 and 4.8 percentage points in 2013) than the EU average (European Commission 2013b). An important distinction in the context of Polish labour market is the one between temporary contracts regulated by Labour code, and the civil law contracts, not regulated by Labour code, widely referred to as *junk contracts*, see e.g. Wojciechowski (2015). Work under these types of contracts is considered to be the most precarious form of employment in Poland. It implies not only the lack of job stability and unregulated relationship with the employer, but also the financial insecurity and risk of poverty in the future due to very low levels of pension benefits these contracts entitle to (Oczki 2013).

Poland also has a relatively large number of self-employed workers, in particular own-account workers—self-employed without employees. In the last few years they constituted about 14 percent (14.2 percent in 2009, 14.5 percent in 2011 and 14.0 percent in 2013) of the Polish labour force, 4 percentage points more than the European average (European Commission 2013c). It is estimated that around a third of Polish self-employment is bogus self-employed—persons with this employment arrangement are in fact employees (OECD 2014a).

According to statistics provided by Central Statistical Office of Poland, in the end of 2014, around 7 percent of all workers were employed under *atypical forms of employment* understood as civil law contracts or bogus self-employment (Główny Urząd Statystyczny 2016). An overwhelming majority—around 80% of them were imposed such an arrangement.

Data and Methods

Data

The data used to conduct the analysis were taken from the *Social Diagnosis 2009, 2011 and 2013*. *Social Diagnosis 2000–2013: Objective and Subjective Quality of Life in Poland* (Social Monitoring Council 2013) is a project that supports the study of the conditions and quality of life of Poles. The data are representative on a national and regional level (Czapiński & Panek 2013).

To retrieve the target group of the study, all the non-working individuals were excluded from the sample. Apart from that, we restricted the sample by eliminating agricultural workers and entrepreneurs—self-employed with paid employees. The nature of the work in these two groups differs substantially from the rest of the labour force. Neglecting this heterogeneity would harm the validity of the results. Considering the mentioned groups as separate groups of interest would significantly increase the complexity of the study and could lead to a departure from its central interest.

Finally, 9,549 incomplete cases from three waves have been excluded from the analysis. This considerable number stems from the fact that the income variable used in the study comprises many missing values (5,509 in total). Despite that, we dismissed the alternative model of job satisfaction without the income variable, as it is one of the central determinants of job satisfaction, and so has to be controlled for. If the same respondent took part in the survey in more than one of the analyzed waves, his or her answers for different waves were treated as separate cases. As a result, 23,942 observations from the three waves were used in the analysis.

Model

To empirically test the hypotheses we used descriptive statistics to characterize the data, followed by logistic modelling to construct the model of job satisfaction and identify relationship between job satisfaction and considered factors. Additionally, we introduced the time dimension into the analysis to ensure the stability of the model over time and its robustness to the external shocks such as economic crisis. In particular, we used data from three subsequent waves of the Social Diagnosis survey: 2009, 2011 and 2013. The model was estimated for the 2009 wave. Additionally, dummy variables were introduced, which indicated if observations come from the 2011 or 2013 waves. Interactions of these variables with all the independent regressors were also added to the model. The significance of the results for these interactions would suggest whether the influence of particular variables analysed in the model significantly changed between the 2009 and 2011 or 2009 and 2013 waves.

Measures

Knowledge Workers

The sample was divided into two separate groups: knowledge workers and other workers, by taking into consideration three factors: occupation, education level, and the use of information and communication technologies. Individuals that belong to the group of knowledge workers comply with the following criteria: they work in the top three occupational groups indicated by ISCO-08 classification (managers, professionals, associate professionals), have higher education (bachelor's degree or higher) and use the Internet to collect materials necessary for education or work. As a result 5,049 (21 percent of all analysed workers) knowledge workers were identified in the dataset.

Job Satisfaction

The job satisfaction measure used in the study is a binary variable with the possible outcomes: Very Satisfied and Satisfied or Not Satisfied. Originally, the variable comprised six levels: Very Satisfied, Satisfied, Quite Satisfied, Quite Unsatisfied, Unsatisfied and Very Unsatisfied. The distribution of the variable for the 2009, 2011 and 2013 waves is presented in Table 1.

It has been transformed to a simpler binary variable for a number of reasons. First, our primal goal is to investigate how interpersonal injustice hinders achieving the feeling

Table 1

Distribution of Job Satisfaction Variable (6 levels)

	2009		2011		2013	
	Frequency	%	Frequency	%	Frequency	%
Very Satisfied	497	6.1	613	7.6	539	6.9
Satisfied	3246	40.1	3112	38.5	2844	36.6
Quite Satisfied	3132	38.7	2955	36.6	3000	38.6
Quite Unsatisfied	722	8.9	757	9.4	760	9.8
Unsatisfied	376	4.6	471	5.8	455	5.9
Very Unsatisfied	121	1.5	167	2.1	175	2.3
Total	8094	100.0	8075	100.0	7773	100.0

Source: Own Elaboration based on Social Monitoring Council (2013).

of being satisfied with a job, rather than to compare the impact of this factor on particular levels of the job satisfaction variable available in the dataset. Moreover, most of the original responses were accumulated around two levels: Satisfied and Quite Satisfied. For that reason the levels were aggregated separately, to group the responses equally between the two levels of the final variable. We attempted aggregating the variable into three levels, extracting Quite Satisfied as a separate level and estimating ordered logistic models. However, the differences between the levels of the variables Quite Satisfied and Not Satisfied were not statistically significant, which blurred the overall legibility of the results. For this reason the two-level version of the variable was used in the final version of the analysis.

Type of Contract

In the analysis we distinguish three types of contracts: Permanent Contract, Temporary Contract and Own-Accountancy. The second category includes fixed-term contracts, part-time contracts, short-term contracts, trial contracts, hired work with a written or spoken contract, or without a contract. While developing the presented model, possibility of distinguishing temporary labour code contracts and civil law contracts was explored. The more detailed analysis did not bring any changes to the conclusions drawn, thus the more aggregated model was chosen to picture the analysis. The third category includes own-account workers—self-employed persons without employees.

Interpersonal Justice

Interpersonal justice reflects the degree to which an employee is treated with dignity, courtesy and respect by superiors or third parties. To analyse it in the paper we used the reverse of interpersonal justice—interpersonal injustice. It was measured by an item denoting perceived unfair treatment at work (Unfair). Namely, the answer to the question “In the recent months have you been unfairly treated by others at work?” was used. This measure fairly appropriately reflects the definition of interpersonal justice. However, it has a broader meaning, covering not only the issues of dignified and respectful relations, but also a number of others. For this reason it might intersect with procedural and distributive dimensions of justice.

Controlled Variables

In the model we also control a number of standard variables to reduce the possible effect of confounding variables. The controlled variables include Personal Income, Sex, Age, Years of Study and Working Hours. In the model we have introduced the log2 transformed version of the income variable (Logged Income). This technique simplifies the quantitative interpretation of the results. Such a transformation enables measurement of the effect of doubling the income. This approach seems to be a better alternative to finding the effect of absolute increase in income, taking into account the spread of this factor.

Some researchers imply there is a non-linear relationship between age and job satisfaction (Clark, Oswald, & Warr 1996). In particular they suggest the relationship is U-shaped, which means that job satisfaction diminishes up to some age and then it increases with age. This hypothesis has been empirically proven and widely replicated (Lange 2009; Lévy-Garboua, & Montmarquette 2004; Millán, Hessels, Thurik, & Aguado 2011). For that, both age and age squared have been included in the model.

Results

Data Description

One of the aims of this paper is to demonstrate the differences between the knowledge workers and other workers. Firstly, we characterise the groups using descriptive statistics. The T-student tests for equality of means and χ^2 test for independence of samples have confirmed that the differences between knowledge workers and other workers were significant for all the analysed variables in all the considered periods. In Table 2 the characteristics of the knowledge workers and the other workers for the years 2009, 2011 and 2013 are presented.

Throughout the years, there has been some variation in the percentage of workers who feel treated unfairly at the workplace. However, in most cases the differences between the years are not significant. Surprisingly, in the 2009 and 2011 waves the knowledge workers turned out to be the group with a relatively higher number of persons who felt unfairly treated at work. This percentage decreased in every wave. In 2013 there were 48 percent of knowledge workers who perceived their work environment as unfair, compared to 50 percent in 2009. Contrastingly, the percentage of unfairly treated other workers increased between 2009 and 2013 from 49 percent to 50 percent, although between 2009 and 2011 a 3 percentage points drop in the number of unjustly treated other workers was noted.

One can conclude that the trends in employment flexibility between knowledge workers and other workers are somewhat dissimilar. At each considered point in time the other workers had a considerably smaller percentage of individuals with permanent contracts and a higher percentage of those with temporary contracts than the knowledge workers. The percentage of own-account workers was higher among the knowledge workers group in 2009. Yet the own-account knowledge workers group was shrinking every year, whereas the group of own-account other workers was gradually growing. Thus, in the years 2011

Table 2
Characteristics of Knowledge Workers and Other Workers

	2009				2011				2013			
	Other		Knowledge		Other		Knowledge		Other		Knowledge	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
Income	1,799		2,895		1,922		3,182		2,023		3,111	
Age	40		38		41		39		41		39	
Years of study	12		17		12		17		12		17	
Working hours	41		39		41		39		41		39	
Unfair		48.9		49.8		46.2		48.7		50.2		48.1
Sex		59.4		44.6		59.3		42.9		58.6		40.7
		40.6		55.4		40.7		57.1		41.4		59.3
Employment Flexibility		64.5		73.0		62.0		75.9		60.9		76.4
Temporary		29.1		19.6		31.5		17.6		32.2		18.7
Own-account		6.4		7.4		6.6		6.5		6.9		4.9
Unsatisfied		54.7		47.5		56.0		46.1		59.2		50.3
Satisfied		45.3		52.5		44.0		53.9		40.8		49.7

Source: Own Elaboration based on Social Monitoring Council (2013).

and 2013 the own-account cluster was relatively larger among the other workers than the knowledge workers.

The reason for the decrease in the relative number of own-account knowledge workers can be sought, among others, in the general slowdown of the Polish economy. First, people in an unstable situation are rather risk adverse and more reluctant to choose this employment arrangement (European Commission 2012). Second, a considerable number of own-account workers in Poland are actually not running their own businesses. In fact they are employed within companies that seek to reduce costs of hiring employees under employment contracts. In the event of an economic downturn of the organisation these employees are the most likely to be the subjects of redundancies. Although we assumed that this imposed employment flexibility is rather characteristic of the other workers, it might be the case that the group of knowledge workers is also, or even more influenced, by these practices. On the other hand, the sought after specialists in the trending fields may be offered permanent employment together with other favorable working conditions to give them an incentive to stay longer in the position. More detailed analysis may help identifying divergent trends between knowledge workers from different occupations.

Within the group of other workers, permanent employment is diminishing over time, while alternative contractual arrangements are growing. Within the group of knowledge workers on the other hand, there is a steadily decline in the number of own-account workers and an increase in the number of permanent workers. Yet the trends among knowledge workers that are employed on a temporary basis are not linear. In this group a 2 percentage point fall in the number of permanent workers was noted, between 2009 and 2011. However, in 2013 the percentage of temporary workers increased again by 1 percentage points.

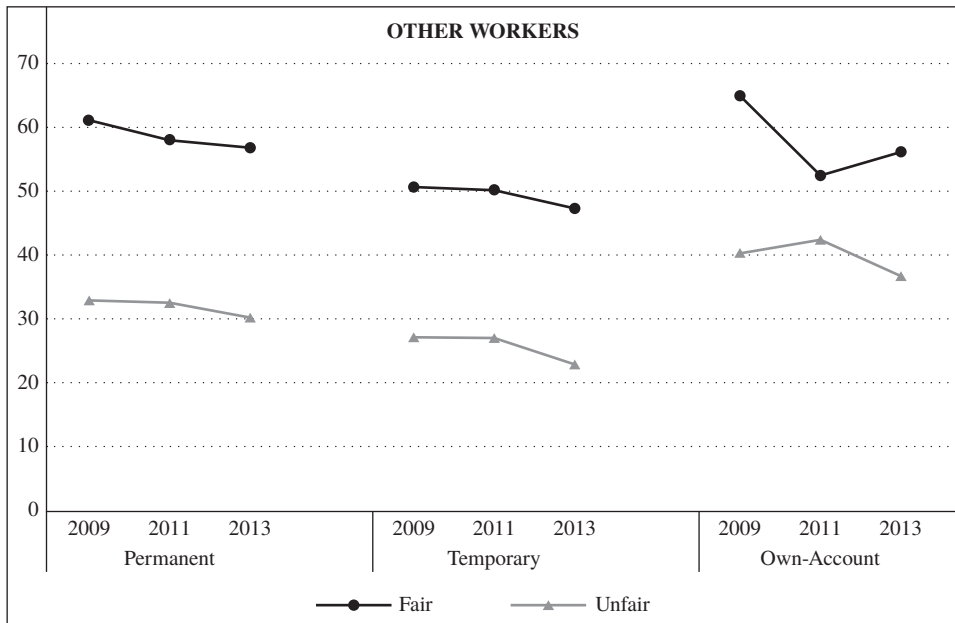
In general terms the percentage of job satisfied knowledge workers is higher than among their counterparts. In each group around half (52 percent in 2009; 53 percent in 2011) of knowledge workers describe themselves as satisfied or very satisfied with their job. However, in 2013 this number dropped to 49 percent. In the group of other workers the relative number of persons satisfied with their jobs stably declined within the analyzed period, dropping from 45 percent in 2009 to 40 percent in 2013. The presented characteristics and their changes over time may suggest that the shift from permanent to flexible working contracts in the case of the other workers adversely impacted their job satisfaction.

The focus of this paper is job satisfaction and its relation to interpersonal injustice and employment flexibility. To see the distribution of job satisfied workers, depending on their employment flexibility and unfair treatment at work Figure 1 and Figure 2 are presented, showing the percentage of other workers and knowledge workers who are satisfied or very satisfied with their jobs for all three considered periods. The results are presented for subgroups determined by the type of contract and interpersonal justice.

Unsurprisingly, in all cases the subgroups of workers who do not perceive themselves as unfairly treated at work had a higher percentage of job satisfied workers. The difference between the unfairly treated workers and those who did not consider themselves as treated unfairly was on average greater among the knowledge workers. However, the percentage of

Figure 1

Percentage of Satisfied Other Workers Depending on Type of Contract and Interpersonal Justice



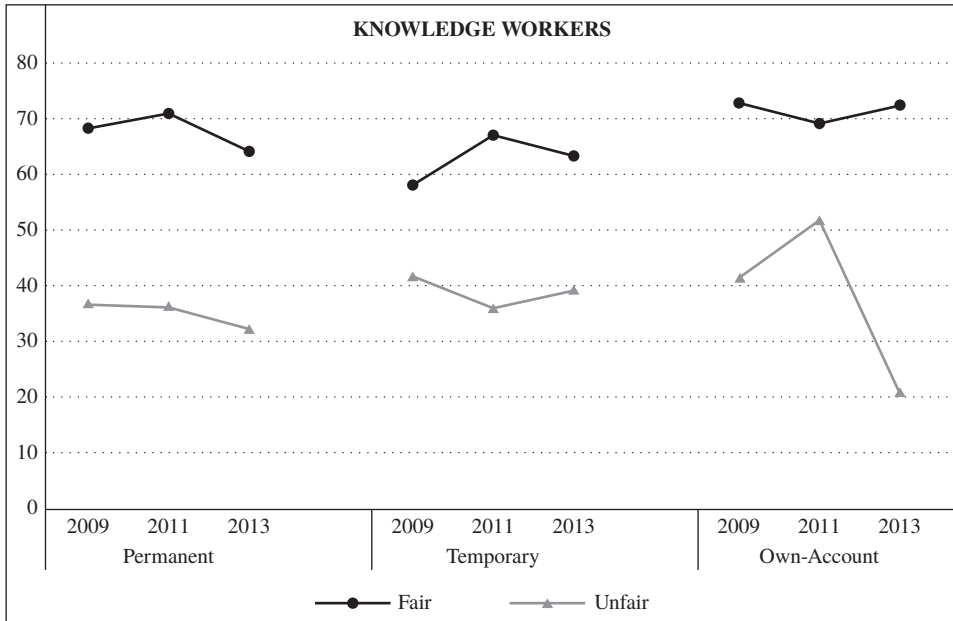
Source: Own Elaboration based on Social Monitoring Council (2013).

unfairly treated knowledge workers that were satisfied with their job was still higher than the percentage of other workers with the same problem. The only exception was the subgroup of unfairly treated own-account workers in 2013. The percentage of satisfied knowledge workers from this group fell drastically in this period. However, the size of this group is very small—in 2013 it was only 44 individuals. Some decrease in the percentage of job satisfied other workers belonging to this contractual group was reported, but the scale of this decline was much smaller.

