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SCHOOL OF ECONOMICS AND BUSINESS

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**BOUNDARY CONDITIONS OF THE RELATIONSHIP BETWEEN
EMPLOYEE OVERQUALIFICATION AND WORK OUTCOMES OF
INDIVIDUALS**

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SUMMARY

The purpose of this dissertation is to improve the understanding of the effects of perceived and objective employee overqualification on work outcomes of individuals. I aim to do this by examining the nomological network of both overqualification types and by studying the boundary conditions of the relationship between the two overqualification concepts and two critical work outcomes for individuals: job satisfaction and relative income. My exploration of the country-level determinants of employee overqualification and studies of the role of important moderators of employee overqualification-work outcomes relationships represents an important next step in the development of the overqualification literature (Erdogan & Bauer, 2009). I organize my work as a series of four successive research chapters.

In the first chapter, I examine the boundary conditions that lead to the overqualification of employees at the country level by conducting a cross-country comparison. Drawing on a country-level data, configurational theorizing and the Qualitative Comparative Analysis I establish that there are different configurations of various macro factors that cause objective and perceived overqualification, respectively. Considering the fact that the two overqualification types are separate constructs with different predictors leads to the conclusion that objective overqualification alone does not necessarily infer perceived overqualification, and that the relationship between them is more complex than previously thought. Furthermore, based on the high or low levels of objective and perceived overqualification, I identify four country-level overqualification archetypes and discuss their configurations.

The distinction I made between the two overqualification types formed the basis for the next steps. I proceeded with tests of individual- and organizational-level moderators of the negative relationships between overqualification and two important work outcomes: job satisfaction and relative income. Again, the analyses were performed separately for perceived and objective overqualification. In contrast to the previous chapter, the focus shifted to individual-level overqualification. The primary theoretical lens also shifted from labor market economics toward the literature on organizational behavior and human capital (resources). To achieve my research aims I primarily used hierarchical multilevel linear modeling and multiple linear regressions for data analysis along with exploratory and confirmatory factor analysis for variable design.

In the second chapter, I focus on high-performance work practices (HPWPs) as formal, organization-based moderators to mitigate the negative relationships between overqualification and job satisfaction and relative income. I demonstrated that both objective and perceived overqualification are indeed negatively related with both focal work outcomes. More importantly, I showed that HPWP attenuates negative relationships of the two overqualification types with job satisfaction, while HPWP exacerbates the negative relationship between objective overqualification and relative income.

In chapter three, I examined the role of qualification mismatches and perceived overqualification itself as moderators of the focal relationship. I again replicated the existence of direct and negative relationships between the two types of overqualification and the main individual work outcomes. More importantly, I proved that being underskilled alleviates the negative relationship between perceived overqualification and the two focal work outcomes. Overskilling and perceived overqualification, on the other hand, strengthen the negative relationship between objective overqualification and relative income and job satisfaction.

In the last chapter, I examined the moderator role of the deep and elaborative learning strategies on the focal relationships between the two overqualification types and the two work outcomes. Examining these boundary conditions, I could only support one of the hypothesized moderating effects. The only supported moderating effect was that deep learning strategies strengthened the negative relationship between objective overqualification and relative income.

In sum, in this dissertation I replicated the finding that objective and perceived overqualification have a direct and negative impact on job satisfaction and relative income. More importantly, I have hypothesized and confirmed new and important boundary conditions of these relationships highlighting important moderating roles of HPWP, underskilling and deep processing learning strategies. Not all hypothesized moderating roles were confirmed, though. For example, deep and elaborative strategies had no effect at all on the relationships between the two types of overqualification and job satisfaction, HPWPs did not moderate the relationship between perceived overqualification and relative income, and skill mismatches did not affect the relationship between objective overqualification and job satisfaction. Generally, my work shows that the distinction between "being overqualified" and "feeling overqualified" is much more than an etymological dilemma and should also be treated in this way, both theoretically and practically. Based on the findings in this dissertation, I offer discussion and implications for relevant stakeholders such as employers, managers, policy makers and organizations.

Keywords: objective and subjective overqualification, configurations, moderator, high performance work practices, skills, deep and elaborative learning strategies.

POVZETEK

Namen te disertacije je izboljšati razumevanje učinkov zaznane in objektivne prekvalificiranosti zaposlenih na delovne izide posameznikov. To skušam doseči s preiskovanjem nomološke mreže obeh vrst prekvalificiranosti oziroma s preučevanjem robnih pogojev razmerja med obema vrstama prekvalificiranosti in dvema kritičnima delovnima izidoma za posameznike: zadovoljstvom na delovnem mestu in relativnim prihodkom. Moje proučevanje dejavnikov prekvalificiranosti zaposlenih na ravni države ter preučevanje vloge pomembnih moderatorjev povezanosti med prekvalificiranostjo zaposlenih in delovnimi izidi predstavlja pomemben naslednji korak v razvoju literature o prekvalificiranosti (Erdogan & Bauer, 2009). Delo je organizirano kot serija štirih zaporednih raziskovalnih poglavij.

V prvem poglavju s pomočjo primerjave med državami preiskujem robne pogoje, ki vodijo v prekvalificiranost zaposlenih na ravni države. Na podlagi podatkov na ravni države, konfiguracijskega teoretiziranja in kvalitativne primerjalne analize ugotavljam, da objektivno in zaznana prekvalificiranost povzročajo različne konfiguracije makro dejavnikov. Upoštevanje dejstva, da sta obe vrsti prekvalificiranosti ločena konstrukta z različnimi napovednimi dejavniki, vodi do zaključka, da sama objektivna prekvalificiranost ne nakazuje nujno zaznane prekvalificiranosti, ter da je razmerje med njima kompleksnejše, kot se je sprva domnevalo. Nadalje na podlagi visokih oziroma nizkih ravni objektivne in zaznane prekvalificiranosti prepoznam štiri arhetipe prekvalificiranosti na ravni države ter obravnavam konfiguracije dejavnikov, ki jih povzročajo.

Razlikovanje med obema vrstama prekvalifikacije predstavlja temelj za nadaljnje korake. Nadaljujem s testiranjem moderatorjev na individualni in organizacijski ravni negativnega razmerja med prekvalificiranostjo in dvema pomembnima delovnima izidoma: zadovoljstvom na delovnem mestu in relativnim prihodkom. Tudi tokrat so analize izvedene posebej za zaznano ter za objektivno prekvalificiranost. V nasprotju s prejšnjim poglavjem je tu poudarek na prekvalificiranosti na individualni ravni. Prav tako se primarni teoretski fokus preusmeri iz ekonomike trga dela na literaturo o organizacijskem vedenju ter človeškem kapitalu (virih). Za doseganje ciljev raziskave sem za analizo podatkov v glavnem uporabljal hierarhično večnivojsko linerano modeliranje ter multiplo linearno regresijo, za določanje spremenljivk pa preiskovalno in potrjevalno faktorsko analizo.

V drugem poglavju se osredotočim na delovne prakse za visoko delovno uspešnost (PVDU) kot formalne moderatorje na ravni organizacije, ki lahko omilijo negativno povezanost med prekvalificiranostjo in zadovoljstvom na delovnem mestu ter relativnim prihodkom. Pokažem, da sta tako objektivna kot zaznana prekvalificiranost dejansko negativno povezani z obema osrednjima izidoma. Kar je še pomembneje, pokažem tudi, da PVDU zmanjšujejo negativna razmerja med obema vrstama prekvalificiranosti in zadovoljstvom na delovnem mestu, medtem ko okrepita negativno povezanost med objektivno prekvalificiranostjo in relativnim prihodkom.

V tretjem poglavju sem preiskoval vlogo neskladja kvalifikacij in zaznane prekvalificiranosti kot moderatorjev osrednjega proučevanega razmerja. Ponovno sem potrdil obstoj neposredne negativne povezanosti med obema vrstama prekvalificiranosti in glavnimi individualnimi delovnimi izidi. Še pomembneje, dokazal sem, da (dejanska) podusposobljenost omili negativno razmerje med zaznano prekvalificiranostjo in obema osrednjima delovnima izidoma. Po drugi strani pa (dejanska) preusposobljenost in zaznana prekvalificiranost okrepita negativno razmerje med objektivno prekvalificiranostjo in relativnim prihodkom ter zadovoljstvom na delovnem mestu.

V zadnjem poglavju sem preiskoval moderatorsko vlogo poglobljenih in dodelanih učnih strategij v osrednjih razmerjih med obema vrstama prekvalificiranosti in delovnima izidoma. S proučevanjem teh robnih pogojev sem lahko potrdil samo enega od predpostavljenih moderacijskih učinkov. Edini podprti moderacijski učinek je bil ta, da poglobljene učne strategije okrepijo negativno razmerje med objektivno prekvalificiranostjo in relativnim prihodkom.