Between the years 2009 and 2011 the percentage of job satisfied other workers with permanent contracts and own-account workers who did not report interpersonal injustice significantly declined. There were no other significant changes between the two periods. Between 2011 and 2013 the percentage of unfairly treated temporary other workers who were satisfied with their job fell by a significant amount: 4.2 percentage points. Also, a significant drop (6 percentage points) in the percentage of satisfied workers has been noted within the subgroup of permanent knowledge workers who did not struggle with the interpersonal injustice. Within the group of temporary workers the difference in the percentage of job satisfied persons between the unfairly treated individuals and the ones who did not face unfair treatment is smaller than within the group of permanent workers. This is especially true among the knowledge workers. Also, in 2009 and 2013 this difference within the group of temporary knowledge workers was notably lower than within the group of own-account knowledge workers.

Figure 2

Percentage of Satisfied Knowledge Workers Depending on Type of Contract and Interpersonal Justice



Source: Own Elaboration based on Social Monitoring Council (2013).

Model Estimates

To verify the research hypotheses two separate logistic models of job satisfaction for knowledge workers and other workers have been estimated. The separate models, instead of one model with interaction terms, were used to guarantee legibility of the results. Also, the two groups have been proven to have significantly different levels of all considered variables. Apart from that, the mechanisms through which the variables influence job satisfaction of knowledge workers and other workers may differ, therefore it is reasonable to free all the coefficients by estimating separate models. In both models the time element was included to verify the stability of the obtained results over time. We tested if the estimates of coefficients from the year 2009 were significantly different from the estimates from 2011 and 2013.

Table 3 presents results of the logit model estimated for other workers for the year 2009, as well as the estimated changes in values of the coefficients between the waves. According to the estimates there were no significant changes between 2009 and 2011. In general we can conclude that the results are stable over time. The only significant change between 2009 and 2013 was noted in the estimated influence of income on job satisfaction. However, the difference is quantitative rather than qualitative—in both waves income turned out to be a significant positive determinant of job satisfaction. In 2013 its impact was slightly stronger. As shown in Table 2, the average income of this group grew between these two periods, while other factors worsened, e.g. unfair treatment grew and number of

permanent contracts declined. One possible explanation for the increased strength of this factor's impact is that other workers would seek consolation in a better financial situation to compensate for the adverse effects of otherwise poorer conditions.

According to the model, temporary other workers have a significantly lower probability of attaining job satisfaction than the other workers with permanent contracts. Temporary employment may go together with a number of undesirable factors such as high precariousness. This may influence the satisfaction of temporary other workers. What is more, this group may have lower employability than their counterparts from the group of knowledge workers, as they possess less employable assets such as expert skills and knowledge.

The most influential factor determining job satisfaction of other workers in the model is interpersonal injustice. Other workers who believed they were subject to unfair treatment had much lower odds of being satisfied with their job than the people who did not share this belief. As assumed, interpersonal injustice has a strong impact on the job satisfaction of the workers. Drawing on the discrepancy theory, although some people may expect to be faced with unfair treatment at work, being treated with respect and dignity is probably a facet valued by the majority of workers. Therefore discrepancy from the valued reference level of this job feature clearly may result in job dissatisfaction. The interaction term between the unfair treatment and types of contract on the other hand, turned out to be statistically insignificant. From that one can conclude that other workers react to this factor similarly, independently from the type of contract, which contradicts hypothesis H2a about the lower impact of interpersonal justice on flexible other workers.

Table 4 presents the estimates of the logistic model for the knowledge workers for the year 2009 as well as the differences in the value of estimates between this year and the consecutive waves. In this group no significant differences in the estimates of the model between the analysed periods have been observed. We can conclude that the estimated results represent not only the specificity of the given year, but also that they can be generalised to other periods.

Unlike the case with other workers, there is no significant difference between either temporary workers or own-account workers and permanent workers, provided they do not feel unfairly treated. As explained before, it might be associated with the fact that knowledge workers in general have higher employability. Thus, negative outcomes that flexible employment may bring do not affect them as they do the other workers.

Similar to the case of other workers, the job satisfaction of knowledge workers is also significantly impacted by interpersonal injustice. In this case it is also the strongest factor in the presented model. As hypothesized in H1, the impact of this variable is stronger in the case of the knowledge workers. However, the difference between the values of the coefficients for the unfair treatment variable is small. One conclusion would be that both analysed groups are adversely affected by unfair treatment to a similar extent.

Additionally, the interaction term between interpersonal justice and the variable indicating temporary contract have a significantly positive coefficient. It suggests that the temporary knowledge workers are less influenced than the permanent knowledge workers by the unfair treatment at work, in terms of job satisfaction. One could conclude that, job satisfaction of temporary knowledge workers is less affected by interpersonal injustice than job satisfaction of temporary other workers, rejecting hypothesis H1.

Table 3
Logistic Model for the Group of Other Workers

	2009		2009–2011		2009–2013	
	B	S.E.	B	S.E.	B	S.E.
Logged Income	.303***	.039	.070	.055	.187***	.058
Age	-.062***	.016	-.018	.023	-.010	.023
Age Squared	.001***	.000	.000	.000	.000	.000
Male	-.124**	.056	-.126	.078	-.035	.079
Years of Study	.001	.012	-.024	.017	-.009	.017
Working Hours	-.001	.003	.002	.004	-.006	.004
Temporary	-.376***	.080	.120	.111	.086	.114
Own-Account	.114	.132	-.332	.178	-.137	.180
Unfair	-1.143***	.063	.107	.090	.036	.092
Temporary × Unfair	.137	.116	-.106	.161	-.133	.164
Own-Account × Unfair	.113	.222	.442	.317	.274	.313
Constant	-1.448***	.493	-.216	.705	-1.690**	.727
N	18,893					
% Correct Intercept	56.6					
% Correct Model	63.6					
			Cox & Snell R Square		0.089	
			Nagelkerke R Square		0.126	
			-2 Log likelihood		26,229.918	

* p < 0.1; ** p < 0.05; *** p < 0.01

B—estimate; SE—standard error; Exp(B.)—exponentiated estimate

Source: Own Elaboration based on Social Monitoring Council (2013).

Table 4
Logistic Model for the Group of Knowledge Workers

	2009			2009–2011			2009–2013		
	B	S.E.	Exp(B)	B	S.E.	Exp(B)	B	S.E.	Exp(B)
Logged Income	.467***	.070	1.595	-.086	.099	.918	-.033	.100	.968
Age	-.072	.037	.931	.067	.049	1.070	-.102	.054	.903
Age Squared	.001***	.000	1.001	-.001	.001	.999	.001	.001	1.001
Male	-.172	.103	.842	-.106	.142	.899	-.223	.142	.800
Years of Study	.015	.033	1.015	.035	.043	1.035	.011	.041	1.011
Working Hours	-.013**	.005	.988	.008	.007	1.008	.006	.008	1.006
Temporary	-.323	.179	.724	.257	.251	1.293	.294	.247	1.342
Own-Account	.115	.251	1.122	-.276	.341	.759	.289	.375	1.335
Unfair	-1.301***	.114	.272	-.151	.155	.860	-.082	.155	.921
Temporary × Unfair	.547***	.243	1.728	-.384	.340	.681	-.065	.336	.937
Own-Account × Unfair	.051	.398	1.052	.702	.557	2.018	-.952	.648	.386
Constant	-2.937***	1.037	.053	-1.006	1.421	.366	1.841	1.462	6.301
N	Cox & Snell R Square								
% Correct Only Const.	Nagelkerke R Square								
% Correct Model	-2 Log likelihood								
	5,049						0.119		
	52.0						0.168		
	66.0						8,080.63		

* p < 0.1; ** p < 0.05; *** p < 0.01

B—estimate; SE—standard error; Exp(B.)—exponentiated estimate

Source: Own Elaboration based on Social Monitoring Council (2013).

On the other hand, a weaker effect of interpersonal injustice on temporary knowledge workers partly confirms the hypothesis H2b. In the context of discrepancy theory, this result suggests that the temporary knowledge workers value interpersonal justice less than the permanent knowledge workers. This may be derived from the short-lived relationship with the job. However, a similar effect was not found among the group of own-account workers. It is possible that the relation of own-account workers with the job prevails in the long run.

The hypothesis H3 has been confirmed in the case of temporary workers. In the case of the other workers no mitigating effect was found between unfair treatment at work and temporary employment. What is more, temporary other workers in general turned out to have a lower probability of job satisfaction than the permanent other workers. In the case of knowledge workers the influence of interpersonal injustice has been shown to be weaker among temporary workers than permanent workers. The divergence between knowledge workers and other workers in this matter may stem from the difference in employability between these two groups. The knowledge workers in general may have better employability assets that other workers may be lacking. Thus, they have higher employment security, a feature that can immunize them to the negative effects of interpersonal injustice.

Conclusions

In this paper we strived to demonstrate the influence of interpersonal injustice on workers' job satisfaction, dependent on their employment flexibility and the type of work they perform. In particular we sought confirmation for three research hypotheses. First, we hypothesized that the knowledge workers value interpersonal justice more, thus they would be more affected by unfair treatment than the group of other workers. Second, we formed a hypothesis about the lesser effect of unfair treatment on job satisfaction among both knowledge and other workers with flexible contracts. Finally, we proposed a hypothesis stating that this mitigating effect is stronger among the knowledge workers. To verify the hypotheses, we employed logistic modelling, preceded by descriptive analysis.

Descriptive analysis has shown that relatively more knowledge workers are satisfied with their jobs than other workers. On the other hand, the percentage of unfairly treated persons is similar in both groups. Permanent employment is more common among the knowledge workers than the other workers. Additionally, this form of employment is growing in popularity within this group, while the percentage of the permanent other workers is declining. The opposite is true for the own-account workers: this employment arrangement is diminishing among the knowledge workers, while growing among the other workers. A substantially smaller number of own-account workers have to deal with unfair treatment at work, compared to both permanent and temporary workers, who have in general a similar percentage of unfairly treated employees. Yet the percentage of unfairly treated own-account workers is higher among knowledge workers than the other workers.

In both analyzed groups and under any type of contract, the percentage of job satisfied workers is considerably lower among individuals facing interpersonal injustice.

Logistic modelling has shown that the unfair treatment at work has a similarly strong adverse impact on job satisfaction of both the other workers and the knowledge workers.

Yet, among the latter group the negative effect is smaller for persons with temporary contracts, which led us to reject the hypothesis H1 about the stronger impact of interpersonal justice on knowledge workers. At the same time, it partly confirms the hypothesis H2 stating that the flexible workers are affected by this factor to a lesser extent. However, this effect was not found either among knowledge own-account workers or groups of flexible other workers. The result also supports our third hypothesis H3 regarding the greater mitigating effect of employment flexibility on knowledge workers.

It is by no means to say that temporary workers, who are less impacted by unfair treatment, may be treated with less respect and dignity. Quite the contrary, the conclusion drawn should be that permanent knowledge workers as well as own-account workers are more vulnerable to these undesirable factors. For the permanent knowledge workers the unfair treatment at work may be a sign of a violation or breach of the psychological contract established with the employer. The consequence of violating this informal mutual agreement between the employee and the employer is not only diminished job satisfaction of employees; it also may result in outcomes undesirable for the organization, such as increased turnover and lowered intention to remain at work (Robinson & Rousseau 1994) as well as diminishing workers' loyalty and increased neglect (Turnley & Feldman 1999).

The findings do not unconditionally advocate temporary employment. Indeed, in the case of other workers temporary employment has been shown to be straightforwardly inferior to permanent employment in terms of job satisfaction. On the other hand, in the case of knowledge workers it has been proven to be favorable in conditions of interpersonal injustice. However, there are other factors often associated with temporary employment that need to be taken into account, such as job security (see: Wilczyńska, Batorski, & Torrent-Sellens 2016), employability or social security.

Limitations and Implications for Future Research

There are some limitations to this study. First, the variable used to measure interpersonal injustice might have a broader meaning than the interpersonal injustice itself. Unfair treatment by others may regard to the unjust procedures or unfair distribution of outcomes. In this way it intersects with other dimensions of organizational justice. However, as the measure focuses on the unjust treatment by other persons at work, be it co-workers, superiors or third parties, the interpersonal aspect of this variable is indisputable. That is to say that even if the unfair treatment regards unjust procedures or distribution, the employee perceives the problem on a personal rather than procedural level. For this reason the measure reflects well the interpersonal aspect of organizational justice.

Secondly, the voluntariness of working under a particular form of contract is an important factor forming job satisfaction, which has not been explored in the presented paper due to lack of availability of this data in the used dataset. Majority of employees working under civil law contracts or under bogus self-employment are imposed such an arrangement by an employer. Replicating the presented result, taking into consideration the type of contract preferences of the workers would be an interesting extension of the presented study providing an additional insight into the obtained results. Another implication for the

future research would be to compare the result with the results obtained after beginning of 2016, given the change in the Art. 25 § 4 of Labor Code from February 2016, entitling the workers with temporary labor code contracts to the same notice periods as the permanent workers.

The prevalence of certain type of contract may depend immensely on the nature of the actual occupation. Some occupations, are more exposed to precarious employment. Similarly, the kind of occupation may also determine the importance of unfair treatment by others at work. Some occupations require more interaction with the peers or supervisors than others. In such a case hostile relations could result in being generally more harmful for job satisfaction and well-being at work. The postulate of conducting the research on more disaggregated data in order to distinguish the actual knowledge work from the knowledgeable work is also present in the knowledge work literature (Fleming, Harley, & Sewell 2004). For this reason, a similar analysis on more disaggregated occupational groups of workers would help investigating if, in some occupations, workers prefer flexible over permanent employment.

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CHAPTER IV

PRECARIOUS KNOWLEDGE WORK? THE COMBINED EFFECT OF OCCUPATIONAL UNEMPLOYMENT AND FLEXIBLE EMPLOYMENT ON JOB INSECURITY

Precarious Knowledge Work? The Combined Effect of Occupational Unemployment and Flexible Employment on Job Insecurity

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Abstract Job insecurity affects individual well-being and organisational performance. Many studies show correlation between job insecurity and flexible employment. However, whether flexible contracts inevitably contribute to precarious employment, independently of other factors, is less clear. Here, we investigate the impact of employment flexibility on job insecurity among knowledge workers, depending on the unemployment rate in their occupations. Logistic models, estimated using a large sample of workers, showed that job insecurity among temporary workers in occupations with low unemployment does not differ significantly from job insecurity among permanent workers. Occupational unemployment adversely affects only temporary knowledge workers, while permanent workers are uninfluenced.