V tej disertaciji sem ponovno potrdil ugotovitve predhodnih raziskav, da imata objektivna in zaznana prekvalificiranost neposreden in negativen vpliv na zadovoljstvo na delovnem mestu in relativni prihodek. Kar je še pomembnejše; predvidel in potrdil sem nove in pomembne robne pogoje za ta razmerja. Osvetlil sem pomembno moderacijske vloge PVDU, nizke usposobljenosti ter poglobljenih učnih strategij. Vse hipoteze, ki so naslavljalale moderacijske učinke, pa niso bile potrjene. Poglobljene in dodelane učne strategije, denimo, niso imele nobenega učinka na razmerja med obema vrstama prekvalificiranosti in zadovoljstvom na delovnem mestu, PVDU niso moderirale razmerja med zaznano prekvalificiranostjo in relativnim prihodkom, neskladja glede usposobljenosti pa niso vplivala na razmerje med objektivno prekvalificiranostjo in zadovoljstvom na delovnem mestu. V splošnem moje delo kaže, da je razmerje med "biti prekvalificiran" in "čutiti se prekvalificiran" mnogo več kot le etimološka dilema in da ga je kot takšnega potrebno tudi obravnavati, tako teoretično kot praktično. Na podlagi izsledkov pričujoče disertacije predlagam razpravo in implikacije za vpletene deležnike, kot so zaposlovalci, vodstveni delavci, politični odločevalci in organizacije.

Ključne besede: objektivna in subjektivna prekvalificiranost, konfiguracije, moderator, prakse za visoko delovno uspešnost (PVDU), veščine, poglobljene in dodelane učne strategije.

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LIST OF ABBREVIATIONS

.sl -Slovene

CEDEFOP - (sl. Evropski center za razvoj poklicnega usposabljanja) European Centre for the Development of Vocational Training

CFA - (sl. Potrjevalna faktorska analiza) confirmatory factor analysis

DP ELS - (sl. Globoko procesirajoče elaborativne učne strategije) deep processing elaborative learning strategies

ECB - (sl. Evropska centralna Banka) European Central Bank

EFA- (sl. Preiskovalna faktorska analiza) exploratory factor analysis

EPL - (sl. Zakonodaja o varnosti zaposlitve) Employment protection legislation

EP ELS - (sl. Poglobljene dodelane učne strategije) Elaboration processing elaborative learning strategies

GALM - (sl. Globalna zveza za spremljanje učenja) Global Alliance to Monitor Learning

GLOBE - (sl. Globalno voditeljstvo in uspešnost organizacijskega vedenja) Global Leadership and Organizational Behavior Effectiveness

HMLR - (sl. Hierarhična večnivojska linearna regresija) hierarchical multilevel linear regression

HPWP - (sl. Delovne prakse za visoko delovno uspešnost (PVDU)) high performance work practices

ICC - (sl. Medrazredni korelacijski koeficient) interclass correlation coefficient

ISCED - (sl. Mednarodna standardna klasifikacija izobrazbe) International Standard Classification of Education

ILO - (sl. Mednarodna organizacija za delo) International Labor Organization

ISCO - (sl. Mednarodna standardna klasifikacija poklicev) International Standard Classification of Occupations

LFP - (sl. Stopnja udeležbe delovne sile) Labor Force Participation Rate

OLS – (sl. Metoda najmanjših kvadratov) – ordinalry least squares

OOQ - (sl. Objektivna prekvalificiranost) Objective overqualification

OS - (sl. Preusposobljen) Overskilled

PIAAC - (sl. Program za mednarodno ocenjevanje kompetenc odraslih) Program for the International Assessment of Adult Competences

POQ - (sl. Zaznana prekvalificiranost) Perceived overqualification

QCA- (sl. Kvalitativna primerjalna analiza) Qualitative comparative analysis

RDT - (sl. Teorija relativne prikrajšanosti) Relative Deprivation Theory

SDG-4 - (sl. Trajnostni razvoj, cilj 4) Sustainable Development Goal 4

OECD - (sl. Organizacija za ekonomsko sodelovanje in razvoj) Organization for Economic Co-operation and Development

UNESCO - (sl. UNESCO) United Nations Educational, Scientific and Cultural Organization

US - (sl. Podusposobljen) underskilled

VET - (sl. Poklicno izobraževanje in usposabljanje) Vocational education and training

INTRODUCTION

In this dissertation, I address employee overqualification, which is a problem for individuals and professionals, but also a debated and developing area of research for academics. By establishing boundary conditions, I shall designate a new network of overqualification antecedents and moderators, discuss theoretical issues to complement existing theoretical knowledge, and thus chart a path for future research. This shall traverse contextual, empirical, etymological, and theoretical niches and be operationalized and unified at individual, organizational and national levels.

Although the study of boundary conditions and moderator tests risks to be theoretically complex (Busse, Kach & Wagner, 2017), the integration of moderator variables increases the accuracy of theoretical predictions of the relationship between overqualification and outcomes in different contexts. Apart from notifying of a "literature gap" in existing research, the study of boundary conditions represents the next important step in the development of the "overqualification literature" (Erdogan & Bauer, 2009). They are necessary as the world's leading economies will inevitably face a shortage of (skilled) labor. Therefore, this issue is also relevant to professionals who seek to describe the conditions that either mitigate or reinforce the link of the mismatch between skills and their outcomes.

These are the main reasons why the research area of this topic bypasses the theoretical level of labor economics and turns to the literature on organizational behavior and human capital (resources) to address these issues at organizational and individual levels. Accordingly, the central aim of this collection of research chapters is, firstly, to identify the contexts in which worker overqualification occurs and, secondly, to examine selected boundary conditions of the two main negative outcomes that occur as a result of employee overqualification.

A limitation of the previous relevant studies is that they were not carried out on a larger sample size and did not predict the use and generalizability of their findings on a (within) country level, even less so on a level that would permit both within and cross-country comparison and analysis. To this end, I begin by using a set-theoretic approach and configurational theorizing on macro factors for the occurrence of overqualification. This study fills a gap in the literature on overqualification by identifying configurations of macro factors that lead to its occurrence and by differentiating worker overqualification by type, which can be objective and perceived, as well as by presenting it by country and level. I do not expect the configurations of macro factors to offer the same perspectives on the extent of overqualification in a cross-country context. Many country-specific macroeconomic and labor factors such as migration, education (reforms), economic structure, labor market policies, demographics, or cultural dimensions may not be part of a configuration of conditions that lead to high/low levels of overqualification of workers in a country. I suspect that certain configurations give more information about objective overqualification, while others more information about perceived overqualification.

From this chapter onwards, I shall dispense with the labor-economics aspect to prepare the grounds for presenting the direct and moderating effects. I complete the context, the macro-configurative space I have prepared, by descending to the organizational and individual levels, from where I shall be examining the direct and moderating effects within the contexts. In this way, I create the necessary property space to further develop the nomological network from which one can select and hypothesize the direct and moderating effects between worker overqualification and two important negative individual worker outcomes: job dissatisfaction and relative income loss. I shall focus on individual outcomes and ways to mitigate the negative relationship in the following steps, drawing on PIAAC individual data to test moderators but also to distinguish between linear and hierarchical data structures to do so. I shall also show the significant direct and moderating effects for both objective (overeducation) and subjective (perceived) overqualification of workers individually and in the aggregate.

Having established that there are two types of overqualification, I shall first examine whether the relationships between them apply to the two key outcomes, and then examine the outcomes themselves to see whether they are hierarchical or linear. Initially, not all moderators would be based on the RTD and earnings theories, so the overqualification-outcomes relationship could be subject to different moderators that initially start from an organizational level.

However, once the fact that employees are a resource rather than a cost to the organization was accepted, the constant demand for higher productivity, innovation, and competitive advantage of organizations led to a set of “black box” human resource management practices that clearly link organizational performance to the human resources available. What is commonly known as HPWP highlights the dimensions of HR practices that are believed to influence workforce performance. Thus, I shall expand on the set of moderating effects by targeting the organizational level, relying on formal, rule-like practices as moderators, and using the HPWP example to show that there may be other moderators besides individual, informal moderators. Furthermore, this and all subsequent chapters shall deal with how these moderators affect the relationship between overqualification and its outcomes.

With no connection to HPWPs at this point, education has often been used as an imperfect substitute for skills, but labelling the mismatch only through over/under-education so that schools are then the only ones eligible for certain "skill" problems (Abraham, 2015). To this end, I address an apparent etymological discrepancy and show that perceptions of overqualification, overeducation, and skill mismatch are distinct constructs and should not be confused with one another or conceptualised, let alone measured in the same way. An important contribution to the dissertation research field is to demonstrate how the interplay of skills mismatches and overqualification can affect outcome relationships in different contexts within organizations. As a result, the theoretical background currently presented would require skill

proficiency as an input into the model to structure the broader competencies mismatch and outcomes more accurately.