Keywords Job insecurity · Employment flexibility · Occupational unemployment · Knowledge work

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Introduction

Perceived job insecurity is a topic that has increasingly drawn the attention of scholars. Understanding the mechanism underlying the feeling of job insecurity is important for both employees and employers, as job insecurity may have consequences for individual well-being and the performance of the organisation. Usually, the individual and job characteristics are considered as antecedents of perceived job insecurity. In particular, flexible contractual forms are thought to have a strong association with the feeling of job insecurity. Although empirical evidence suggests otherwise, flexible employment is often used as a synonym for insecure, precarious work. In the presented study, we show the conditions in which flexible employment indeed translates into the feeling of job insecurity. Namely, we consider the possible combined effect of employment flexibility and unemployment rates in occupations on perceived job insecurity.

Job insecurity has been proven to be influenced by macroeconomic-level indicators (De Witte 2005). Within this group of determinants, level of unemployment is undoubtedly one of the most influential variables. A considerable body of research shows that unemployment levels play a significant role in the formation of the sense of job insecurity. Some studies focus on the national level of unemployment (De Witte 2005). Others look for a relationship between job insecurity and unemployment on a more disaggregated level, considering regional unemployment (Green et al. 2000) or unemployment within economic sectors (Ellonen and Natti 2015) as central to individual perceptions of job insecurity. However, this division into regions or industries may not fully reflect the feeling of job insecurity among employees. This may be especially true for more mobile or highly skilled workers, who can easily change their physical location or shift between industries.

In this paper, we contribute to the existing literature, investigating the relationship between perceived job insecurity and unemployment in various occupational groups. In the research, we focus on knowledge workers. We also demonstrate the differences between the impact of unemployment in occupations on job insecurity among knowledge workers and the remainder of the workforce. There is reason to believe that knowledge workers in particular, as those equipped with the expert skills required in a variety of industrial sectors, would be more influenced by occupational unemployment than by other unemployment measures used in similar analyses.

Our results, obtained using logistic regression models, show that the probability of job insecurity grows with higher unemployment in occupations only in the case of knowledge workers with temporary contracts. At the same time, job insecurity among temporary and permanent knowledge workers does not differ significantly, provided that there is a low unemployment rate in their occupations. In the case of other workers on the other hand, higher unemployment rate in their occupations increases job insecurity among all workers, regardless of the contractual group. The findings of this study challenge the common view that flexible contracts are inevitably inferior. They show that for specific groups of workers, temporary employment does not result in precariousness.

In this paper, we first present the main goal and specific hypotheses of the study. Secondly, we review existing literature on job insecurity, knowledge work, occupations and employment flexibility; and we provide background on the employment situation in Poland. In the next section, we present the empirical results, which are followed by a

discussion. Finally, we outline the limitations of this study and suggest some implications for future research.

Literature Review

Job Insecurity

In the past few decades, job insecurity has played a significant role in the industrial relations literature. By and large, two lines of inquiry with regard to this subject can be distinguished. First, a great body of research focuses on the consequences of job insecurity on organisational outcomes, such as performance (Cheng and Chan 2008), attitudes towards work and the organisation (Sverke and Hellgren 2002) or organisational commitment (De Witte and Näswall 2003). In the same vein, in numerous studies, links between job insecurity and personal well-being and mental health are made (e.g. Bernhard-Oettel et al. 2011; Sverke et al. 2002). The other research perspective concentrates on the factors determining job insecurity.

Three levels of factors that determine job insecurity are usually identified: macro-level variables, individual characteristics (including job characteristics and demographic variables), and personality traits (De Witte 2005). Macro-level variables may include unemployment rate, legislative conditions, change in organisational structure, etc. Unemployment rate in particular is considered to be a strongly influential macro-level factor determining job insecurity. Individual characteristics may include such variables as age, educational and occupational level, previous experience of unemployment, trade union membership, job tenure or type of contract. It has been shown that perceived job insecurity strongly correlates with individual characteristics that indicate vulnerability on the labour market, e.g. temporary contracts or low-skilled work (De Witte and Näswall 2003).

Research has shown that job insecurity depends also on the macro-level situation of the region or country, with the level of unemployment being one of the most influential variables (De Witte 2005). However, grouping workforces using the physical location as a key may not be the most optimal solution. In fact, a recent study by Ellonen and Natti (2015) proved that the unemployment rates in industrial sectors reflect individual levels of perceived job insecurity better than the regional unemployment rates. At the same time, the research demonstrated that micro-level factors explain job insecurity much better than the macro-level determinants, including unemployment rates. An interesting development of this research would be to use occupations, rather than industrial sectors, as a grouping key. As occupational groups gather employees with similar personal and job characteristics, they have greater discriminating power.

Knowledge Work

Knowledge workers are a central element of the modern economies in which the knowledge sector plays a significant role. There are a number of alternative approaches to defining knowledge workers in the literature. Warhurst and Thompson (2006) provide an interesting definition of knowledge workers, based on the job content. According to their definition, knowledge work requires high levels of creativity,

intellective skills and theoretical rather than purely contextual knowledge. Alternatively, the occupational approach to defining knowledge workers suggests distinguishing knowledge workers according to occupational categories: professionals, managers and technical workers (Drucker 1993).

The former definition of knowledge workers is more exclusive and enables sifting actual knowledge workers from *knowledgeable* workers. The latter, on the other hand, seems to be generic and too inclusive. However, at the same time, the occupational approach is more accessible in terms of its operationalisation. According to Brinkley (2006), a measure to improve the flawed occupational approach is to introduce, as well as the occupational categories, additional requirements to the definition of knowledge workers—high-level skills indicated by higher education or equivalent qualifications and carrying out tasks that require expert thinking and complex communication skills with the assistance of computers. According to Brinkley's definition, knowledge workers fulfil all three of these conditions.

The advantage of using the three presented conditions to define knowledge workers is that it is the most commonly used operationalisation of this concept. It is not only applied to individual-level analyses, but it is also used in macro-level accounts. This indicates a high comparability of the obtained results.

Another issue associated with defining knowledge workers is the level of aggregation. Usually, the three main groups of standard classifications from the International Standard Classification of Occupations (ISCO-08) are used—managers, professionals and associate professionals. However, some researchers suggest relying on more desegregated levels of occupations to define the knowledge worker group (Fleming et al. 2004). In the presented study, this issue is addressed by introducing unemployment rates at more disaggregated (2-digit ISCO-08) levels of occupations into the analysis of job insecurity, described in detail in the “[Unemployment in Occupations](#)” section.

Occupations

The perception of job insecurity differs depending on occupational level. This is due to the fact that there are large differences between occupations in terms of vulnerability on the labour market. The demand for some occupations is much higher than that for the others. Additionally, this demand is also subject to change overtime. The occupations that were sought after a decade ago might be presently in decline. On the other hand, new occupations emerge. The dynamics of occupational change is even further fostered by technological advancement (Brynjolfsson and McAfee 2011).

By and large, knowledge workers are the most demanded category of employees (CEDEFOP 2012; CEDEFOP 2015). However, there are several views on the prospects of different occupations. According to some, the occupational categories classified as knowledge work already face or may face in the future a decline in demand (e.g. Frey and Osborne 2013). For this reason, it is worthwhile focusing on unemployment in occupations also in the context of knowledge work.

Employment Flexibility

An interesting factor in the context of job insecurity is employment flexibility. Employment flexibility, next to work-time flexibility, is an answer to the market's need to adapt and react

to changing conditions. The term refers to the possibility of regulating the amount of labour by adjusting the number of employees (Beatson 1994). Employment flexibility is reflected by the type of contracts used. The three general categories of contractual arrangements are permanent contracts, temporary contracts and self-employment.

Temporary employment has been proven to be positively correlated with job insecurity (De Witte and Näswall 2003). In fact, some researchers (Pearce 1998) argue that temporary employment is inevitably associated with job insecurity and therefore may serve as its indicator. However, it has been shown that the two, although correlated, are not identical. Notably, temporary employment not accompanied by the feeling of job insecurity may result in positive outcomes, such as increased job satisfaction or organisational commitment. Additionally, self-employed workers without employees are more likely to attain job satisfaction than permanent workers, provided they are job secure (Wilczyńska et al. 2015). A crucial question with respect to this issue is if the temporary nature of the contract is voluntary or imposed (De Witte and Näswall 2003). The presented study provides a valuable insight into the situation of a country where flexible employment has already constituted an important share of total employment for a number of years.

Hypotheses

It has been shown that knowledge workers tend to have a higher job security than other workers (Benson and Brown 2007; Pot and Smulders 2012). One would think that they might be more immune to the adverse factors that decrease one's perception of job security. Undoubtedly, one of the reasons this group of workers enjoys higher security is higher employability. Knowledge work, characterised by theoretical knowledge, expert skills and high creativity (Frenkel et al. 1995), is highly demanded on the labour market, as evidenced by the Study of Human Capital in Poland (2013), CEDEFOP (2012) and CEDEFOP (2015). For this reason, knowledge workers may be seen as individuals with high employability and, thus, have higher job and employment security.

However, there is a considerable amount of heterogeneity in regard to employability among knowledge workers. Some occupations usually assigned to this group are more sought after than others. There is a reason to believe that job security among knowledge workers differs depending on the ability to regain employment. The ability to regain employment in turn largely depends on the demand side of the labour market. Therefore, we hypothesise that knowledge workers employed in occupations with a high unemployment rate are at a higher risk of being job insecure.

H1: Higher unemployment in occupations significantly increases job insecurity among knowledge workers.

We also believe that the effect of higher unemployment in occupations is stronger among workers with flexible contracts. These workers have the most vulnerable position on the job market. They are more likely than permanent workers to be laid off when an employer is facing financial difficulties. In highly demanded occupations, this may not be seen as a problem. However, if the unemployment rate is high for a given occupation, flexible workers are not only the ones most likely to lose their jobs,

but they may also have difficulty with finding new employment. Therefore, the effect of high unemployment may be stronger within this group.

H2: High unemployment in occupations has more influence on job insecurity among flexible knowledge workers than among permanent knowledge workers.

Apart from verifying the research hypotheses regarding knowledge workers, the analysis provides a comparison between the group of knowledge workers and the group of other workers. In particular, we hypothesise that job insecurity among other workers is more influenced by employment flexibility than job insecurity among knowledge workers. The differences between knowledge workers and other workers may be explained by the “replaceability thesis”, proposed by Goldthorpe (2000), which has received some empirical support (Emmenegger 2009). The thesis implies that workers who possess very specific skills are more difficult to replace. For that reason, they have less preference for job stability, understood as permanent employment. Workers with few specific skills, on the other hand, have high replaceability; therefore, they prefer more stable employment. In our study, we move from analysing the preference for job protection to analysing the influence of more and less protected jobs on the perception of job insecurity among workers with more specific skills (knowledge workers) and among workers with less specific skills (other workers). In particular, we hypothesise that knowledge workers feel less replaceable than other workers; thus, they have less preference for permanent employment.

H3: Other workers with flexible contractual forms are more likely to feel insecure due to high unemployment in their occupation than knowledge workers with flexible contracts.

There is no basis to hypothesise about other particular differences between the two analysed groups. However, they differ considerably (see Table 1) and there is good reason to expect some other disparities within the results of the analysis that was run separately on the subsamples of knowledge workers and other workers.

Data and Methods

Data

To conduct analysis of job insecurity among Polish workers, we used the Social Diagnosis 2011 and Social Diagnosis 2013 datasets. *Social Diagnosis 2000–2013: Objective and Subjective Quality of Life in Poland* (Social Monitoring Council 2013) is a longitudinal study supporting the analysis of the conditions and quality of life of Poles. The dataset is representative on a national and a regional level (Czapiński and Panek 2013). In this study, we consider two consecutive waves of the Social Diagnosis survey (2011 and 2013) in order to verify the robustness of the obtained results.

For the purpose of this study, the sample was restricted to working individuals. Additionally, agricultural workers, as well as entrepreneurs (self-employed workers with paid employees), were excluded from the sample. The job nature of the two excluded groups differs considerably from the remainder of the labour force. Overlooking this heterogeneity

Table 1 Characteristics of knowledge workers and other workers

	2011		2013		
	Knowledge workers		Other workers		
	Mean	%	Mean	%	
Personal income	3159.1	1917.5	3102.2	2004.4	
Age	39	41	39	41	
Years of study	17.3	12.4	17.2	12.5	
Unemployment in occupations	5.5	12.9	8.5	15.3	
Income source uncertain		48.1	62.3	54.9	69.0
Sex	Male	42.1	58.4	40.2	58.4
	Female	57.9	41.6	59.8	41.6
Sector	Not public	49.5	76.3	50.0	78.1
	Public	50.5	23.7	50.0	21.9
Previous unemployment		4.7	12.9	6.8	13.1
Employment flexibility	Permanent	76.0	61.1	75.0	59.5
	Temporary	17.6	32.1	18.9	33.4
	Own-Account	6.5	6.8	6.2	7.1
Region	East	19.3	18.6	19.0	18.4
	West	80.7	81.4	81.0	81.6

Source: Self-elaboration based on data from Social Monitoring Council (2013) and Górnjak (2014)

in the analysis would have led to flawed and biased results. On the other hand, addressing this issue in the analysis would have significantly increased the complexity of the outcomes and might as a result have blurred the conclusions regarding the main analysed group.

Measures

Knowledge Work

The sample was divided into two groups: knowledge workers and other workers. The division was made taking into consideration three factors: occupation, education level and the use of information and communication technologies. Namely, the group of knowledge workers was retrieved using the following criteria: the occupation was in one of the top three occupational groups indicated by the ISCO-08 classification (managers, professionals and associate professionals), the individual had a higher education (bachelor's degree or higher) and the individual used the Internet to collect materials necessary for education or work. As a result, 3767 (22% of all analysed workers) knowledge workers were identified in the dataset.

Job Insecurity

Job insecurity was measured by an indicator which denotes an uncertain and insecure source of income in recent months. Initially, the variable could take one of three values: Never, Sometimes or Often. They were aggregated into two categories: Yes and No.

The used measure concerns financial insecurity, as it refers to the source of income. This is not necessarily the job, as it could also be a different source of income, for instance, pensions. In that sense, this variable is semantically the closest to the notion of employment security. However, in the used dataset, only around 3.8% of respondents that were taken into consideration for the study declared a secondary income source that was not a paid job.

Unemployment in Occupations

To retrieve information about the unemployment rate in various occupations, we used the *Study of Human Capital in Poland 2010–2013* dataset (Górnjak 2014), which comes from a labour market monitoring project initiated in 2010. In the project, extensive research of the Polish labour market both from the demand and supply side was conducted in five consecutive annual rounds (2010–2014). The data regarding unemployment are taken from the *Study of Human Capital in Poland* since, unlike Social Diagnosis, this dataset is focused on the labour force, rather than the whole population. Therefore, its sample does need to be further restricted. For this reason, the unemployment rates may be calculated based on a considerably larger sample. For the survey, 17,600 respondents were interviewed in each round. The unemployment rates corresponding to the 2011 wave in Social Diagnosis were calculated from the 2010 and 2011 waves of the *Study of Human Capital in Poland*. Unemployment rates for the 2013 wave of Social Diagnosis were retrieved from the 2012 and 2013 waves of the *Study of Human Capital in Poland*. Using the *Study of Human Capital in Poland* dataset to conduct the whole analysis was not possible due to the fact that in the questionnaire, for some contractual groups, the questions regarding job insecurity were not present.

The unemployment rate in occupations, measured in percent, is defined by the 2-digit ISCO level (see Table 5). The rates were calculated based on the number of unemployed persons looking for a job in a given profession compared to the number of all individuals in this profession: working and unemployed.

Employment Flexibility

Employment flexibility is measured by type of contract. Three types of contracts were considered in the analysis: permanent contract, temporary contract and own-accountancy. The first category reflects solely indefinite contracts. The second category includes fixed-term contracts, part-time contracts, short-term contracts, trial contracts, hired work with a written or spoken contract, or without a contract. The third category is for own-account workers—self-employed persons without employees.

Control Variables

The analysis also used a number of control variables to reduce the possible effect of confounding variables. The controlled variables included personal income, age, sex, years of study, region, working in the public sector and experience of previous unemployment. Previous experience of unemployment is proven to play a central role in the perception of job security (e.g. Ellonen and Natti 2015). Persons who experienced unemployment in the recent past may perceive the threat of losing their job again

as more real and possible. In the study, previous unemployment is a dummy variable indicating if a person was unemployed, i.e. stayed without a job, at least once in the two years prior to the survey.

Work in the public sector is usually characterised by a lower mobility and rigidity with regard to changes in the economic situation. For this reason, workers employed in the public sector might feel more secure. The private sector, on the other hand, is usually more flexible and adapts more easily to the macroeconomic situation of a country. Private companies are more likely to make use of solutions available in the globalised world, such as outsourcing or offshoring. This flexibility might come at the cost of job insecurity for employees. Hence, in the analysis, we included the variable denoting working for the public sector into this study of job insecurity, with the private sector as a reference category.

The log2 of the personal income was introduced in the job insecurity model to measure an effect of doubling one's income on job insecurity. The region variable included in the model distinguishes respondents coming from the Eastern (Lubelskie, Podlaskie, Podkarpackie, Świętokrzyskie and Warmińsko-Mazurskie) and Western (Dolnośląskie, Kujawsko-Pomorskie, Lubuskie, Łódzkie, Małopolskie, Mazowieckie, Opolskie, Pomorskie, Śląskie, Świętokrzyskie, Wielkopolskie, Zachodniopomorskie) voivodeships. Such a division provides a good level of differentiation between regions characterised by a lower economic growth and higher unemployment, i.e. Eastern regions (Central Statistical Office of Poland 2017), without introducing superfluous granularity in the analysis.

Models

The main goal of the analysis is to investigate how knowledge workers respond to various factors in terms of perceived job insecurity. In particular, the aim of the study is to analyse the influence of unemployment in occupations on the perception of job insecurity among knowledge workers and determine if this influence changes depending on employment flexibility. An additional objective is to compare knowledge workers with the remainder of the workforce, in order to see if knowledge workers react to the considered factors distinctively from other workers. In order to do that, two separate models were constructed for these groups. As a dichotomous dependent variable was included in the analysis, logistic modelling was applied:

$$p_i = Pr(Y_i = 1 | X_i) = \frac{\exp(\beta X_i)}{(1 + \exp(\beta X_i))}$$

Namely, logit models with control variables, employment flexibility and unemployment in occupation variables, as well as with the interaction term between the latter two, were estimated separately for knowledge workers and other workers. Job insecurity is assumed to be a latent continuous variable $Insecurity_i^*$, which cannot be measured directly. Instead, a binary variable $insecurity_i$ is measured, taking the value 1 if $Insecurity_i^*$ is higher than the threshold value, normally set to 0, and the value 0 otherwise:

$$Insecurity_i^* = \beta X_i + \varepsilon, \quad \varepsilon \sim Logistic(0, 1)$$

$$insecurity_i = \begin{cases} 1 & \text{if } Insecurity_i^* \geq 0 \\ 0 & \text{if } Insecurity_i^* < 0 \end{cases}$$

Logistic regression in such a form is our benchmark model. However, we present two more restricted models, to compare the results between them. The first model (1) encompasses the control variables as well as employment flexibility measures. The unemployment in occupations rate was not included in the model. In the second model (2), the unemployment in occupations rate was added to the equation. The benchmark model (3) was extended by the interaction of the employment flexibility variable with the unemployment in occupations rate.

Additionally, the time dimension was introduced into the analysis to verify the stability of the models over time. In particular, the models were estimated for years 2011 and 2013.

Results

Background Statistics

In most of the post-communist countries, temporary employment constitutes a small part of total employment. Poland, however, despite its history, stands out from not only post-communist, but also the other European countries, in terms of employment structure. It has the highest percentage of temporary employees in the European Union. Almost 27% of the employees in Poland were employed under temporary contracts in 2011 and 2013. Poland also had one of the highest percentages (around 18%) of self-employed workers in Europe at that time (European Commission 2014b). The vast majority of them were self-employed workers without employees—own-account workers (European Commission 2014a). Notably, it is estimated that approximately 30% of self-employment in Poland is false self-employment (OECD 2014)—in which the self-employed worker provides services for an employer, but de facto their relationship is one of subordination (Kwiatkiewicz 2008). The fact that the different contractual groups constitute a big part of the Polish labour market gives a good opportunity to compare job insecurity of workers with different forms of employment. In most European countries, groups of flexible workers are still considerably smaller, which makes it harder to draw conclusions about their relationship with job insecurity. However, the changes in modern economies are universally forcing a shift from permanent to flexible employment (Eurofound 2015).

In both analysed waves, annual unemployment rate in Poland was in line with the European average. In 2011, it totalled 9.7%, compared with 9.6% of the EU27, while in 2013, it equalled to 10.3%, compared with 10.8% in the EU27 (European Commission 2013). It is important to mention that the analysed periods coincide with the slowdown of the Polish economy, following the financial crisis in 2008.

Looking at the sample characteristics presented in Table 1,¹ in both analysed periods, the average occupational unemployment is by around 7 percentage points lower among knowledge workers (5.5% in 2011; 8.5% in 2013) than it is among other workers (12.9% in 2011; 15.3% in 2013). In both groups, it increased between 2.4 and

¹ The Student's *t* tests for equality of means and χ^2 test for independence of samples have confirmed that the differences between knowledge workers and other workers were significant for all the analysed variables in both the considered periods.

3 percentage points between 2011 and 2013. A similar difference (-8.2 pp in 2011 and -6.3 pp in 2013) between knowledge workers and other workers can be observed in the percentage of those who had experienced unemployment, with 4.7–6.8% of knowledge workers admitting to have had this experience compared with 12.9–13.1% of other workers.

Also, a lower proportion of knowledge workers feel their income source is uncertain (-14.1 pp in 2011 and -14.2 pp in 2013). However, the share of those feeling job insecure increased between 2011 and 2013 both among knowledge workers (from 48.1 to 54.9%) and other workers (from 54.9 to 69%). The socio-demographic profile of knowledge workers is substantially different from the other workers' characteristics. Probably the most prominent difference is the one in the income between the two groups. On average, knowledge workers earn around a third more than the other workers. Another considerable difference is shown in the proportion of persons working in the public sector. Around half (50.5% in 2011; 50% in 2013) of knowledge workers are employed in the public sector compared with only around a fifth (23.7% in 2011; 21.9% in 2013) of other workers. Also, around 75% of knowledge workers (75% in 2011; 76% in 2013) work under permanent contracts, while only around 60 (61.1 in 2011; 59.5 in 2013) of other workers have this type of contractual arrangement. Among the latter group, the temporary contracts are more common, with around a third (32.1% in 2011; 33.4% in 2013) working under such contracts, compared with less than a fifth (17.6% in 2011; 18.9% in 2013) of knowledge workers. The proportion of own-account workers among the two groups is similar: 6.5% of knowledge workers compared with 6.8% of other workers worked as self-employed workers without employees in 2011 (6.2 and 7.1% in 2013, respectively). Almost 60% of knowledge workers are women, whereas in the case of other workers, women represent only around 40% of the subsample. The distribution of the two groups in the regions is similar between the groups, with over 80% of respondents coming from the Western voivodeships and under 20 from the Eastern parts of Poland.

Flexible Contracts and Unemployment in Occupations

The presented study is focused on the impact of occupational unemployment on job insecurity in the context of employment flexibility. The relevance of this analysis is supported by the literature in the sense that job insecurity and employment flexibility have been shown to be correlated numerous times. Additionally, in the data used in the study, a relatively strong correlation ($CORR = 0.657$, $p < 0.001$) between employment flexibility and unemployment rate in occupations was demonstrated. A relationship between percentage of workers with permanent contracts and the unemployment rate in occupations is illustrated in Fig. 1. One can conclude, therefore, that the higher the unemployment rate in occupations, the lower the percentage of permanent workers. This means that workers in professions characterised by a high unemployment rate more frequently have flexible contracts compared to individuals working in occupations with a low unemployment rate. These results serve as a support for a further analysis of combined effect of unemployment in occupations and flexible employment on job insecurity.

The information regarding percentage of occupations among knowledge workers and other workers, unemployment rate in occupations can be found in Table 4 and Table 5, respectively.

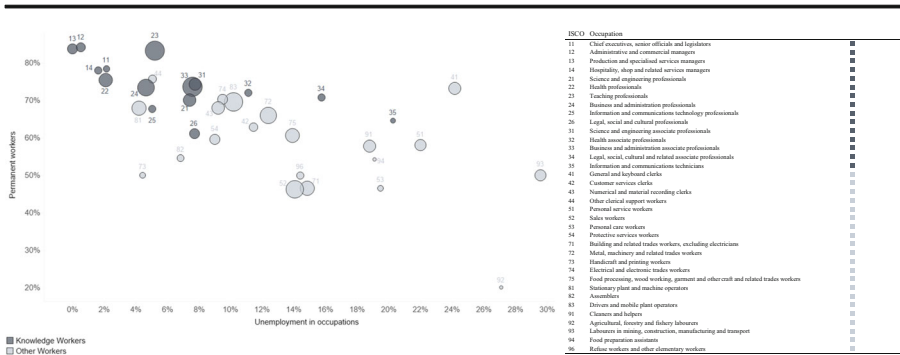


Fig. 1 Percentage of permanent workers and unemployment rate by occupations. Source: Self-elaboration based on data from Social Monitoring Council (2013) and Górnjak (2014)

Results for Knowledge Workers

Three alternative models of job insecurity were estimated separately for the groups of knowledge workers and other workers for years 2011 and 2013. The results of the models for the groups, with coefficients and exponentiated coefficients, are presented in Table 2 and Table 3, respectively. The exponentiated estimates usually are equal to the odds ratios (OR), the exponentiated estimate of interaction is the ratio of odds ratios, and the exponentiated intercept represents the baseline odds. In our case, the odds represent the ratio of the probability of a worker perceiving their job as insecure to the probability of them perceiving their job as secure.

In the analysis of the results, we focus on the findings for the group of knowledge workers (Table 2). Subsequently, we compare these findings to the results obtained for the other workers in search of important differences.

The control variables that were consistently significant across all the presented models in both analysed years were logged income, working in the public sector and previous experience of unemployment. According to the results, an increase in income considerably decreases the probability of feeling that one’s job is at risk.

As suspected, previous experience of unemployment turned out to play a significant role in the shaping of one’s job insecurity. Workers who had been unemployed within two years prior to the conducting of the survey were proven to have higher odds of struggling with job insecurity. On the other hand, working in the public sector significantly diminishes the probability of experiencing job insecurity.

According to models (1) and (2), both considered types of flexible employment: temporary contracts and own-accountancy, have a positive link with job insecurity. Temporary knowledge workers have much higher odds of feeling job insecure ($OR_{2011(1)} = 1.693, p < 0.001; OR_{2011(2)} = 1.702, p < 0.001$) than permanent workers with similar characteristics. Own-account workers are especially exposed to job insecurity, with the odds of experiencing the feeling of their job being at risk at over threefold the odds of their counterparts with permanent contracts ($OR_{2011(1)} = 3.456, p < 0.001; OR_{2011(2)} = 3.480, p < 0.001$).

The unemployment in occupations variable introduced in model (2) turned out to be insignificant at a significance level of 0.05. However, conclusions drawn from the third model, where interaction terms between unemployment in

Table 2 Logistic regression estimates of the job insecurity models for knowledge workers

	2011					
	(1)		(2)		(3)	
	Exp(B)	95% C.I. for EXP(B) Lower Upper	Exp(B)	95% C.I. for EXP(B) Lower Upper	Exp(B)	95% C.I. for EXP(B) Lower Upper
Logged income	-0.525 ^{*,***}	0.591 0.519 0.674	-0.531 ^{***}	0.588 0.515 0.671	-0.529 ^{***}	0.589 0.516 0.673
Age	0.008 [*]	1.008 0.999 1.016	0.007 [*]	1.007 0.999 1.016	0.007 [*]	1.007 0.999 1.016
Female	-0.213 [*]	0.808 0.674 0.968	-0.214 [*]	0.807 0.673 0.967	-0.209 [*]	0.811 0.676 0.973
Years of study	0.000	1.000 0.951 1.051	-0.002	0.998 0.949 1.050	-0.001	0.999 0.950 1.051
Public sector	-0.421 ^{***}	0.656 0.547 0.788	-0.419 ^{***}	0.657 0.547 0.789	-0.413 ^{***}	0.662 0.551 0.795
Previous unemployment	0.631 ^{***}	1.880 1.218 2.901	0.634 ^{**}	1.885 1.221 2.909	0.634 ^{**}	1.886 1.220 2.917
Temporary	0.527 ^{***}	1.693 1.346 2.131	0.532 ^{***}	1.702 1.352 2.143	0.080	1.083 0.667 1.759
Own-account	1.240 ^{***}	3.456 2.340 5.104	1.247 ^{***}	3.480 2.355 5.142	0.733 [*]	2.082 0.975 4.444
East	-0.278 [*]	0.757 0.610 0.941	-0.275 [*]	0.759 0.611 0.943	-0.268 [*]	0.765 0.615 0.951
Unemployment occupations			-0.009	0.991 0.964 1.020	-0.029 [*]	0.971 0.940 1.004
Temporary × Unemployment occupations					0.078 [*]	1.081 1.004 1.164
Own-account × Unemployment occupations					0.095	1.099 0.972 1.243
Constant	5.808 ^{***}	332,902	5.954 ^{***}	385,332	6.014 ^{***}	408,934
N	1865		1865		1865	
AIC	3127.75		3129.186		3126.652	
	2013					
	(1)		(2)		(3)	
Logged income	Exp(B)	95% C.I. for EXP(B) Lower Upper	Exp(B)	95% C.I. for EXP(B) Lower Upper	Exp(B)	95% C.I. for EXP(B) Lower Upper
	-0.482 ^{***}	0.617 0.540 0.705	-0.489 ^{***}	0.613 0.536 0.702	-0.495 ^{***}	0.609 0.532 0.697

Table 2 (continued)

	2011				(2)				(3)					
	(1)		Exp(B)		95% C.I. for EXP(B)		B		Exp(B)		95% C.I. for EXP(B)		B	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Age	0.019 ^{***}	1.019	1.010	1.029	0.019 ^{***}	1.019	1.009	1.028	0.019 ^{***}	1.019	1.009	1.028	0.019	1.028
Female	0.021	1.021	0.854	1.221	0.022	1.023	0.855	1.223	0.028	1.028	0.859	1.230	0.028	1.230
Years of study	0.034	1.034	0.989	1.082	0.033	1.034	0.988	1.081	0.032	1.032	0.987	1.080	0.032	1.080
Public sector	-0.724 ^{***}	0.485	0.403	0.584	-0.719 ^{***}	0.487	0.405	0.587	-0.717 ^{***}	0.488	0.405	0.588	-0.717	0.588
Previous unemployment	0.287	1.332	0.924	1.922	0.284	1.328	0.921	1.916	0.260	1.297	0.898	1.873	0.260	1.873
Temporary	0.526 ^{***}	1.692	1.343	2.132	0.535 ^{***}	1.707	1.353	2.155	0.093	1.097	0.711	1.694	0.093	1.694
Own-account	0.653 ^{**}	1.922	1.277	2.891	0.669 ^{**}	1.952	1.294	2.943	0.524	1.689	0.791	3.606	0.524	3.606
East	0.059	1.061	0.855	1.317	0.057	1.058	0.852	1.314	0.062	1.064	0.857	1.322	0.062	1.322
Unemployment occupations					-0.006	0.994	0.977	1.011	-0.019 [*]	0.981	0.961	1.002	-0.019 [*]	1.002
Temporary × Unemployment occupations									0.048 ^{**}	1.049	1.008	1.091	0.048 ^{**}	1.091
Own-account × Unemployment occupations									0.017	1.018	0.954	1.086	0.017	1.086
Constant	4.600 ^{***}	99,454			4.746 ^{***}	115,108			4.940 ^{***}	139,714			4.940 ^{***}	139,714
N	1902				1902				1902				1902	
AIC	3335.054				3337.061				3334.060				3334.060	

* $p < 0.1$
 * $p < 0.05$
 *** $p < 0.01$
 *** $p < 0.001$

B, estimate; Exp(B), exponentiated estimate; C.I., confidence interval.