Moreover, the relevance of moderating the overqualification - outcomes relationship also rests on the possibility that there are significant differences between workers' perceptions and the actual extent to which they are overqualified. Showing how the generalizability of the RDT, for example, can be determined by group or individual deprivation moderators is an important contribution to the theoretical knowledge domain as it can also be used to test moderators for the correspondence between objective and perceived overqualification. This is even more appropriate for this purpose, as most of the literature on moderation effects relies mainly on perceived overqualification. Thereby, I also seek to answer the research question of how perceptions of qualification mismatch affect the relationship between overqualification and outcomes (see Figure 1.1 on Theoretical diagram below).

The current research will address this double overqualification throughout the chapters and challenge the existing literature based on its findings. Apart from reference to the relative deprivation theory, this is particularly true of human capital and earnings theories and the income-enhancing effects of education that they assume. It also relates to other theoretical approaches that consider other aspects of the nature and occurrence of overqualification among workers and its effects on job satisfaction and relative earnings.

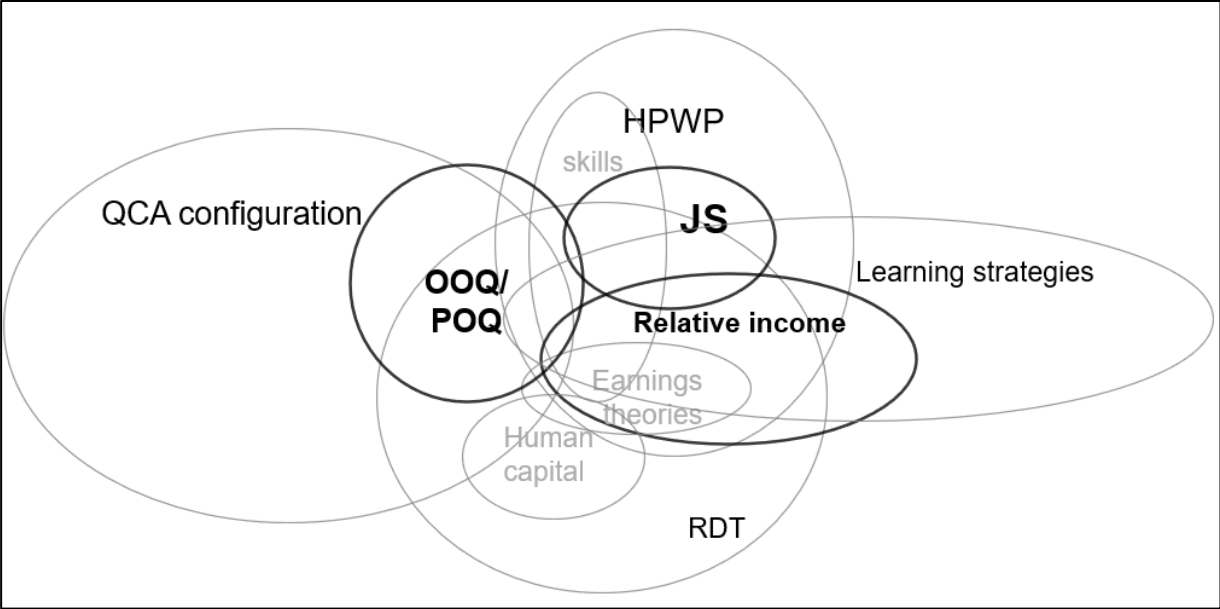
Except for Chevalier and Lindley (2009), no other current research has really emphasised that the complexity of overqualification also results from its objective and perceived character, and that this complexity is embedded not only in the alternation but also in the alignment of these two characters. This also supports the development and presence of the three different mixed approaches to data collection and analysis (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014).

As a final step, I show that self-regulatory processes, as exemplified by deep and elaborative processing as modalities of learning strategies, act as moderators of the above relations. Moreover, I propose a new measure of learning strategies for both students and workers.

The dissertation results will clarify numerous aspects related to the overqualification of workers and will serve its users. These may be researchers, academics, policymakers, professionals, employers, and overqualified individuals. I group them as stakeholders altogether to better understand the phenomenon of overqualification of workers and propose common steps to eliminate its adverse effects. Based on the research findings, I intend to show each stakeholder how worker overqualification takes place, which pathways and configurations lead to it, and suggest new ways of dealing with the two negative consequences mentioned above.

I will conduct the analyses on the large dataset of the PIAAC (Program for International Assessment of Adult Competencies) survey, collected in two rounds from 2011 to 2015, and include a sample size of N=156068 individuals from 27 of the PIAAC participating countries. To this, I add World Bank data, OECD national education reports and migration reports, and International Labor Organization data, which I compare and contrast to the GLOBE, Bologna and Global Alliance surveys for Monitor Learning to see if they complement and match. The individuals considered are drawn from the working-age population between the ages of 15 and 64, regardless of their employment status at the time of the survey, considering age, company size, gender, sector type, and occupational classification, but also the country in which the survey was conducted, such as whether it is a developing or a developed one.

Figure 1.1: Theoretical diagram on employee overqualification



Source: own work.

1 A CONFIGURATIONAL APPROACH TO DETERMINANTS OF COUNTRY-LEVEL EMPLOYEE OVERQUALIFICATION

1.1 Introduction

Employee overqualification is a pervasive global phenomenon and a growing problem, as many countries will face shortages of qualified workers in 2030 (Starck et al., 2014). Even today, more than 21% of workers in many OECD countries are overqualified for their current occupations (OECD, 2013c).

Overqualification has many negative consequences both at the individual employee level as well as at the organizational level. At the employee level, overqualification has been associated with low job satisfaction (Maltarich, 2011; Zhang, Law & Lin, 2016), effects on wages such as inequality (Handel, 2003; Di Pietro & Urwin, 2006; OECD, 2013d) or a wage penalty relative to qualification level (Brynin, 2002), increased turnover intentions (Allen & Van der Velden, 2001; Erdogan & Bauer, 2009; McKee-Ryan & Harvey, 2011), increased on-the-job search (Quintini, 2011), and psychological stress (CEDEFOP, 2010). At the organizational level, overqualification increases turnover rates and reduces employee productivity (Allen et al., 2007). It also has a mediating effect on reducing competitive advantage (Quintini, 2011) because it reduces cumulative learning (Lazonick, Moss, Salzman & Tulum, 2014).

With so many adverse effects, one can assume why most of the literature on overqualification (OQ) focuses on mitigating these effects. However, there are fewer studies on how OQ occurs, which leads us to the need to address the antecedents of OQ. While the antecedents of employee OQ can be addressed on multiple levels, this chapter shall only focus on macro-level antecedents. There are significant differences in country-specific levels of employee overqualification (see OECD, 2013d), but existing research does not seem to be able to explain why this happens. I have found a lack of research addressing this issue at the cross-country level and in countries outside the Western world (Erdogan & Bauer, 2009; Zhang, Law & Lin, 2016).

Instead of addressing the antecedents in isolation, I adopted the configurational logic and shall examine configurations of macro factors instead (Furnari et al., 2020). The central research question is: “*What configurations of macro conditions determine employee overqualification at the country level?*” Accordingly, this chapter aims to connect the inferred knowledge of individual causal conditions with the causal complexity underlying employee overqualification. Configurational theorizing (Furnari et al., 2020) has allowed us to determine the configurations of macro factors that lead to OQ occurrence by country and type.

The originality of this chapter also lies in its contribution to the emerging literature on overqualification by acknowledging the existence of two types of OQ: objective and perceived. In this chapter, they shall not only be considered as two different operationalizations of

overqualification, but rather as independent concepts with their own theoretical domains, antecedents, and separate literature (Erdogan, Bauer, Peiró & Truxillo, 2011; Maltarich, Reilly & Nyberg, 2011). Because of their interdependence, they have both been treated with the intention of providing a way to integrate the related yet so far disparate bodies of literature.

For these purposes, in this chapter, I have adopted the set-theoretic approach (Rihoux & Ragin, 2008; Ragin, Drass & Davey, 2006, Dul, 2016; Furnari et al., 2020) to represent the macro factors as conditions under which the objective or perceived overqualification of workers occurs at the country level. The multitude of causal mechanisms that could explain OQ denotes a context or property space from which I have selected the theoretically plausible macro factors and determined the configuration patterns that link them and lead to employee OQ at the country level. For this purpose, Qualitative Comparative Analysis (QCA) was used.

What is unique to this chapter is that OQ has been considered as one resulting from imbalances between supply and demand of human capital in the labor market (Handel, 2003) and derived from macro factors of the labor market, education, and culture. To them, I have added positions from assignment theory, career mobility theory and institutionalism, which refer to employee overqualification as temporary or permanent (Quintini, 2011) or both (Kiersztyn, 2013) or as an exclusively individual phenomenon (Duncan & Hoffman, 1981; Budria, 2011).

1.2 Theoretical framework

1.2.1 Objective and perceived overqualification

Overqualification is traditionally defined as education, skills, and work experience that exceed those required by the job post or the employer (Khan & Morrow, 1991; Feldman & Maynard, 2011; Kuhn & Shen, 2012; Erdogan, Bauer & Karaeminogullari, 2017). Acknowledging this general definition, for this chapter, **objective overqualification (OOQ)** shall be defined following OECD's qualification mismatch approach, where an employee is mismatched when s/he is employed in a job that requires a lower or higher level of qualification/education than s/he has (Zhang, Law & Lin, 2016). When the difference between the employee's qualification level and the qualification level required in her/his job is positive, s/he is overqualified (Quintini, 2011).

A complete analysis of antecedents of overqualification should consider both objective and subjective overqualification. In other works of literature, **OOQ** has typically been operationalized as overeducation (Liu & Wang, 2012). On the other hand, **subjective, "perceived" overqualification (POQ)** which takes employee **awareness** (Alfes, Shantz & Baalen, 2016), **feelings** (Erdogan, Bauer, Peiro & Truxillo, 2011; Maynard, Joseph & Maynard, 2006) or **perceptions** (Johnson & Johnson, 1996; Harari, Manapragada & Viswesvaran, 2017) into consideration means that one's qualifications exceed their job requirements. It can be

observed that the literature on management and organization (in particular) rely extensively on POQ as antecedent. Nevertheless, this chapter shall suggest a differentiation between objective and perceived OQ by acknowledging that the two constructs are linked yet different (Liu & Wang, 2012).

Very few studies have addressed objective and perceived overqualification simultaneously (Chevalier & Lindley, 2009; Maltarich, Reilly & Nyberg, 2011; Liu & Wang, 2012), although such integration is necessary to provide a complete understanding of the phenomenon. Namely, many OQ negative effects are a consequence of the perception of overqualification by employees and are not due to the actual state of being objectively overqualified. While OQ may seem to be a more accurate representation of overqualification, the employees' perceptions of overqualification do not necessarily reflect an accurate assessment of reality (Alfes, Shantz & Baalen, 2016), as individuals may easily overstate the requirements of their job to inflate the status of their position (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). POQ, on the other hand, takes no account of the fact that people with the same qualifications working in comparable positions often experience diverse levels of POQ (Erdogan, Bauer, Peiró & Truxillo, 2011), possibly due to variation in actual job content and differences in the quality and type of their education and experience (Hu et al., 2015).

1.2.2 Antecedents of overqualification

The configurational approach suggested in this chapter has been developed upon limited literature on OQ antecedents. Moreover, these works of literature do not always make it clear whether they are referring to the overqualification of employees in terms of POQ or as OQ. Therefore, the antecedents derived from theory are considered for both types of OQ unless there is a clear distinction in the respective literature. For this purpose, Figure 1.1 depicts a theoretical model, an actual intersection of relevant theoretical antecedents. The temporal nature of OQ is initially presented through frictions between the education system and the state of the labor market, leading to OQ vulnerability of young (tertiary educated) workers or re-employment of prime-age workers during economic downturns. Next, we consider the regulatory perspective, which sets OQ as an outcome when rigid employment protection structures affect the demand and the supply for human capital in the labor market. Finally, it can be observed that cultural antecedents lead to a dual appearance of OQ: one from a normative perspective, which is set as a standard by employers and must be accepted by employees in weak labor markets, and another one from a cultural perspective, which results from aggregate and cognitive individual trade-offs between cultural, social, and human capital in that same market.

1.2.2.1 Theory of career mobility, assignment theory and workforce crisis dynamism as labor market aspects of OQ occurrence

One can argue the temporality the theory of career mobility (Sicherman & Galor, 1990, p. 169) assigns to OQ, as schooling increases the probability of occupational upgrading both within as well as across firms. Thereby, OQ usually affects inexperienced labor market entrants, such as jobs of young employees in the early stages of their careers (Erdogan, Bauer, Peiró & Truxillo, 2011; Abraham, 2015), low-level jobs taken by students to pay for their studies in time and money (Erdogan, Bauer & Karaeminogullari, 2017), or tide-over jobs that are taken by older workers trying to earn a sufficient pension income (Erdogan & Bauer, 2011).

According to the assignment theory stance (Sattinger, 1993, p. 835), objective OQ is a function of labor market responses to the problem of assigning newcomers to fewer demanding jobs. This occurrence could be due to the increasing number of college graduates entering the labor market (Liu & Wang, 2012). One might also attribute it to the rapid population growth in developing and transition countries, resulting in an oversupply of educated young employees, which is also reflected in their lower bargaining power and high wage dispersion (Liu & Wang, 2012).

Further, it can be argued that objective OQ, in particular, occurs due to mobility between industrial and service sectors during economic crises. Namely, during these economic downturns, the size of labor markets decreases and unemployment grows (ECB, 2014), limiting the availability of jobs and leading to higher OQ (Erdogan, Bauer, Peiró & Truxillo, 2011). Thereby, workers that left or were dismissed from unionized jobs in manufacturing, many working in shrinking industries and experiencing re-employment after dismissal for lower-paid, less-skilled service jobs (McKee-Ryan & Harvey, 2011; Liu & Wang, 2012; Abraham, 2015), were likely to become overqualified.

1.2.2.2 Overprotective labor legislation and OQ occurrence

To resume from the previous paragraph, given the imbalance between employees' earnings and productivity even before the 2009 recession (Eichhorst, Escudero, Marx & Tobin, 2010), these employees have suffered a further decline in their negotiated wages and incomes (ECB, 2014). It can be observed that in order to tackle this problem, governments addressed labor costs (McKee-Ryan & Harvey, 2011) and regulated inactivity and employment through unemployment and wage loss support programs and staffed retraining programs to meet the new demands of the labor market (Eichhorst, Escudero, Marx & Tobin, 2010).

Another argument is that employment supporting legislation leads to OQ, especially in segmented labor markets, where a permanent contract is a particular asset for employees. Indeed, in such case, one can observe human capital being traded for job security, and paradoxically, OQ is more likely to occur here rather than among permanent workers (Ortiz,

2010). One can advocate that, during an economic crisis, OQ is more frequent among directly hired temporary workers (Liu & Wang, 2012). Nevertheless, the rigidity of labor legislation relates to both permanent and temporary employment relationships, as there are measures to protect each of them and measures against mass dismissals. However, this may exacerbate OQ, as the initial rigidity of laws against the dismissal of employees and the hiring of temporary workers could increase the unemployment rate in times of crisis.

Diamond (2011) stressed that whether a person is considered qualified or not for a particular job may depend on the labor market situation. For example, employers who may not consider a candidate for a particular job in a weak labor market would hire him and provide him the necessary training in a tight labor market. Although employers consider qualifications and value OQ (Melink & Pavlin, 2012), managers often question why candidates apply for jobs for which they are overqualified (Maynard, Joseph & Maynard, 2006). Paradoxically, employers who expect layoffs to be curtailed may be reluctant to hire at all, even in good times, given overly protective legislation, by reducing hiring rates. On the other hand, in a weak labor market, the unemployed could reject job offers that they would otherwise find acceptable (Tasci & Zenker, 2011).

To sum up, OQ occurs due to rigidity and the differences between labor market institutions and the policies that regulate the interactions between labor markets. Flexible labor markets keep unemployment lower in the long run (Tasci & Zenker, 2011) and act as a deterrent for employers who anticipate labor market conditions and the market's rigidity in hiring. Indeed, since the mismatch between education and skills is pervasive (Kulkarni, Lengnick-Hall & Martinez, 2015), persistent (CEDEFOP, 2010) and linked to labor market structure (Brynin, 2002), the policies that focus only on the current employment situation ignore the dynamics of growing economies (Hampf & Woessmann, 2017).

1.2.2.3 Institutional, normative, and educational perspectives on the occurrence of overqualification

The institutionalist stance on OQ (Scott, 1995; Powell & DiMaggio, 2012) assumes the existence of qualification (mis)match when its antecedents cumulate in both human systems and organizational contexts of organizations. This approach stresses that organizational practices achieve legitimacy through social processes by which individuals accept shared definitions of reality (Scott, 1981) or take on rule-like status in social thought and action (Meyer & Rowan, 1977).

Correspondingly, our stance is that OQ could also be such an accumulation of employees' beliefs and values resulting from such a common way of thinking (Palthe, 2014). Thus, labor market rigidity could affect OQ through employers' perceptions and hiring decisions, and it could influence POQ through employees' perceptions of quality through which they choose a job for

which they are overqualified. Employers' requirements may rise faster than graduation trends (Handel, 2003), they may re-categorize jobs requiring a degree (Di Pietro & Urwin, 2006), or they may ultimately decide not to hire workers because of job search and withdrawal. In all these cases, employers set overqualification as the norm that jobseekers and employees must accept.