Source: Self-elaboration based on data from the Social Monitoring Council (2013) and Górnica (2014)

Table 3 Logistic regression estimates of the job insecurity models for other workers

	2011														
	(1)				(2)				(3)						
	Exp(B)	95% C.I. for EXP(B)	Upper	Lower	B	Exp(B)	95% C.I. for EXP(B)	Upper	Lower	B	Exp(B)	95% C.I. for EXP(B)	Upper	Lower	Upper
Logged income	-0.507 ^{***}	0.602	0.557	0.651	-0.489 ^{***}	0.613	0.567	0.664	0.567	0.664	0.613	0.567	0.664	0.567	0.664
Age	-0.009 ^{***}	0.991	0.986	0.995	-0.009 ^{***}	0.991	0.987	0.996	0.987	0.996	0.991	0.987	0.996	0.987	0.996
Female	-0.232 ^{***}	0.793	0.713	0.881	-0.254 ^{***}	0.776	0.697	0.863	0.697	0.863	0.778	0.699	0.866	0.699	0.866
Years of study	-0.056 ^{***}	0.946	0.924	0.968	-0.051 ^{***}	0.950	0.928	0.972	0.928	0.972	0.950	0.928	0.973	0.928	0.973
Public sector	-0.317 ^{***}	0.729	0.647	0.820	-0.309 ^{***}	0.734	0.652	0.826	0.652	0.826	0.731	0.650	0.823	0.650	0.823
Previous unemployment	0.611 ^{***}	1.843	1.534	2.214	0.600 ^{***}	1.822	1.517	2.190	1.517	2.190	1.792	1.490	2.155	1.490	2.155
Temporary	0.436 ^{***}	1.547	1.373	1.743	0.432 ^{***}	1.540	1.367	1.735	1.367	1.735	1.227	0.951	1.582	0.951	1.582
Own-account	0.916 ^{***}	2.499	2.001	3.120	0.905 ^{***}	2.472	1.979	3.086	1.979	3.086	2.150	1.203	3.842	1.203	3.842
East	0.047	1.048	0.922	1.192	0.048	1.049	0.923	1.192	0.923	1.192	1.047	0.921	1.190	0.921	1.190
Unemployment occupations					0.012 ^{**}	1.012	1.004	1.020	1.004	1.020	0.007	0.997	1.017	0.997	1.017
Temporary × Unemployment occupations											0.018 [*]	1.018	1.036	1.000	1.036
Own-account × Unemployment occupations											0.011	1.011	0.968	0.968	1.056
Constant	6.935 ^{***}	1027.464			6.519 ^{***}	677,946					6.578 ^{***}	719,428			
N	6744				6744						6744				
AIC	9134.573				9049.122						9048.776				
	2013														
(1)					(2)						(3)				
B	Exp(B)	95% C.I. for EXP(B)	Upper	Lower	B	Exp(B)	95% C.I. for EXP(B)	Upper	Lower	B	Exp(B)	95% C.I. for EXP(B)	Upper	Lower	Upper
Logged income	-0.555 ^{***}	0.574	0.527	0.625	-0.535 ^{***}	0.586	0.537	0.638	0.537	0.638	-0.537 ^{***}	0.584	0.536	0.536	0.637

Table 3 (continued)

	2011							
	(1)		(2)		(3)			
	Exp(B)	95% C.I. for EXP(B) Lower Upper	B	Exp(B)	95% C.I. for EXP(B) Lower Upper	B	Exp(B)	95% C.I. for EXP(B) Lower Upper
Age	-0.001	0.994 1.003	-0.001	0.999	0.994 1.004	-0.001	0.999	0.994 1.004
Female	-0.155**	0.765 0.959	-0.173**	0.841	0.750 0.942	-0.175**	0.840	0.749 0.941
Years of study	-0.019	0.981 1.005	-0.014	0.986	0.962 1.011	-0.014	0.986	0.962 1.011
Public sector	-0.513***	0.527 0.680	-0.498***	0.608	0.535 0.691	-0.499***	0.607	0.534 0.690
Previous unemployment	0.543***	1.415 2.091	0.540***	1.716	1.412 2.086	0.539***	1.714	1.410 2.083
Temporary	0.441***	1.555 1.368	0.423***	1.526	1.342 1.736	0.349*	1.418	1.074 1.872
Own-account	0.862***	2.367 1.861	0.838***	2.312	1.816 2.942	0.358	1.431	0.753 2.718
East	-0.061	0.940 0.822	-0.064	0.938	0.820 1.073	-0.065	0.937	0.819 1.072
Unemployment occupations			0.011**	1.011	1.003 1.018	0.008*	1.008	0.999 1.017
Temporary × Unemployment occupations						0.005	1.005	0.989 1.021
Own-account × Unemployment occupations						0.031	1.032	0.992 1.073
Constant	7.075***	1182.463	6.640***	764,999		6.696***	808,774	
N	6758		6758			6758		
AIC	8753.723		8729.970			8731.696		

* $p < 0.1$
 * $p < 0.05$
 ** $p < 0.01$
 *** $p < 0.001$

B, estimate; Exp(B.), exponentiated estimate; C.I., confidence interval
 Source: Self-elaboration based on data from the Social Monitoring Council (2013) and Górnjak (2014)

occupations and employment flexibility were included, are different. Namely, according to the third model, unemployment in occupations specifically affects knowledge workers with temporary contracts and does not influence the remaining contractual groups.

Moreover, in this version of the job insecurity model, the temporary employment variable coefficient was not significant. This suggests that if there is no unemployment in a profession, the sheer fact of having a temporary contract does not influence one's perception of job insecurity. The probability of job insecurity for the temporary workers group rises together with an increase in unemployment in their profession.

When unemployment in an occupation is equal to zero, *ceteris paribus*, there is no significant difference between the probability of job insecurity between permanent knowledge workers and temporary knowledge workers. However, employees with permanent contracts are not influenced by the unemployment rate in their professions, whereas the odds of being job insecure among temporary workers increase with an increase in unemployment in their professions.

In the occupations in which the unemployment rates are very low, there is little or no difference between permanent and temporary workers with the same characteristics in terms of job insecurity. However, with high levels of unemployment in occupations, temporary workers have a much higher probability of job insecurity than their counterparts with permanent contracts.

Knowledge Workers Versus Other Workers: Comparison

Most of the control variables present in the models affect the job insecurity of knowledge workers and other workers similarly. The only exception is education measured in years of study, which in the case of other workers is positively related to job security. It is not surprising, as unlike knowledge workers, other workers are diverse in this aspect and higher education may improve both perceived and actual employability, which in turn is reflected by the higher job security.

In the case of other workers, according to models (1) and (2), employment flexibility is negatively related to job security, as in the case of knowledge workers. When the interaction term is introduced in model (3), the results for 2011 and 2013 lead to different conclusions. In 2013, the temporary employment shows to be associated with job insecurity, suggesting that other workers with fixed-term contracts are more susceptible to job insecurity. In 2011, the association between temporary work and job insecurity shows to be insignificant. On the other hand, own-accountancy turned out to be significant in 2011, but not in 2013. Also, the interaction term between the unemployment rate in occupations and job insecurity turned out to be insignificant for this group. While in the group of knowledge workers, the higher likelihood of feeling at risk of job loss among flexible workers is conditioned by the unemployment rate in occupations, for other workers the influence of employment flexibility does not depend on unemployment in occupations.

The unemployment in occupations variable introduced in model (2) proved to significantly increase the probability of job insecurity among other workers. However, in model (3), this variable turned out to be insignificant.

Three presented models were to show how the results differ depending on the variables introduced. In the case of knowledge workers, models (1) and (2) suggest that employment flexibility seems to be a significant determinant of job insecurity. However, the interaction term introduced in model (3) suggests that the probability of job insecurity among temporary knowledge workers depends on the unemployment rate in their professions. According to the Akaike information criterion, model (3) is the best fit for the group of knowledge workers. Additionally, the interaction term related to temporary workers not present in models (1) and (2) is significant. Based on this, we can conclude that model (3) is the most appropriate model for the group of knowledge workers.

In contrast, the interaction between unemployment in occupations and employment flexibility is insignificant in the case of other workers. Conforming to the Akaike information criterion, the model with the unemployment rate in occupations, but without the interaction term, is the most suitable for the other workers. Hence, model (2) is the most suitable model for job insecurity among other workers.

Discussion

The aim of this study was to investigate the impact of unemployment in occupations on the job insecurity of knowledge workers. In particular, we strived to demonstrate whether unemployment in occupations affected the perception of a job loss threat among this group and how this impact differed depending on contractual arrangements.

The study only partly confirmed hypothesis H1 (H1: Higher unemployment in occupations significantly increases job insecurity among knowledge workers). Job insecurity is indeed increased by the unemployment rate in occupations, but solely among knowledge workers with temporary contracts. Permanent knowledge workers are unaffected by this factor. Thus, hypothesis H2 (H2: High unemployment in occupations has more influence on job insecurity among flexible knowledge workers than among permanent knowledge workers) has been confirmed.

This result demonstrates the precarious situation of workers with flexible contracts. In the face of unfavourable circumstances, they feel that they are at a greater risk of losing their job, as their position has weaker legislative protection. At the same time, with no presence of unemployment in a particular occupation, job security is not harmed by temporary employment. It is a macroeconomic situation that triggers the perception of the risk of job loss among temporary workers.

Interestingly, the conclusions drawn from the analysis of job insecurity conducted on other workers were substantially different. For other workers, unemployment turned out to be a significant factor among all contractual groups. However, the impact of this variable is not stronger for employees with flexible

contracts. Additionally, own-account and temporary other workers are at risk of being job insecure compared with permanent workers with the same characteristics, independently from the rate of unemployment in occupations. The latter conclusion confirms hypothesis H3 (H3: Other workers with flexible contractual forms are more likely to feel insecure due to high unemployment in their occupation than knowledge workers with flexible contracts).

This result may be explained by Goldthrope's "replaceability thesis". The other workers who have less specific skills in general may feel more replaceable and as a result, they require permanent contracts in order to feel secure. If they work under temporary contract, it is reflected by higher insecurity. Furthermore, their feeling of replaceability rises with an increase in unemployment in their occupational group, regardless of the type of contract, so does the feeling of job insecurity increases.

Knowledge workers, on the other hand, in general can be regarded as workers with highly specialised skills. For this reason, they feel like they are difficult to replace and thus they are indifferent about permanent or temporary employment. However, the higher unemployment rate in an occupation is a signal that indicates higher replaceability in this profession. As a result, knowledge workers in occupations with higher unemployment rates have a higher preference for stable employment. The lack thereof is manifested by higher job insecurity.

Job security is an important factor both from the point of view of the employee and the organisation. On one hand, it plays a significant role in building of organisational commitment and in organisational citizenship behaviour. On the other, it is a factor that significantly influences individual well-being. For this reason, some measures have to be taken to minimise the risk of job insecurity. Among knowledge workers those with temporary contracts, working in professions with a high unemployment rate are also more exposed to job insecurity. If improving their situation by changing the contractual form is not possible, other measures have to be sought. A dialogue between the most vulnerable groups of employees and the employer should be established, leading to mutual support and understanding. Additionally, some measures ought to be taken by the employer to create reassurance that these employees are crucial for the success of the organisation and therefore their work is needed and appreciated. One possibility would be an investment in contingent workers by means of staff training. A training session in which some specific skills were taught would help reduce the feeling of replaceability among these workers, and as a result diminish the likelihood of job insecurity.

The findings provide a valuable insight for policymakers, showing which groups of workers are the most susceptible to precariousness and therefore should be the subject of stronger job protection schemes.

The presented study shows that flexible employment and job insecurity are not inseparable. For some groups of workers, i.e. knowledge workers in occupations with low unemployment rates, having a temporary contract does not influence their job insecurity. However, in many cases, the ever more popular and widely promoted flexible forms of employment expose workers to job insecurity.

Limitations and Future Research

The presented study is not free of limitations, which should be acknowledged and taken into account when interpreting the results. Presenting the limitations of the study should also help to show a direction for future research.

First of all, the dependent variable used in the study refers to income source insecurity, not to job insecurity itself. In the study, the sample was restricted to individuals who gain income from paid work. However, we cannot exclude the possibility that respondents answering the question referred to other (e.g. more profitable) sources of income or to the sum of their income sources. Yet, the share of respondents in the sample who had a secondary source of income not related to paid work was low - equal to 3.8%.

Secondly, as De Witte and Näswall (2003) point out, an important aspect of analysing job insecurity with respect to employment flexibility is the voluntariness of such arrangements. Individuals who choose to work under temporary contracts or on their own account should feel more secure in their positions than employees on whom flexible employment was imposed. The distinction between voluntary and forced employment flexibility was not taken into consideration in this research, as adequate data were not available in the used dataset.

De Witte and Näswall (2003) also call for a greater differentiation between the types of contracts. In the presented analysis, three groups of contracts were distinguished. The results obtained for these contractual groups provide a starting point for similar analysis conducted on a more disaggregated level.

A note needs to be taken that the years in which the analysed data coincide with a slowdown of economy in Poland. Although financial crisis in Poland was not as severe in terms of economic growth, as in many other European countries, a comparison with more prosperous period would provide an interesting insight in how the perceptions of workers change depending on the economic climate. Another interesting line of research would be to provide cross-national comparisons, which would allow introducing other macroeconomic measures to the analysis.

Finally, the future research of job security should tackle issues related to overeducation and horizontal job mismatch. In the presented analysis we strove to explain the link between one's present occupation and susceptibility to job insecurity. We argued that occupational unemployment would be the most relevant measure to capture this relationship. However, given the prevalence of vertical and horizontal job mismatch it is to be expected that many workers already work in occupations that are either below their qualifications or do not fit their area of expertise. Similarly, those in less demanded occupations on the labour market would look for jobs that are not necessarily close to their field or are below their qualifications.