It can also be observed that a country's education system that has been classified as general or less vocational usually precedes OQ. Literature that deals with the extent to which the mismatch between employees, in general, varies according to the type of education (Allen et al., 2007) adds to this argument. While vocational training is seen as something that aids people's transition from school to work and an initial employment advantage, it becomes a disadvantage later in life compared to people with general education (Hanushek, Schwerdt, Woessmann & Zhang, 2017). It also reduces the adaptability of older employees to economic change (Hampf & Woessmann, 2017). Additionally, while general education only ensures good horizontal match, vocational qualifications reduce vertical or horizontal mismatch (Allen et al., 2007).

1.2.2.4 Cultural macro-factors preceding OQ

This part includes the cultural antecedents which attribute the occurrence of OQ to the co-occurrence of multiple individual characteristics, such as belongingness to a particular population group (Erdogan, Bauer, Peiró & Truxillo, 2011) or discrimination on the grounds of demography (Alfes, Shantz & Baalen, 2016) such as migrant workers and older people (OECD, 2013d). Migrant employees, for example, are prone to OQ to the extent to which their foreign education is not recognized or due to existing language barriers (Allen et al., 2007). At the same time, older employees rarely benefit from HR practices across organizations (Dychtwald, Erickson & Morison, 2004).

This section differentiates the individual characteristics from a cultural and cognitive point of view so as to aggregate and reflect OQ at the macro level. From a cultural perspective, OQ arises from pent-up individual personalities (Zhang, Law & Lin, 2016). Careerist attitudes (De Vos, De Stobbeleir & Meganck, 2009) or narcissism (Liu & Wang, 2012), in particular, lead the personal desire for social status to override the rational calculus of the value of education (Brynin, 2002) or to the achievement of an individual psychological contract (Erdogan, Bauer & Karaeminogullari, 2017) by adopting OQ jobs based on individual career history (Alfes, Shantz & Baalen, 2016) or personal work preferences (McKee-Ryan & Harvey, 2011).

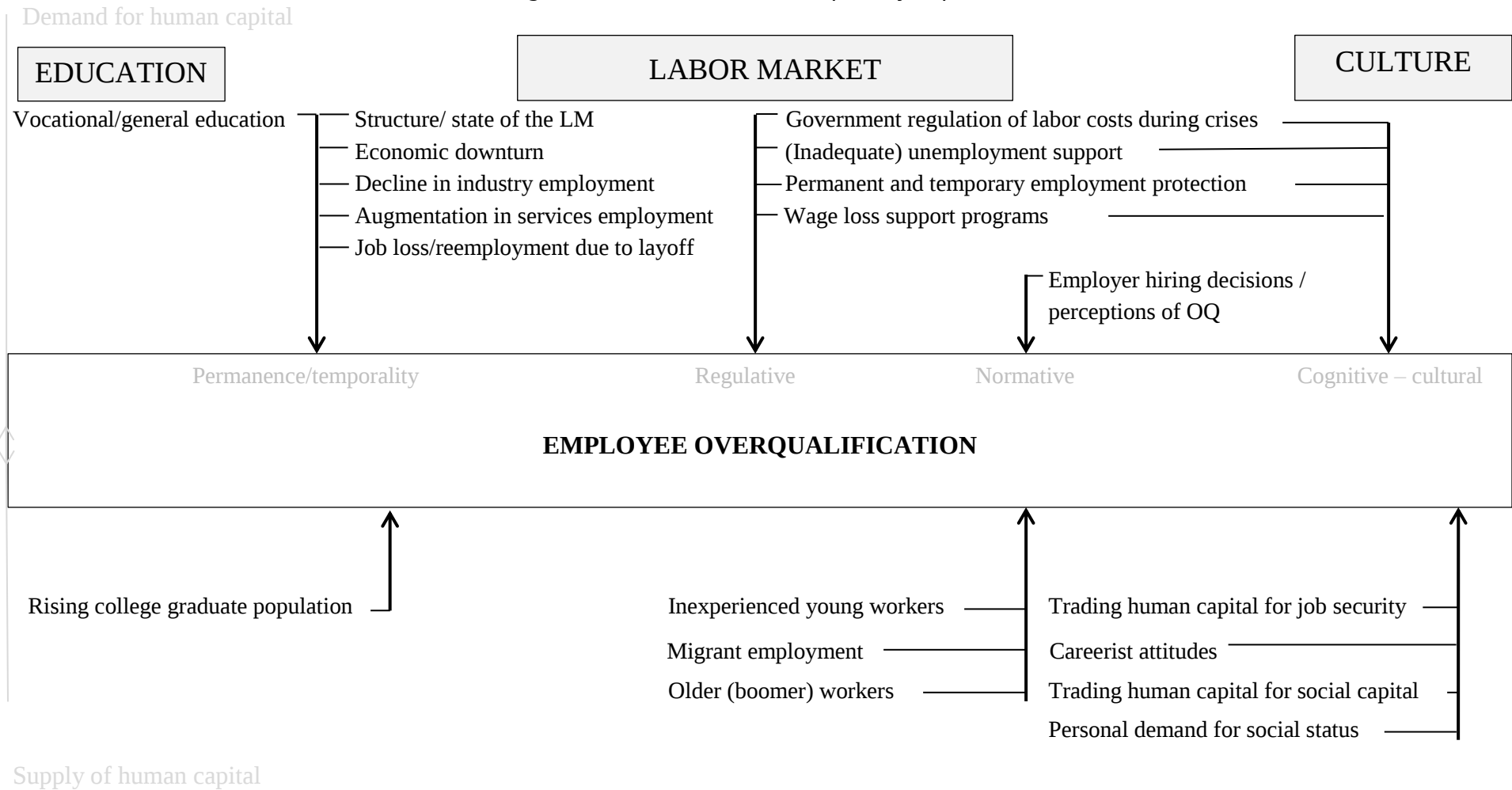
From a cognitive perspective, OQ often occurs in aggregation due to imperfect information about job requirements (Erdogan & Bauer, 2011). OQ may also be the result of multiple individual trade-offs between benefits and costs (Stojanov, 2012), such as the degree of freedom of choice of the OQ candidate (Erdogan, Bauer, Peiró & Truxillo, 2011) to trade off between the attractiveness of a current job and the availability of alternatives (Shaw, Delery, Jenkins &

Gupta, 1998). In addition, POQ is commonly thought to be caused by OQ (Feldman, Leana & Bolino, 2002; Liu & Wang, 2012), which will be discussed in more detail below.

Finally, this research has shown that the employees' gender is an ambiguous OQ antecedent (McKee-Ryan & Harvey, 2011; Liu & Wang, 2012). It is often considered that women are more likely to be overqualified than men (Luksyte, Spitzmueller & Maynard, 2011) by settling for low salaries to balance family duties (McKee-Ryan & Harvey, 2011). This again exemplifies the point of “trading” between human capital for social benefits (Figure 1.1) and social capital (Erdogan, Bauer, Peiró & Truxillo, 2011).

Conversely, Erdogan & Bauer (2009) and Maynard, Joseph & Maynard (2006) stressed that male employees perceived higher levels of OQ. This paradox also ranges from both genders being equally prone to OQ (OECD, 2016b) up to a near-zero correlation between gender and POQ (Johnson & Johnson, 1996; Luksyte, Spitzmueller & Maynard, 2011).

Figure 1.2: Theoretical model of overqualification antecedents



Source: own work.

1.2.3 Configurational approach to country-level employee overqualification

1.2.3.1 *Configurational view on overqualification antecedents*

According to Cress and Snow (2000, p. 1077), it is vital to establish the general context in which OQ occurs: "One of the main difficulties in assessing the factors that theoretically influence the achievement of outcomes is to operationalize them in a way that is consistent with the literature and yet relevant to the local context."

Employee overqualification (as OOQ and POQ) occurs in different countries (OECD, 2015) and affects the way individuals experience their work in organizations (Oldham & Hackman, 2010). According to Selznick (1948, p. 256-257), "all organizational action is driven by cultural-cognitive, normative, and regulatory elements of institutions". Action is a product of the institutional context and is therefore not context-free but rather constrained (bounded) and shaped by the setting in which it occurs. This is also in line with Johns' (2006) definition of context. If his definition were to be applied to this specific case, macro context could be seen as a set of situational opportunities and constraints that influence the occurrence and meaning of employee overqualification (objective, subjective). If one were to consider country-context in this way, set-theoretic logic along with configurational approaches would be well suited to explain such a causally complex phenomenon (Furnari et al., 2020).

Using this approach, this thesis has built on a preselected set of theoretically plausible factors (Figure 1.2) to explain the occurrence of OQ by examining the role of combinations of macro factors or configurations. The configurational (set-theoretic) approach seems to be superior in accomplishing this when compared to the correlational approach. Indeed, while the net effects/correlation statistics approach focuses on the independent effects of causal conditions on the outcome and cannot unravel the causally complex nature (Pustovrh & Jaklič, 2014), the configurational approach establishes clear links between specific combinations of conditions and the outcome (Ragin, 2009).

1.2.3.2 *Qualitative comparative analysis (QCA)*

QCA starts from the premise that causation is not easily determined because outcomes of interest rarely have any single cause, and they rarely operate in isolation. Additionally, a specific causal attribute may have different and even opposite effects depending on the other factors (Greckhamer, Misangyi, Elms & Lacey, 2008). Developed by Charles Ragin (2009), QCA seeks to identify the common causal conditions underlying a particular outcome by examining the attributes of cases exhibiting that outcome.

The causality in QCA is complex, equifinal, asymmetric, and conjectural, and it is based on set-theoretic relationships using the concepts of necessary and sufficient conditions. It uses combinatorial logic relying on Boolean algebra and considers only the relations of necessity and

sufficiency between antecedents and an outcome. With necessity, the outcome is a subset of the causal condition; with sufficiency, the causal condition is a subset of the outcome. A causal condition is necessary if it appears in all the configurational patterns producing the outcome but cannot predict the outcome by itself. Alternatively, sufficient conditions can solely predict the outcome but might not be the only ones with this propriety (Legewie, 2013).

To assess necessity and sufficiency, the QCA uses two parameters. Consistency refers to the degree to which a relation of necessity or sufficiency between a causal condition and an outcome is met within a given data set (Ragin, Drass & Davey, 2006) or the degree to which solution terms and the solution are subsets of the outcome. Coverage, on the other hand, assesses the degree to which a cause or causal combination “accounts for” instances of an outcome (Ragin, Drass & Davey, 2006; Rioux & Ragin, 2008) or how much of the outcome is covered (or explained) by each solution term and by the solution.

1.3 Methodology

1.3.1 The data and the sources

The main data is extracted from OECD and International Labor Organization (ILO), primarily PIAAC (OECD, 2013d), as well as national reports, where needed. In the two rounds of PIAAC, more than 255,000 respondents from 33 countries provided data on adults’ proficiency in key information-processing and various “generic” skills (OECD, 2013d). This chapter focuses on the working-age population (aged 15-64) from 27 participating countries. Six countries were excluded from the survey due to the unavailability of data on critical causal conditions.

The main advantage of selecting the PIAAC Survey over other data sources is its propriety in allowing us to simultaneously construct the POQ, and especially the OOQ variable, for the same individual. The surveyed individuals provided individual socio-economic data, among which they also reported whether their qualifications matched their work requirements. Indeed, the least biased method for measuring vertical employee-job mismatch is the normative or job analysis method (Quintini, 2011). However, the disadvantage of this method until PIAAC was that it was very costly due to the large and cross-national sample. PIAAC data is well equipped to deal with such a flaw and has the advantage of overcoming another obstacle in measuring vertical mismatches, as it relies on the common International Standard Classification of Education (ISCED), which allows for cross-national comparison.

In addition, country-level data was queried from the ILO and in annual OECD reports on education (OECD, 2018; OECD, 2017), migration (OECD, 2015), and employment protection legislation for the year of 2013 or the latest year available.

1.3.2 Variables

The theoretical antecedents of overqualification from Figure 1.2 have been streamlined into a new, macro-configurational model of employee overqualification (Figure 1.3), which considers six causal conditions for the OQ and five causal conditions for the POQ as outcomes.

1.3.2.1 Outcomes

POQ, as an outcome, is created from the PIAAC questionnaire as a sum of the cross-tabulations of the respondents' stated (perceived) necessity for their highest level of education to satisfactorily do their current job. To put it differently, all the respondents who stated that a lower qualification than the one they have is necessary for doing their job satisfactorily were set as "perceiving themselves as overqualified" (Appendix 1.1).

OQ was operationalized as any positive difference between the highest acquired level of education and the job-required educational level both measured on ISCED scale (OECD, 1999); (UNESCO, 1976). For this purpose, all the formal education levels have been grouped into four clusters: lower and upper secondary, post-secondary (non-tertiary), and tertiary education (Appendices 1.1 and 1.2).

1.3.2.2 Causal conditions

1.3.2.2.1 Labor market

The 'Risk Categories' causal condition (causal condition RISK) includes those employees who are prone to overqualification due to labor market discrimination. It is computed as a sum, a cumulative percent of labor force participation (LFP) of the following labor market categories: young workers aged 15-24, "boomer" workers aged 55-64, and migrant (or foreign-born) workers (OECD, 2015b).

The LFP migrant percentage is first calculated as the share of foreign population within the total population (in 1000's) using ILOSTAT's databases and is then multiplied by its LFP rate from the OECD database (LFP rate / 100). The migrant LFP rate, along with other secondary data used in this research, is from the year 2013, except for Chile, which includes data from 2014 (OECD, 2015a), France (2014), Israel (2014), Lithuania (2014), Ireland (2012), and Poland and Turkey with data from 2005. In Japan, the labor force participation rate of the foreign population was unknown, so their LFP is calculated from the overall LFP rate of the working population (aged 15-64) in the country.

The OECD publishes an Employment Protection Legislation (EPL) index that categorizes countries as rigid or flexible in terms of measures against individual or collective dismissal (OECD, 2013b). In this paper, the causal condition 'Rigidity of Employment Protection Legislation (RGTY)' is considered as rigidity against individual dismissal of permanent and temporary workers, with accenting rigidity against temporary employment or collective

dismissal, again for the year 2013. The exception years are for Slovenia (2014), Great Britain (2014) and Lithuania (2015).

The final causal condition is ‘Dynamism (DYNA)’ or workforce turnover from the industry to the services sector between the years of 2007 (the economic crisis debut) and 2013 (crisis end). During the crisis, all other countries from the sample, except for Turkey, had a decline in industry employment and an augmentation in services employment. The data used for the constituting causal condition for Estonia is from 2012. As for Lithuania, the data is drawn from The World Bank database.

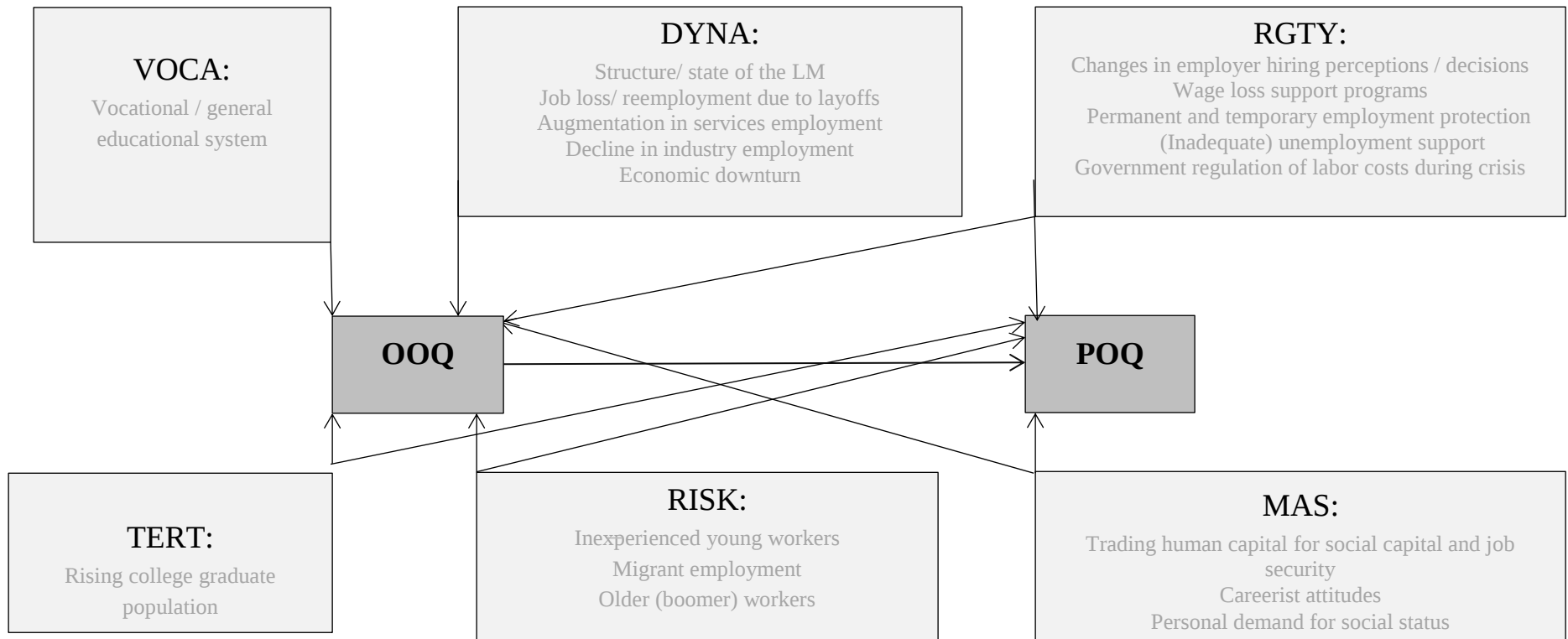
1.3.2.2.2 Culture

Culture itself is a candidate for being a precursor of overqualification levels and types. Here one finds the emphasized masculinity versus femininity index (MAS) or the aggregated emotional implications of being born as a girl or boy (Hofstede, 1984). It is the index of a country's preference for performance, heroism, assertiveness, and material rewards for success rather than cooperation, modesty, caring for the weak, and quality of life.