Appendix

Table 4 Distribution of occupations in group of knowledge workers and other workers

ISCO	Occupation	Knowledge workers %		Other workers %	
		2011	2013	2011	2013
11	Chief executives, senior officials and legislators	2.43	2.27	0.24	0.23
12	Administrative and commercial managers	4.01	3.82	0.37	0.38
13	Production and specialised services managers	4.40	4.60	0.82	0.79
14	Hospitality, shop and related services managers	1.91	1.43	0.59	0.28
21	Science and engineering professionals	9.40	8.24	0.46	0.54
22	Health professionals	8.02	7.89	1.89	2.14
23	Teaching professionals	24.13	24.85	0.75	1.09
24	Business and administration professionals	15.45	16.07	0.84	1.09
25	Information and communications technology professionals	3.02	3.82	0.15	0.18
26	Legal, social and cultural professionals	7.56	5.91	0.35	0.33
31	Science and engineering associate professionals	2.17	2.57	2.34	3.20
32	Health associate professionals	1.45	2.15	0.93	0.89
33	Business and administration associate professionals	12.95	12.66	4.21	3.87
34	Legal, social, cultural and related associate professionals	2.76	2.81	0.64	0.94
35	Information and communications technicians	0.33	0.90	0.35	0.45
41	General and keyboard clerks			3.39	3.71
42	Customer services clerks			1.94	1.81
43	Numerical and material recording clerks			4.05	3.30
44	Other clerical support workers			1.56	1.22
51	Personal service workers			3.92	3.88
52	Sales workers			11.59	12.47
53	Personal care workers			1.39	1.47
54	Protective services workers			2.84	2.79
71	Building and related trades workers, excluding electricians			8.07	8.00
72	Metal, machinery and related trades workers			7.18	7.60
73	Handicraft and printing workers			1.19	1.07
74	Electrical and electronic trades workers			2.62	2.58
75	Food processing, wood working, garment and other craft and related trades workers			6.43	6.28
81	Stationary plant and machine operators			5.03	5.66
82	Assemblers			1.59	1.64
83	Drivers and mobile plant operators			8.38	7.70
91	Cleaners and helpers			5.45	5.00
92	Agricultural, forestry and fishery labourers			0.86	0.99
93	Labourers in mining, construction, manufacturing and transport			5.18	4.28
94	Food preparation assistants			0.49	0.38
96	Refuse workers and other elementary workers			1.94	1.77

Source: Self-elaboration based on data from the Social Monitoring Council (2013)

Table 5 Unemployment in occupations

ISCO	Occupation	Unemployment rate in occupations	
		2011	2013
11	Chief executives, senior officials and legislators	2.14	2.17
12	Administrative and commercial managers	0.55	1.68
13	Production and specialised services managers	0.00	0.89
14	Hospitality, shop and related services managers	1.63	1.59
21	Science and engineering professionals	7.42	7.03
22	Health professionals	2.10	5.46
23	Teaching professionals	5.22	7.34
24	Business and administration professionals	4.64	6.24
25	Information and communications technology professionals	5.04	9.80
26	Legal, social and cultural professionals	7.71	20.87
31	Science and engineering associate professionals	7.75	12.68
32	Health associate professionals	11.10	16.21
33	Business and administration associate professionals	7.60	9.17
34	Legal, social, cultural and related associate professionals	15.75	20.79
35	Information and communications technicians	20.27	20.41
41	General and keyboard clerks	24.17	16.97
42	Customer services clerks	11.46	9.67
43	Numerical and material recording clerks	9.21	9.46
44	Other clerical support workers	5.08	4.66
51	Personal service workers	22.00	22.67
52	Sales workers	14.06	18.23
53	Personal care workers	19.47	27.19
54	Protective services workers	9.00	11.41
71	Building and related trades workers, excluding electricians	14.83	20.73
72	Metal, machinery and related trades workers	12.40	15.96
73	Handicraft and printing workers	4.45	7.42
74	Electrical and electronic trades workers	9.50	11.94
75	Food processing, wood working, garment and other craft and related trades workers	13.92	18.76
81	Stationary plant and machine operators	4.19	1.94
82	Assemblers	6.83	4.58
83	Drivers and mobile plant operators	10.20	12.35
91	Cleaners and helpers	18.78	19.31
92	Agricultural, forestry and fishery labourers	27.12	41.41
93	Labourers in mining, construction, manufacturing and transport	29.59	34.37
94	Food preparation assistants	19.09	34.44
96	Refuse workers and other elementary workers	14.41	18.12

Source: Self-elaboration based on data from Górnjak (2014)

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CHAPTER V

WORK-FAMILY BALANCE OF KNOWLEDGE WORKERS IN POLAND

Work-Family Balance of Knowledge Workers In Poland

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Abstract

The subject of managing both work and family spheres has drawn a lot of academic attention in the last few decades. Various models of work-family balance have been created. Yet, the most widely used, and perhaps the most feasible are models that measure balance by its absence. In the study, we use the work to family conflict model to investigate how work interrupts the family life. We focus on knowledge workers, as among this group the boundary between work and family spheres continue to be more and more blurry, especially with the presence of new information and communication technologies. In the research, we show how different working patterns and work attitudes influence family life. Additionally, we analyze the impact of usage of ICTs at home for professional reasons on familial harmony. In order to conduct the analysis we use the secondary data from the Social Diagnosis 2013 Project. The analysis is conducted on the group of knowledge workers (nkw=1, 457) and the rest of the workers (now=5, 955). The knowledge workers who used the Internet and e-mail at home for professional reasons were found to be more likely to face family problems than ones who did not use the new technologies in this manner. The relation between working hours and struggling with family problems has turned out to be non-linear and changing depending on the work environment perception. The results suggest that in general knowledge workers, who report work problems, have higher probability of struggling with problems in family than individuals who do not. The workers, who do not perceive their work as problematic, are more likely to have problems in family long very long hours. The individuals who work long hours are less likely to be subject to family problems, if they do not struggle with work-related problems..

Keywords: Work-family balance, knowledge workers, Poland

Introduction

Work family balance (WFB) has drawn a lot of attention in the last few decades and has been widely empirically analysed. Our society is viewed as increasingly rushed and work-centred. The view that the work and family spheres are separate realms is outdated and deeply flawed (Currie & Eveline, 2010). These two spheres interact and intertwine between each other.

Various aggregated measures show that Poland falls behind the rest of Europe in terms of work-family balance. The average number of working hours in Poland is higher than in the European Union. Some groups of the workers in Poland, such as self-employed, work on average more than the persons from this group in most European countries (Eurofund, 2012). Also, Poles spend on average the least amount of hours in the week for personal care and leisure among all the European countries (OECD, 2014). Thus, it is noteworthy to establish a causal relationship between extended work-dimension and diminishing and harmed family dimension in Polish families.

A group especially seen as exposed to obstructions in reaching a balance between the work and family life are the knowledge workers, the persons who "think for living" (Davenport, 2005). Among this group the boundary between work and family spheres continue to be even more and more blurry, especially with the presence of new information and communication technologies. As the new technologies emerged, companies started to give professionals greater time flexibility, making them responsible for managing their life schedule. Quantitative studies showed that these new arrangements, together with employer high expectations and workers' job insecurity resulted in increased time and effort invested in work (Moen, Lam, Ammons, & Kelly, 2013; Perrons, 2003). The blurred boundaries are imposed by the working conditions of the knowledge workers, such as schedule and workplace flexibility, autonomy and accountability, teamwork, management by objectives and strict deadlines (Frenkel, Bendit, & Kaplan, 2012).

The aim of the research is to show how different working patterns and work attitudes influence family life of knowledge workers. Extended working hours may affect persons who have a positive image of work differently than persons who have

negative attitude towards work. Additionally, the impact of usage of ICTs at home for professional reasons on familial harmony is analyzed.

Literature Review

Work-Family Balance: Definition and Models

An intuitive definition of the term “work-life balance” is a point where a perfect harmony between work and private life is reached. However, this generic and vague definition does not suffice in a process of conceptualising work life balance for the means of empirical analysis. In fact, this raises more questions, for example what is the mentioned cut-off point of balance and how can it be captured? Another controversy associated with the subject of work/life balance is the specification of term “life” or “private life”. Whereas “work” is, in most cases, a clearly defined dimension, “private life” is a conglomerate of different aspects of life such as family, leisure, health, etc. Even though the multidimensionality of the “life” part of the work-life balance concept is acknowledged, the research studies usually focus only its limited part, namely on the family aspect of life, e.g. Dyer, Mcdowell, & Batnitzky (2011). Indeed family aspect seems to be the most prominent of all the dimensions and probably the easiest one to capture. However, for the sake of accuracy, the relation between work and family life should be denoted as work-family balance (WFB).

There are various models of WFB. The approaches most often taken by researchers measure either spill-over of work to family life or vice versa, or conflict between the two spheres (Guest, 2002). According to the spill-over model one world can influence the other in either positive or negative way. It can also combine both: work-to family life influence and family life-to work influence, to establish the WFB (Pichler, 2008). The even more widely used approach is the conflict model, which assumes that extended activity in one sphere occurs at the cost of the other. The widely used definition of work-family balance complies with this model. It defines the term as a “satisfaction and good functioning at work and at home, with a minimum role of conflict” (Clark, 2000).

An interesting question associated with this issue is whether working long hours by choice is the situation of balance. Maybe it is worthwhile separating this category from the workers who work long hours as they feel obliged to do so. Peiperl & Jones (2001) divide workers who work long hours into two categories: “workaholics” – ones who feel they get appropriate benefits (both tangible and intangible) from working more than average and “overworkers” – ones who do not feel the reward from their work is adequate.

Yet, work-family balance does not solely focus on the individual. It should also capture a family perspective. For instance “workaholics” may be satisfied with the time and attention they devote to both family and work spheres, yet it may affect how other family members share the time between these spheres. For this reason it is important to capture the other working family members’ view on the work-family balance of the analysed individual.

Another potential doubt associated with this approach is the question whether measuring work family balance by conflict is appropriate. The literature sources suggest that individuals are more aware of work-family balance in the case of its absence (Guest, 2002). It can serve as a rationale for using this negative rather than positive indicator of work-family balance.

Another issue stressed in the literature is the fact that the dichotomy assumption in relation to the subject of work-life or even work-family balance is deeply flawed (Currie & Eveline, 2010). The boundaries between work and private zone are being constantly blurred, and with the ubiquitous information and communication technologies this process is progressing even faster.

In general, the measures of work-family balance can be divided into objective and subjective ones. Among objective measures we can distinguish: normal weekly working hours, evening and weekend work, working overtime on short notice, free time, family roles and others. The subjective indicators usually measure self-reported balance, conflict or interference between the two spheres. Often the objective and subjective measures do not converge. Although a considerable correlation between working hours and self-reported work life (or family) balance is usually reported, it is not sufficiently high to use these two measures interchangeably. It brings a question about how well objective criteria can serve as indicators of subjective experience and whether we can rely on subjective accounts as valid indicators of balance without some evidence of others (Guest, 2002). A plausible solution to these issues would be to combine objective and subjective measures. This would allow the extraction of the group of “workaholics” who objectively work more than an average person, yet do not feel overwhelmed by this situation. Another technique to make the measure of work-family balance more robust

is to use the reports not only from the individuals in question, but also accounts of persons from their closest environment. The ideal situation would be to have opinions of persons from both realms: a family member and a co-worker or a superior.

Work-Family Balance in Poland

The international accounts of work-life and work-family balance show that Poland falls behind in this area comparing to other European countries. Polish workers work on average 40.7 hours per week, 3.5 hours more than the European average (European Commission, 2013). Polish self-employed have the second longest working hours in Europe – 53h/week (Eurofund, 2012).

On the other hand, Polish workers spend significantly less time per day on leisure and personal care (i.e. eating, sleeping, socialising with friends and family, hobbies, games, etc.) than individuals in other European countries. Among OECD countries, Poland scores as the third lowest in this measure, after Turkey and Mexico (OECD, 2014). Also, a study on country clusters shows that individuals from Central and Eastern European countries (CEEs) spend on average the least time on domestic activities, including care activities (Eurofund, 2012).

These individual time-use measures suggest that Poland is a country, where the “work” component is prominent in work-life or work-family mix. There can be various reasons for this proportion, including individuals' preferences. However, when we compare these outcomes with some accounts from area of work organization, we can conclude that the work-life or work-family balance is hardly a priority among Polish labor market policies. For instance, the percentage of part-time jobs in Poland is considerably low – it constitutes 7.1% of total employment, whereas the EU average equals to 19.5%. The part-time work can be viewed negatively, as it can be associated with exclusion from benefits and access to promotion. Nevertheless the possibility of working part-time is often a solution to manage work and family life. It is especially valuable for young parents, in particular mothers who often spend much more time on care activities than fathers (Eurofund, 2013). The recent results from European Working Conditions Survey show that there is a negative relation between average working time of women and female employment rate (Eurofund, 2012). It is worrying, as women who have exited the labour market upon entering the parenthood phase, tend to have lower well-being than the ones that remained in the job market. Also, these unfavorable conditions may hinder already low population growth.

Another issue is employers' induced job flexibility. Among all Polish workers, 31.6% work shifts. This percentage is among the highest in Europe. The EU average of shift workers as a percentage of all employment equals only to 18% (European Commission, 2013). These atypical working patterns may have an adverse impact on employees' satisfaction from work-life balance (Eurofund, 2012). Additionally, Poland is characterized by highest in Europe percentage of temporary contracts (26.8% compared to EU average of 13.8%) (European Commission, 2013) and high job and employment insecurity (Dixon, Fullerton, & Robertson, 2013). Although the unemployment rate (10.5%) is not exceptionally high in comparison to other European countries, the unemployment among youth (15-24) is substantially higher than the OECD average (26.5% and 16.2% in 2012, respectively) (OECD, 2012). These factors may force, especially young people, to focus on professional life and neglect personal life.

Knowledge Workers and ICT Usage

In majority of the European countries, the amount of time spent at work increases together with earnings (Guest, 2002; OECD, 2011). Also, the probability of facing work-life balance problems grows together with the educational status (OECD, 2011; Pichler, 2008). One of the occupational groups that reports the most problems with WLB are managers and some groups of professionals (Ford & Collinson, 2011; Guest, 2002; Shanafelt et al., 2012). This suggests that a cluster, which is exposed the most to the work-family conflict are highly educated workers, on well-paid top occupations. These characteristics are specific for knowledge workers. For them, the boundary between the two spheres are even more blurry, also because of the solutions brought by ICTs, that allow the workers to work from any place and communicate for work matters at any time, in other words be constantly bounded to the work milieu. The growing body of research shows that use of ICTs, even though may enhance the work performance, has significant adverse impact on the time devoted to family and the quality of this time (Boswell & Olson-Buchanan, 2007; Currie & Eveline, 2010). This study aims to shed a light on patterns of work-family balance among Polish knowledge workers and the factors impacting it, including the use of ICTs at home for work.

To analyze the work-family balance in the context of knowledge economy, it is crucial to establish a definition of a knowledge worker. However, a unique or straightforward definition of a knowledge worker does not exist. An occupational approach

defines knowledge workers as "professional, managerial and technical people" (Drucker, 1993). Another way to define knowledge workers is to specify the content of their job, i.e. describe them as individuals whose work requires high levels of creativity, intellectual skills and theoretical rather than purely contextual knowledge (Warhurst & Thompson, 2006). However, this type of conceptualization is difficult to operationalize due to scarcity of the data about the actual character of the activities individuals carry out at work. For that reason the occupation-based approach, closer to Drucker's definition of knowledge workers, is often used to operationalize this concept. According to this classification knowledge workers are persons who work in the International Standard Classification of Occupations (ISCO) top three occupational classifications (managers, professionals, associate professionals) (International Labour Organization, 2010), have high level skills indicated by higher education or equivalent qualifications and perform tasks that require expert thinking and complex communication skills with the assistance of computers (Brinkley, 2006). The categories are not exclusive and may overlap. This occupation-based classification, as well as education-based classification is vulnerable to mistakes, as many of the workers that would be included in these categories usually would not be regarded as knowledge workers (i.e. managers of small firms, higher education graduates not working in the knowledge sector etc.). The way to minimise the error margin is to classify persons as knowledge workers if and only if they fulfil all three of the above-mentioned classification conditions.

The advantage of this way of using the occupation-based approach together with education-based approach is that it is a standard, used in most of the studies, as well as in the macro-level accounts. Thus, applying the three above-mentioned conditions in the study will allow its results to be comparable with outcomes of other studies of similar interest. This is why we have decided to use this standard for defining knowledge workers group.

Methodology

To analyze the work-family balance of knowledge workers, data from the Social Diagnosis 2013 (Rada Monitoringu Społecznego, 2013) are used. The dataset comprises a large number of cases and many relevant variables. However, the variables measuring work-family balance per se are not present in the dataset (also the time use variables measuring "family time" and variables measuring work-family interaction are missing). Yet, other widely available surveys that include the question about the work-family conflict, e.g. European Working Conditions Survey (EWCS), include a relatively small number of cases from Polish individuals with marginally small number of knowledge workers among them. For this reason another approach has been taken. Namely, a causal relationship between problems in family sphere and work sphere, time devoted to work and working from home with use of ICTs has been modeled.

The main objective of the research is to investigate if an extended work dimension may harm quality of family life. Particularly, the aim of the study is to test the following hypotheses:

- H1 Family problems are more probable among workers who work long hours.
- H2 The adverse impact of working long hours can be mitigated by the work perception (workaholics report less family problems than overworkers)
- H3 Family problems are negatively influenced by the extensive use of ICTs at home for professional reasons.

As mentioned before, the work-family balance has been widely empirically analyzed. However, this study is run on a specific group, namely knowledge workers from Poland. So far the majority of the empirical research dealing with the work-family balance, especially in the context of knowledge economy, focused on the western countries. However, the knowledge sector in the CEEs, including Poland, is growing faster than in the western Europe (European Commission, 2012), thus the insight about the quality of life of this groups is also needed. The results for this group may be significantly different from the results obtained in the previous studies.

The usually taken approach is either to investigate the subjective perception of the hegemony of the work dimension, or to focus on objective measures, normally expressed by the number of hours spent on work. In this analysis the two approaches are combined to investigate the joint impact of subjective perception of the work sphere (i.e. self-reported work problems) and the time spent at work. The hypothesis H2 (H2: The adverse impact of working long hours can be moderated by the work perception) suggests that relation of long working hours on family life is ambiguous and changes depending on the work perception.

Data Description

Social Diagnosis Project - Description of the Sample

The analysis employs secondary data from the project Social Diagnosis 2013. (Rada Monitoringu Społecznego, 2013). The Social Diagnosis project, initiated in the year 2000, is a diagnosis of the conditions and quality of life of the Poles. The dataset from year 2013 is the latest wave of the panel comprising seven waves.

The Social Diagnosis dataset contains vast amounts of data, coming from a large and representative sample. The data have been collected by Polish Central Statistical Office. The two-stage stratified sampling has been applied to find households that took part in the survey. Firstly, households have been stratified by voivodeships and then within voivodeships, by the size of agglomeration. The first stage sampling units were statistical regions (covering at least 250 apartments), and rural strata statistic circuits. In the second stage two flats were drawn systematically from a randomly ordered list of apartments, independently within each of the layers formed in the first stage of sampling. The appropriate weights, calculated with the use of set of variables (household size, voivodeship, rural or urban area of living, gender and age group) are provided for the sample to make the it representative on the national level (Czapiński & Panek, 2013). The weights are used throughout the presented analysis.

The research is focused on the specific subgroup of the population – knowledge workers. The group of the rest of the workers (excluding farmers) is used for comparison. The subgroup of interest has been separated from the whole sample in two steps. First, all the individuals that have a job were selected with help of four variables: Any paid work (or a helper without pay in the family business) performed during the last 7 days; An employee, a self-employed person or a helper without pay in the family business, but has temporarily not performed his/her work during last 7 days; Main source of income; Secondary source of income.

The first two variables determine if an individual performs any job (paid or unpaid). The latter two help restraining the dataset to the observations from respondents who gain any profit from their work activities. In the second stage knowledge workers are retrieved from the dataset. Knowledge workers are found by their educational level, ISCO occupational classification and by the usage of ICTs for work or educational purposes.

According to the used operationalization of the concept of knowledge worker and given the mentioned variable-setting criteria, the persons who belong to the group of interest are individuals with higher education (Bachelor's degree or higher), working in the top three occupational classifications (according to the ISCO classification) – Managers, Professionals or Associate Professionals and use information and communication technologies for work. With the described criteria 2, 160 (22.7% of the all workers) knowledge workers were selected from the whole sample. The remaining 81.3% (7355) are the other workers.

Another condition set on the analyzed group is having a family. The family is understood as at least having a spouse or a partner. Consequently, the sample has been further reduced by excluding all the single workers. There are 1, 503 cases of knowledge workers comprising given criteria. After reducing the incomplete cases, 1, 457 observations have been used. There were 5, 955 of other workers remaining in the analysis

Family Problems Index

The family problem index is the dependent variable used in the causal model. The measure has been constructed using nine variables denoting self-reported issues associated with marriage, children and elderly relatives and one item related with the problems in marriage, reported by the partner. Namely, there are three variables denoting issues within marriage:

- Expectations of spouse so high, impossible to meet them;
- Spouse spends shared money in a careless manner;
- Problems of spouse worries and makes life harder.

The record of the latter has been also taken from the spouse of the individual. Another group of familial variables are ones associated with issues with children:

- Having to hear complaints about one's children from others;
- Financial costs due to action of children;
- Children ignore and reject one's help and advice;
- Feeling one loses control over/ influence on children.

The last group of family-related variables deals with the worries over elderly family members:

- Feeling responsible for care and well-being of parents or elderly relatives;
- Feeling worried about physical and mental health of parents or elderly relatives

All of these indicators could take one of four levels:

- 1 Often;
- 2 Once or twice;
- 3 Never;
- 4 Not applicable.

The two latter levels have been equalized. Another solution would be to exclude from the analysis the individuals who do not have children. However, the family problems proxy is to measure a spectrum of family issues an individual is faced with. A person without children will not report any children-related problems, which means she or he is not struggling with as many problems as a person with children. For this reason a control measure – number of dependent children has been included in the model instead of restricting the sample to the couples with children.

The results for each individual within the family-related indicators have been summed up. Subsequently, a dichotomous variable “family problems” has been constructed, using mean of the mentioned sum as a cut-off point. As presented in Table 2, according to the binary indicator, 49.3% (nkw=744) of the knowledge workers and 41.1% (now=2472) of the other workers is struggling with family problems

Work-Related Measures

The study is focused on finding relation between the working dimension of an individual and the imbalance in familial life. Three different work-related measures have been used in the article: work-related problems, working time and the Internet use at home for professional reasons. To construct work-related problems variable, three indicators were used:

- Feeling that the job is tiresome, dirty and dangerous;
- Overload of duties hard to cope with;
- Being treated unjustly by other at work.

Similarly as in the family-related variables, measures could take one of four values: “Often”; “Once or twice”; “Never”; “Not applicable”. Also in this case, level “Not applicable” has been aggregated together with “Never”, as it is assumed that there are kinds of workers to whom the situations described by the variables do not apply. Also, in the case of the work problems indicators, the scores have been summed up. Afterwards, a binary measure has been constructed on the basis of the mean of the resulting sum. In the analyzed sample, 37.8% (now=2237) of the other workers and 32.0% (nkw=460) of the knowledge workers report work problems (Table 2).

To capture the joint impact of the long working hours and feelings about the work, a new variable has been derived. The variable “worker type” has four levels “Carefree workers” – workers who do not report problems at work and work on average 45 hours a week or less, “Frustrated workers” – workers who report problems at work and work on average 45 hours a week or less, “Workaholic” – workers who do not report problems at work and work on average more than 45 hours a week, and “Overworkers” – workers who report problems at work and work on average more than 45 hours a week, presented in Table 1. As this variable is used in the model, the variable work-related problems has been removed due to partial colinearity. The 15.5% of analyzed other workers are workaholics (now=942), 25.3% are frustrated workers (now=1500) and 12.5% are overworkers (now=737). Among the group of the knowledge worker, there are 11.2% workaholics (nkw=159), 8.4% overworkers (nkw=116) and 23.7% frustrated workers (nkw=344).

The measure denoting time spent on work is a continuous variable measuring how many hours on average a person works during a week. On average knowledge workers work slightly less than other workers ((Xkw=40, SDkw=10 and Xow=42, SDow=11, respectively). Apart from that, a variable denoting managerial position has been included in the model as a control variable. It has been empirically proven that the persons especially exposed to work-related stress, burnout and work-family conflict are individuals with managerial position (Ford & Collinson, 2011).

The last of the work-related variables is the use of the Internet and electronic mail at home for professional reasons. It is an ordered variable with three levels: “Never”, “Ever” and “In the last week”. Knowledge workers use new technologies to work at home out of their normal working hours much more often than the other workers. Almost 48% (nkw=687) of the

respondents from the knowledge workers group stated they had used ICTs for professional reasons no longer than a week before the survey, whereas only 15% (now=772) of the other workers admitted to use these technologies as frequently.

Apart from the work-related variables, the control variables: sex, age and number of dependent children have been included in the model. Females in general suffer from higher work-to family conflict, as they usually are responsible for majority of the duties at home (Eurofund, 2013). The family problems variable includes problems with children, therefore the suspicion that having children would increase the risk of having family problems. Also, the age squared has been added to the model. There is some indication in the literature showing there is a u-shaped relation between age and well-being (Blanchflower & Oswald, 2008) and directly between age and satisfaction from work-life balance (Allen et al., 2012). The distribution of persons with family problems across the age groups (Figure 1) in the used sample, suggest there is a bell-shaped relation between family problems and age.

Model & Results

To test the hypotheses H1-H3, the two logistic models, separate for the groups of knowledge workers and other workers have been estimated. Both of them are statistically significant, according to the Omnibus test ($\chi^2_{ow}(12)=680.128, p<0.001$, $\chi^2_{kw}(11)=278.803, p<0.00$). The models results, together with the odds ratios (OR) are presented in the Table 3.

The coefficients of the control variables have in general been consistent with the expectations. The female other workers turned out to be more exposed to the family problems than males (ORow=1.459, $p<0.001$). In the case of knowledge workers, sex has turned out to be an insignificant factor in the model of familial problems. In the both groups, it has been shown that there is a bell-shaped relationship between family problems and age. In the both groups, having children increased the odds of having problems in family, by one fifth with every child in the case of other workers and by half in the case of knowledge workers (ORow=1.222, $p<0.001$; ORkw=1.508, $p<0.001$). The managerial position turned out to be an insignificant factor in both groups.

As suspected, using ICTs at home for professional reasons increases risk of family problems. In the case of knowledge workers, the higher the frequency, the greater were the odds of having family problems (ORkw=1.552, $p<0.001$, if individual ever used the Internet or e-mail at home for work reasons and ORkw=1.791, $p<0.001$, if he did so not earlier than one week prior to the survey). Also in the case of the other workers, using ICTs at home for work increases the risk of having problems in family, yet it does not grow linearly. The odds increase by half for other workers who have done so at least once (ORow=1.509, $p<0.001$). Yet, it grows by slightly less -0.369 (ORow=1.369, $p<0.001$) for persons who assumingly do it more frequently, comparing to the individuals who never use ICT at home for work. In the case of other workers, the model has shown that not using Internet slightly decreases the odds of having family problems, yet the result is not significant at the confidence level of 95% (ORow=0.881, $p=0.076$).

As hypothesized, not only working hours and having working problems, but also interaction between these two variables influences the family life. In the case of other workers, being "workaholic" is not significantly different from being the "carefree worker". In other words, the long working hours do not have an adverse impact on individuals from this group provided he or she does not has work problems. On the other hand, other workers who reported the work-related problems are at a significantly higher risk of facing family problems. Also, in this case, the difference between "frustrated workers" and "overworkers" is much bigger (ORow=2.797, $p<0.001$ and ORow=4.061, $p<0.001$, respectively). It shows that in the situation when the work is problematic for an individual, the long working hours strengthen the adverse impact on the family life.

In the case of knowledge workers, "workaholics" are at more risk of having family problems than "carefree workers" (ORkw=2.871, $p<0.001$). It means that for this group, unlike for other workers, the prolonged working time has an adverse impact on the family life even when an individual does not report work problems. Also in this case, the impact decreases with the working time.

The "frustrated workers" and the "overworkers" have even higher odds of having problems in family life (ORkw=3.689, $p<0.001$ and ORow=3.785, $p<0.001$, respectively). In comparison with the group of the other workers, the difference in odds between the "carefree workers" and the "frustrated workers" is much higher. On the other hand, unlike in the case of the other workers, among knowledge workers there is a small difference in the strength of the impact between the "frustrated" and the "overworkers". In fact, taking into account that the difference diminishes together with the working time (ORkw=0.976, $p<0.001$), in most situations, the group of frustrated knowledge workers is more likely to struggle with family problems.

Conclusions

The hypothesis H1 (H1: Family problems are more probable among workers who work long hours) has not been confirmed. Especially in the case of the knowledge workers the influence of working time is ambiguous. Whereas the “workaholics” are more likely to struggle with familial problems than the “carefree workers”, the “overworkers” are in most cases less likely to have family problems than “frustrated workers”.

The second hypothesis (H2: The adverse impact of working long hours can be moderated by the work perception) has been confirmed. In both cases, persons with no work problems, who work the same number of hours, have less family problems. In the case of other workers, when the individuals do not report work problems, the long working hours do not increase the probability of having the work problems. In fact, the risk slightly decreases with each additional hour worked. In this group, “workaholics” – persons who work long hours, but assumedly do so from their own choice, are much less likely to experience family problems than the “overworkers” – assumedly the group, on whom the long working hours are imposed. In fact, in terms of family problems, there is no statistically significant difference between the “workaholics” and the “carefree workers”. Thus, one can conclude, that working long by choice is a form of balancing between work and home. However, to draw a definite conclusion, the analysis should be complemented by the model focused solely on the reports of the significant others who are often affected by the working schedule of the “workaholics”. Also in the case of the knowledge workers, the “workaholics” are much less likely to have family problems than the “overworkers”.

In the both groups the third hypothesis (H3: Family problems are negatively influenced by the extensive use of ICTs at home for professional reasons.) has been confirmed. The result replicates outcomes of previous studies which show the possibility of working from any place, including home, brought by emergence of ICTs, may be advantageous for the job performance, but it also is likely to be harmful for the family life of an individual.

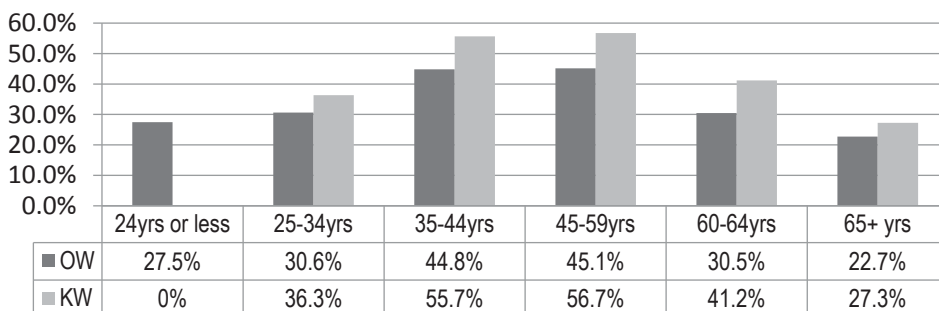
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Figures

Fig 1 The Percentage of the Persons with Family Problems Among Six Age Groups (Separately For Knowledge Workers and Other Workers)



Tables

Table 1. Presentation of the Variable “Worker Type”

	Working Time	
	45h or less	More than 45h
No Work Problems	“Carefree” workers	Workaholics
Work Problems	“Frustrated” workers	Overworkers

Table 2. Characteristics of the Sample Separately For Knowledge Workers and Other Workers.