MAS is robust enough to encompass gender differences in proneness to over-qualify. It also incorporates the trade-offs between human and social capital or benefits, personal costs and benefits, or individual work preferences embedded in quality perceptions. This causal condition also includes discrimination against older people and migrants in the labour market. Reference is also made to the personal psychological contract when faced with work or the search for a job for which one is overqualified.

This research relies on MAS, as a causal condition, over other recent studies comparing cultural indicators across countries, such as Global Leadership and Organizational Behavior Effectiveness (GLOBE 2020), for conceptual, empirical, and pragmatic reasons. Conceptually, MAS is about gender differences or being born as a boy or a girl (as in Hofstede, 1984) applied to social perceptions of quality. If one were to choose GLOBE as a cultural indicator, one might omit some of the theoretical inputs covered by MAS and the overview of a country's designation. From an empirical and pragmatic point of view, if we were to classify GLOBE rather than MAS, we would have chosen additional GLOBE culture indicators such as assertiveness, philanthropy, and gender equality, resulting in at least three macro factors on culture, instead of one. Finally, this research employs a conservative threshold for MAS, namely Hofstede's mean MAS for all 81 countries he considered (including all 27 countries in our sample), as opposed to the 62 countries included in GLOBE (including 22 of the countries in our sample).

Figure 1.3: Macro-configurational model on overqualification antecedents



Legend: VOCA = country's education system is vocational; DYNA = workforce turnover between industrial and services sectors; RGTY = Rigid employment protection legislature; TERT= augmentation of tertiary educated workers on the labor market; RISK = labor force participation rate of oldest, youngest, and migrant workers, combined; MAS = country's masculinity index

Source: own work.

1.3.3 Descriptive statistics

The conceptual distinction between OOQ and POQ presented in this chapter, leading to different nomological networks, is also reflected in the empirical section (Table 1.1). There, on average, one finds seemingly more overeducated (OOQ) individuals (21.55%) compared to those who perceive themselves as being overqualified (POQ = 20.63%).

In this chapter, OOQ is a four-level index (Appendix 1.2) based on the ISCED scale, which maps educational attainment (OECD, 1999). This could have led to even greater differences in values between OOQ and POQ if, as (Liu, Luksyte, Zhou, Shi & Wang, 2015) suggested, it were divided into six levels instead of four, by separating master and doctoral education levels from other, tertiary education. Given that there are different national labels for formal educational qualifications, such a “six-level” comparison would have meant that the UK (England) would have been excluded from the current analysis, making the comparison between the pre-Bologna and Bologna periods difficult. At this point, one can see the disadvantage of PIAAC in not being able to address qualification perceptions before and after Bologna for that country, whereas it is certainly feasible for all the other countries from the dataset.

Conversely, this sample also includes 12 countries where the POQ has a higher value than the OOQ, including Slovenia (although this country has both a low OOQ and POQ). This can be seen as an aggregate effect of individuals with comparable education perceiving and overvaluing their education differently. Finally, POQ feelings could also result from reasons other than education itself, meaning that different conceptualizations and measurements sharpen the supposedly obscure boundaries between the concepts of being and feeling overqualified.

1.3.4 The procedure and analysis

The purpose of a crisp-set QCA (hereafter csQCA) was to identify the necessary or sufficient subset conditions between the dataset and the attributes relying on the theoretical background of the overqualification antecedents. This paper makes use of dummy coding for all causal conditions' values dichotomized upon a conservative threshold value (mainly using the OECD average, see Table 1.1) or upon the mean values of the dataset for the causal condition created.

The causal conditions with values below the set QCA threshold value were coded as "0" (or in Boolean logic as "missing", "not a member" of a configuration), while those with values above the threshold value were coded as "1". The result is the "truth table" (Table 1.2), in which 15 countries had high POQ (low POQ was referred to as ~POQ), while 11 countries had high OOQ (low OOQ was referred to as ~OOQ).

Table 1.1: Descriptive overview of the dataset

COUNTRY	OOQ	POQ	RISK	RGTY	DYNA	VOCA	TERT	MAS
AUT	20.979	16.502	31.729	2.369	7.511	70	4.65	79
BEL	15.798	23.514	24.276	1.892	7.062	60	3.44	54
CAN	26.841	21.061	44.643	0.920	5.958	8	4.79	52
CHI	16.345	15.794	15.657	2.626	21.447	29	3.97	28
CZE	20.623	25.686	13.038	2.924	5.959	73	6.73	57
DNK	18.386	15.455	25.371	2.198	5.550	50	4.53	16
EST	26.507	17.290	37.079	1.809	6.600	36	4.20	30
FIN	16.762	23.874	17.823	2.166	5.454	71	4.19	26
FRA	31.330	24.256	19.208	2.384	4.997	41	5.46	43
GBR	25.733	26.855	24.296	1.095	8.361	40	6.36	66
GER	23.165	21.808	24.513	2.678	6.822	51	4.17	66
GRE	20.954	15.548	19.109	2.119	22.177	30	4.53	57
IRL	27.172	20.554	30.680	1.396	11.787	27	9.08	68
ISR	32.489	19.304	62.313	2.035	28.262	41	3.83	47
ITA	13.265	15.852	19.923	2.678	6.219	56	2.71	70
JPN	31.069	22.301	10.198	1.369	3.718	23	6.29	95
KOR	21.221	28.176	8.822	2.369	7.965	18	8.50	39
LTU	26.473	23.933	10.337	2.448	35.040	27	6.27	19
NDL	14.848	15.448	21.935	2.821	6.300	69	3.07	14
NZL	33.823	28.626	53.456	1.392	5.949	32	4.80	58
NOR	19.756	18.466	27.875	2.333	6.844	50	5.57	8
POL	16.370	26.856	10.026	2.230	4.845	50	7.07	64
SVK	18.034	21.173	8.656	1.841	7.694	69	5.44	100
SVN	11.752	14.188	16.356	2.603	6.882	67	5.65	19
SPA	21.741	17.792	27.548	2.047	16.055	35	4.46	42
SWE	18.741	23.466	22.336	2.607	7.351	38	5.71	5
TUR	11.587	13.100	15.934	2.309	18.151	49	4.62	45
mean	21.547	20.625	23.820	2.068	10.406	44.815	5.188	46.926
QCA	21.698	20.625	23.820	2.044	10.406	≥ 50	5.188	50.166
threshold								

* Legend: VOCA = country's education system is vocational; DYNA = workforce turnover between industrial and services sectors; RGTY = Rigid EPL; TERT= augmentation of tertiary educated workers on the labor market; RISK = LFP rate of oldest, youngest, and migrant workers, combined; MAS = country's masculinity index.

OOQ, POQ, RISK, DYNA and TERT are expressed as a percentage, RGTY, VOCA and MAS are index numbers

Source: own work.

Once the causal conditions were entered, the data were analyzed as a crisp-set (cs)QCA (Ragin, 2009). There, in a three-stage process of csQCA, the first step considered what the causal conditions (macro - factors) would look like with both outcomes, OOQ and POQ, present or absent. The threshold for the factors to be included in the analysis has been set with a coverage benchmark of ≥ 0.5 and a consistency benchmark of ≥ 0.9 (Ragin, Drass & Davey, 2006).

In the second stage, as csQCA software generally assesses relations of sufficiency, it unveils necessity relations in very peculiar circumstances. Furthermore, there are "remainder" and "contradictory" rows (Appendices 1.3; 1.5; 1.7 and 1.9) for all the outcomes (OOQ, $\sim$ OOQ, POQ, and $\sim$ POQ), which signals that the respective truth tables are not fully specified. Therefore, not all the causal conditions are to be designated as "necessary" in the QCA. Additionally, a necessity analysis is by rule the first one to be manned (Schneider & Wagemann, 2010). As a result, it was established that only the $\sim$ VOCA is necessary condition for a high OOQ ($\sim$ VOCA $\leftarrow$ OOQ, Table 1.3).