	Other worker				Knowledge worker			
	X	SD	N	Col %	X	SD	N	Col %
AGE	44	10			40	9		
CHILDREN	1.20	1.11			1.15	.91		
W_HOURS	42	11			40	10		
SEX	MALE		3412	59.8%			559	41.3%
	FEMALE		2543	40.2%			898	58.7%
MANAGER			488	9.2%			384	25.9%
W_PROBLEMS			2237	37.8%			460	32.0%
F_PROBLEMS			2472	41.1%			744	49.3%
F_PROBLEMS (SPOUSE)			2728	46.2%			688	45.6%
WORKER_TYPE	CAREFREE		2776	46.7%			838	56.8%
	WORKAHOLIC		942	15.5%			159	11.2%
	FRUSTRATED		1500	25.3%			344	23.7%
	OVERWORKER		737	12.5%			116	8.4%
ICT_HOME	NEVER		2205	38.2%			241	13.8%
	EVER		907	18.4%			529	38.5%
	LAST WEEK		772	15.0%			687	47.7%
	NO INTERNET		2071	28.4%			0	0.0%

X – mean; SD – standard deviation;

N – unweighted count; Col %, - column percentage (weighted).

Table 3. Results of The Logit Models For The Predictors of Self-Reported and Spouse-Reported Family Problems (Results for Knowledge Workers and Other Workers)

	Other Worker	Knowledge Worker
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	Est.	SE	OR	Est.	SE	OR
FEMALE	0.378***	0.058	1.459	0.135	0.106	1.145
AGE	0.222***	0.026	1.261	0.204***	0.047	1.226
AGE2	-0.002***	0.000	0.998	-0.002***	0.001	0.998
CHILDREN	0.201***	0.028	1.222	0.411***	0.062	1.508
W_HOURS	-0.011***	0.004	0.989	-0.015***	0.118	0.976
MANAGER	0.024	0.097	1.025	-0.024	0.118	0.980
ICT EVER	0.411***	0.079	1.509	0.439***	0.159	1.552
ICT LAST WEEK	0.314***	0.084	1.369	0.583***	0.157	1.791
NO INERNET	-0.126*	0.071	0.881			
WORKAHOLIC	0.143	0.103	1.154	1.055***	0.194	2.871
FRUSTRATED	1.028***	0.067	2.797	1.305***	0.124	3.689
OVEROWORKER	1.402***	0.108	4.061	1.331***	0.216	3.785
Constant	-6.307***	0.560	0.002	-5.780***	1.001	0.003
N	5, 955			1, 457		
Log Likelihood	7, 715.265			2, .372.472		
Akaike Inf. Crit.	4588.506			2, 252.500		

*p<0.1; **p<0.05; ***p<0.01

n.s. – non-significant; Est. - estimate; SE – standard error; OR – odds ratio

CHAPTER VI

CONCLUSIONS

1 Impact of the research

The thesis provides a detailed analysis on the aspects of work-related well-being. The study focuses on a specific target group – knowledge workers in Poland and considers the differentiation between the contractual arrangements. This approach brought interesting insights that are relevant not only for the academia, but also for policymakers and human resources managers. The conclusions driven from the dissertation show that persons with different types of contract, can react to adverse working environment or labour market conditions to a different extent. These findings are particularly important in the context of Polish labour market in which workers with temporary contracts and those working on their own account constitute together over a third (European Commission, 2018a, 2018b) of total employment – the highest percentage in the European Union. Additionally, the thesis provides a unique insight into the various antecedents and dimensions of work-related well being of knowledge workers. It highlights both differences and similarities between them and the remainder of the workforce.

The study comprises of four papers tackling different, albeit related aspects of work-related well-being. Two of the articles investigate the cognitive component of work-related well-being - job satisfaction directly: one with the relation to job insecurity, the other - interpersonal injustice.

Both of these factors proved to correlate negatively with job satisfaction: those who perceive their job as insecure or their relations at work as unfair are less likely to be satisfied with their job than workers who are not exposed to these adverse conditions. In the case of job insecurity, the link with job dissatisfaction was particularly strong and persistent across all the groups considered.

Thus, the third paper strived to shed more light on the perception of job insecurity. Concretely, job insecurity was analysed in the context of macroeconomic factor, i.e. level of unemployment in different occupations. This approach highlighted the importance not only the working conditions in the shaping of work-related balance, but also the significance of external factors, not dependent neither on employer nor on

employee. Interestingly, occupational unemployment showed to relate to the perception of job insecurity differently, depending on contractual group and type of work. This insight shows that the external impacts can be moderated by working conditions that lie within the discretion of employer and policymakers.

The fourth paper took a slightly different approach, underlining the importance of balance between the work and familial life in the overall work-related well-being. Namely, it investigated the family-to-work conflict among knowledge workers. Arguably, incorporating the family dimensions into the study of predictors and dimensions of work-related well-being of knowledge workers supplements previous chapters focused on the work sphere on one hand and external circumstances on the other. Again, the study showed some interesting differences between knowledge and other workers, providing further rationale for a differentiation while motivating and incentivising the workers. Concretely, it provides specific hints on the important aspects of working conditions for knowledge workers.

In the following paragraphs, the impact of each of the papers included in the dissertation is outlined.

1.1 Paper 1: Employment flexibility and job security as determinants of job satisfaction: the case of Polish knowledge workers

The aim of this paper was to measure the impact of the insecurity on the job satisfaction among workers in Poland. The differentiation was made between the group of knowledge workers and other workers. Within each of these groups, the strength of influence of job insecurity on job satisfaction was assessed for workers with different contractual arrangements: permanent contracts, temporary contracts and own-account workers (i.e. self-employed workers without employees).

The conducted analysis showed that job security is a crucial factor in determining job satisfaction for both knowledge workers and other workers. It is also the key ingredient in the flexicurity mix. The type of contract should not depreciate the job satisfaction of an individual, provided he or she does not feel that their position is at risk. Job security is also very important for seemingly indifferent knowledge workers, who, one would

assume, can easily find alternative employment. Providing employees with a basis for feeling secure is vital for their satisfaction. This in turn would give benefits for the employer in the form of higher retention rates as well as lower rates of grievances, absenteeism and quits.

1.2 Paper 2: Job Satisfaction of Knowledge Workers. The Role of Interpersonal Justice and Flexible Employment

The second paper strived to demonstrate the influence of interpersonal injustice on workers' job satisfaction, dependent on their employment flexibility and the type of work they perform. The analysis showed that the unfair treatment at work has a similarly strong adverse impact on job satisfaction of both the other workers and the knowledge workers. Yet, among the latter group the negative effect is smaller for persons with temporary contracts. This effect was not found either among knowledge own-account workers or groups of flexible other workers. This leads to a conclusion that permanent knowledge workers as well as own-account workers are more vulnerable to these undesirable factors.

For the permanent knowledge workers, the unfair treatment at work may be a sign of a violation or breach of the psychological contract established with the employer. The consequence of violating this informal mutual agreement between the employee and the employer is not only diminished job satisfaction of employees; it also may result in outcomes undesirable for the organization, such as increased turnover and lowered intention to remain at work (Robinson, Kraatz, & Rousseau, 1994) as well as diminishing workers' loyalty and increased neglect (Turnley & Feldman, 1999). Establishing fair and just atmosphere at work is in both employees' and employers' best interest to establish thriving and long-lasting relation.

1.3 Paper 3: Precarious Knowledge Work? The Combined Effect of Occupational Unemployment and Flexible Employment on Job Insecurity

The third paper investigated the impact of unemployment in occupations on the job insecurity of knowledge workers. Namely, it strived to demonstrate whether

unemployment in occupations affected the perception of a job loss threat among this group and how this impact differed depending on contractual arrangements.

The study showed that among the group of knowledge workers, job security decreased with the raise of unemployment in occupations only for those with temporary contracts. Permanent knowledge workers and own-account knowledge workers were not affected by this macroeconomic factor. This result demonstrates the precarious situation of workers with flexible contracts. In the face of unfavourable circumstances, they feel that they are at a greater risk of losing their job, as their position has weaker legislative protection. At the same time, with no presence of unemployment in a particular occupation, job security is not harmed by temporary employment. It is a macroeconomic situation that triggers the perception of the risk of job loss among temporary workers.

For other workers, unemployment turned out to be a significant factor among all contractual groups. However, the impact of this variable is not stronger for employees with flexible contracts. Additionally, own-account and temporary other workers are at greater risk of being job insecure compared with permanent workers with the same characteristics, independently from the rate of unemployment in occupations.

The results show the vulnerability of certain groups of workers, i.e. those who are not knowledge workers, but also within knowledge workers group – those with temporary contracts. The source of their vulnerability might be the perception of replaceability. The other workers who have less specific skills in general may feel more replaceable and as a result, they require permanent contracts to feel secure. If they work under temporary contract, it is reflected by higher insecurity. Furthermore, their feeling of replaceability rises with an increase in unemployment in their occupational group, regardless of the type of contract, so does the feeling of job insecurity. Knowledge workers, on the other hand, in general can be regarded as workers with highly specialized skills. However, the higher unemployment rate in an occupation is a signal that indicates higher replaceability in this profession. As a result, knowledge workers in occupations with higher unemployment rates have a higher preference for stable employment. The lack thereof is manifested by higher job insecurity.

This highlights a need for measures to be taken by policymakers and employers to mitigate the adverse impact of occupational unemployment on workers. One possibility would be an investment in contingent workers by means of staff training. Training in which some specific skills were taught would help reduce the feeling of replaceability. The findings provide a valuable insight for policymakers, showing which groups of workers are the most susceptible to precariousness and therefore should be the subject of stronger job protection schemes.

1.4 Paper 4: Work-Family Balance of Knowledge Workers In Poland

The paper explores the relation between, work and family life of knowledge workers. The link between working time, work perception, bringing work to home (with the use of ICTs) and problems in familial life is analysed. The research showed that the relation between the working hours and familial problems is ambiguous and can depend on the work perception – positive work perception mitigates the negative effect of working long hours. Additionally, the study has shown that dealing with the work-related issues at home by means of ICTs can increase the family-related problems.

The results provide valuable insights on how work and private life intertwine. The study shows the potentially adverse aspects of job flexibility facilitated by the ICTs. This should draw attention of policymakers, given the mobile work solutions are growing in popularity. An interesting implication from the perspective of organization might be the mitigating effect of work perception.

2 Limitations and future research

It needs to be acknowledged that the presented study bears a burden of some limitations, as often is the case in the empirical research. In this section, these limitations are presented to give a full picture of the obtained findings. Outlining the constraints of the study could also help to show possible directions for future research.

First, a secondary data source is used to conduct the analysis. The use of secondary open data sources has great advantages, as it is very cost and time efficient. Also, open

source survey projects are most often commissioned or financed by large public institutions and are provided substantial funding. Thus, such secondary data comes from large representative samples that meet the highest quality standards. However, at the same time, secondary data is not tailored to the precise needs of a given research. The exact dimensions that one wants to study may not be present in the survey questionnaire, which imposes a use of some proxies. The data source used in this study—Social Diagnosis provides access to vast amount of data on quality of life of Poles and its drivers. The overall sample size of the dataset and its wide thematic scope enabled extracting a sub-sample of knowledge workers large enough to conduct the quantitative analysis. Yet, it would be impossible even for such an exhaustive data source to contain all the detailed questions regarding the work-related well-being. For this reason, in the study, the best available proxies are used to measure job insecurity, interpersonal justice and work-family conflict. While the results provide valuable insights on these dimensions in the context of knowledge workers, an interesting development would be to conduct a complementary qualitative research, to attain a better understanding of the attitudes and beliefs of knowledge workers.

Secondly, there are number of topics related to the presented analysis, that have not been analysed in depth and might provide an extension of the presented research. One of the examples can be work time flexibility and mobile work. This is an interesting subject in the context of knowledge work. The project-based job nature of many knowledge workers does not bound them with a certain working place or time. This solution has its advantages, providing workers with more flexibility. Such flexibility may for instance allow combining family life with work engagements. Yet, on the other hand, it poses a threat of continuous work. Hence, it would be interesting to analyse work time and workplace flexibility in the relation to work-family balance of knowledge workers. Mobile and flexible work is also associated with the growth of the so-called ‘gig’ economy, based on short-term contracts or freelance work. This emerging labour market arrangement raises concerns about the job and, more generally employment, security of ‘gig’ workers.

Another interesting topic that might be a continuation of the presented research is the employment flexibility and its voluntariness. As De Witte and Näswall, (2003) point out, the voluntariness of working under a given form of contract is an important aspect

of analysing job insecurity and job satisfaction with respect to employment flexibility. Individuals who choose to work under temporary contracts or on their own account should feel more secure in their positions than employees on whom flexible employment was imposed. The distinction between voluntary and forced employment flexibility should be taken into consideration in the future research on the topic.

Finally, it needs to be mentioned that there was a change in the Polish labour law implemented after the analysis was conducted. Namely, the Art.25§4 of Labour Code from February 2016, entitles the workers with temporary labour code contracts to the same notice periods as the permanent workers. Implication for the future research would be to compare the presented findings regarding job insecurity with the results obtained after beginning of 2016, when the change was introduced. Unfortunately the Social Diagnosis survey has not been conducted after 2015 and thus the direct comparison with the use of the same measures is not possible.

3 General Conclusions

A large part of the presented analysis has been conducted in the times of economic uncertainty. Although Poland was not as severely impacted by the financial crisis and the recession of 2007-2012 as other European markets (International Monetary Fund, 2015), the Polish economy undoubtedly experienced a certain slowdown in years 2009-2013 (Statistics Poland, 2018). Now however, labour is in high demand in the Polish job market and the unemployment rates are reaching all-time low (Statistics Poland, 2018a, 2018b). In these circumstances, employers have a great incentive to offer workers more favourable working conditions, in order to retain present employees and allure new labour force. The key to do so is to understand the main drivers of workers' satisfaction and well-being. The presented study provides a valuable insight in the intangible aspects of working conditions and work-related well-being.

Given the decreasing marginal utility of income, proposing something extra than a decent salary is especially important in the case of knowledge workers. For this group, especially among those in the top salary tiers, the financial aspect of a job would not suffice to accept or maintain it. Apart from the tangible benefits in a job, knowledge workers are seeking other job features, such as culture of justice and mutual respect,

secure employment conditions and ability to balance family and work life. With the presence of employer-rating portals, such as Glassdoor (Glassdoor, 2018) or initiatives such as Great Place To Work survey (Great Place To Work, 2019), these nuanced aspects of working conditions do not remain unnoticed. Succeeding to provide them, might give an employer a competitive advantage in the battle over professionals with expert skills and high levels of creativity.

The presented study, apart from providing valuable knowledge for human resources managers, also brings some important insights for policymakers. Namely, the analysis exposes vulnerabilities of the analysed groups, showing who should be provided a greater institutional protection and in which areas. An example can be a regulation in the spirit of life-long-learning, incentivising employers who provide and support on-work training. The training might reduce the feeling of replaceability and mitigate the negative effects of adverse economic conditions. The study also provides an evidence that a policy-level consideration should be made with the respect to the changing paradigm of work life, in which the boundary between the work and family life is blurred. These fuzzy division between work and family realms might often be imposed by the employers and further deepened by the widespread use of the ICTs. Such arrangements may have adverse effects on personal and family life of knowledge workers. Thus, providing empirical evidence to policymakers on these issues seems to be of great importance.

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