In the third stage, csQCA performs truth table and counterfactual analyses and then selects the smallest number of combinations that will cover all the positive instances of the outcome (Boolean minimization). This minimization provided certain "primitive expressions" leading to a final configuration – patterns that explain OOQ and POQ. During minimization, however, discrepancies arose between the primitive expressions of a final solution - configuration. For this reason, by relying on extant literature, the causal conditions were set both as "present" and "absent" for the POQ/ $\sim$ POQ outcomes. This was done to isolate "prime implicants" that are logically redundant. As for the high OOQ, only the causal condition VOCA was pre-set as being absent.

Finally, the csQCA presents three¹ solutions to each truth table analysis: a "complex" solution (Tables 1.4; 1.6; 1.8 and 1.10), a "parsimonious" solution, and an "intermediate" solution. This thesis uses the latter for dealing with logical remainders and for interpreting the resulting configurations patterns. All causal conditions appearing in both the parsimonious and intermediate solutions as designated as "core" conditions, whereas the causal conditions appearing only in intermediate solutions are designated as "complementary" conditions (Ragin, 2009). The conditions appearing in all the configurations leading to a same outcome were designated as necessary conditions.

¹ The "complex" solution avoids using any rows without cases - "remainders" (counterfactual cases have been eliminated). The "parsimonious" solution uses only the remainders that will yield simpler (or fewer) patterns. The "intermediate" solution uses only the remainders that survive counterfactual analysis (Legewie, 2013). Apart from the "intermediate" solution, a rule of thumb is to report the "complex" solution and the truth tables as well (Appendices 1.3 to 1.10)

Table 1.2: Overview of the csQCA truth table

COUNTRY	OOQ	POQ	RISK	RGTY	DYNA	VOCA	TERT	MAS
AUT	0	0	1	1	0	1	0	1
BEL	0	1	0	0	0	1	0	1
CAN	1	1	1	0	0	0	0	1
CHI	0	0	0	1	1	0	0	0
CZE	0	1	0	1	0	1	1	1
DNK	0	0	0	1	0	1	0	0
EST	1	0	1	0	0	0	0	0
FIN	0	1	0	1	0	1	0	0
FRA	1	1	0	1	0	0	1	0
GBR	1	1	0	0	0	0	1	1
GER	1	1	0	1	0	1	0	1
GRE	0	0	0	1	1	0	0	1
IRL	1	1	1	0	1	0	1	1
ISR	1	0	1	0	1	0	0	0
ITA	0	0	0	1	0	1	0	1
JPN	1	1	0	0	0	0	1	1
KOR	0	1	0	1	0	0	1	0
LTU	1	1	0	1	1	0	1	0
NDL	0	0	0	1	0	1	0	0
NZL	1	1	1	0	0	0	1	1
NOR	0	0	1	1	0	1	1	0
POL	0	1	0	1	0	1	1	1
SVK	0	1	0	0	0	1	1	1
SVN	0	0	0	1	0	1	1	0
SPA	1	0	1	1	1	0	0	0
SWE	0	1	0	1	0	0	1	0
TUR	0	0	0	1	1	0	0	0

Source: own work.

Table 1.3: Necessity relationship analysis

Outcome Causal condition	OOQ		~ OOQ		POQ		~ POQ	
	consistency	coverage	consistency	coverage	consistency	coverage	consistency	coverage
OOQ	/	/	/	/	0.533333	0.727273	0.250000	0.272727
~ OOQ	/	/	/	/	0.466667	0.437500	0.750000	0.562500
TERT	0.454545	0.416667	0.437500	0.583333	0.666667	0.833333	0.166667	0.166667
~ TERT	0.545455	0.400000	0.562500	0.600000	0.333333	0.333333	0.833333	0.666666
RISK	0.727273	0.666667	0.250000	0.333333	0.400000	0.500000	0.500000	0.500000
~ RISK	0.272727	0.200000	0.750000	0.800000	0.600000	0.600000	0.500000	0.400000
RGTY	0.363636	0.222222	0.875000	0.777778	0.533333	0.444444	0.833333	0.555556
~ RGTY	0.636364	0.777778	0.125000	0.222222	0.466667	0.777778	0.166667	0.222222
MAS	0.545455	0.461538	0.437500	0.538462	0.666667	0.769231	0.250000	0.230769
~ MAS	0.454545	0.357143	0.562500	0.642857	0.333333	0.357143	0.750000	0.642857
DYNA	0.363636	0.571429	0.187500	0.428571	/	/	/	/
~ DYNA	0.636364	0.350000	0.812500	0.650000	/	/	/	/
VOCA	0.090909	0.083333	0.687500	0.916667	/	/	/	/
~ VOCA	0.909091	0.666667	0.312500	0.333333	/	/	/	/

Source: own work.

1.4 Results

The configurational patterns (Table 1.4) for the high OOQ and low OOQ (~OOQ) relied on configurations covering 9 of the OOQ countries and 13 of the low OOQ countries. These configurations incorporated 3 and 5 configurational patterns, respectively (named “a” to “c” and “a” to “e”).

The high OOQ at the country level is clearly explained by three configurational patterns (a, b and c, Table 1.5). This illustrates equifinality as a feature of QCA when multiple configurations (patterns) lead to the same result. Among them, configurational pattern “a” has the highest raw/unique coverage. It covers five countries and designates a high OOQ in countries with high LFP of risk categories and non-vocational education systems. The truth table and the complex solution have also been presented (Appendices 1.3 and 1.4).

The low OOQ at the country level is explained by five configurational patterns (a – e, Table 1.6). Among these equifinal patterns, the configurational pattern “c” has the highest raw/unique coverage. It covers seven country relationships and denotes a low OOQ in countries with low-risk categories LFP, low dynamism of intersectoral workforce turnover, rigid EPL, and vocational education systems. The truth table and the complex solution have also been presented (Appendices 1.5 and 1.6).

As for the POQ, the configurational patterns (Table 1.7) relied on configurations covering 11 of the high POQ countries and 8 of the low (~) POQ countries. These configurations incorporated 4 and 3 configurational patterns, respectively (a-d and a-c), shown in detail in Tables 1.8 and 1.9. Before proceeding with the standard QCA analyses, prime implicants emerged for the high POQ, according to which $\sim \text{RGTY} * \text{MAS}$ and $\text{OOQ} * \text{TERT}$ were retained in the prime implicants chart (Appendix 1.11).

Table 1.4: Configurations for OOQ

Causal conditions	High objective overqualification (OOQ)			Low objective overqualification (~ OOQ) *				
	a	b	c	a	b	c	d	e
risk categories	■					□	■	□
rigidity		□	■	■		■	□	■
dynamism			■			○		●
vocational education	□	□	□	■	■	■	■	□
tertiary education LFP		■	■		■			□
masculinity		●	○	□	■		■	
raw coverage	0.636364	0.272727	0.090909	0.3125	0.1875	0.375	0.0625	0.1875
unique coverage	0.454545	0.090909	0.090909	0.125	0.0625	0.0625	0.0625	0.1875
consistency	1	1	1	1	1	1	1	1
solution coverage		0.818182				0.8125		
solution consistency		1				1		

■ Core condition present ● Complementary condition present
 □ Core condition absent ○ Complementary condition absent
 * The “~” sign denotes a negated, absent causal condition or a causal condition having a value lower than its threshold in csQCA

Source: own work.

Table 1.5: Configurations for high OOQ

Model: $OOQ = f(RISK, RGTY, DYNA, VOCA, TERT, MAS)$				
INTERMEDIATE SOLUTION: frequency cutoff: 1.0000 consistency cutoff: 1.0000				
Assumptions: RISK (present) RGTY (present) DYNA (present) $\sim VOCA$ (absent) TERT (present)				
$RISK*\sim VOCA + \sim RGTY*\sim VOCA*TERT*MAS + RGTY*DYNA*\sim VOCA*TERT*\sim MAS \rightarrow OOQ$				
	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
RISK*$\sim VOCA$	0.636364	0.454545	1	CAN, EST, GBR, IRL, ISR, NZL, SPA
$\sim RGTY*\sim VOCA*TERT*MAS$	0.272727	0.090909	1	GBR, IRL, JPN
RGTY*DYNA*$\sim VOCA*TERT*\sim MAS$	0.090909	0.090909	1	LTU
solution coverage: 0.818182				
solution consistency: 1				

Source: own work.

Table 1.6: Configurations for low OOQ

Model: $\sim OOQ^* = f(RISK, RGTY, DYNA, VOCA, TERT, MAS)$				
INTERMEDIATE SOLUTION: frequency cutoff: 1.000000 consistency cutoff: 1.000000				
Assumptions: TERT (present) $\sim VOCA$ (absent) DYNA (present) RGTY (present) RISK (present)				
$RGTY*VOCA*\sim MAS + VOCA*TERT*MAS + \sim RISK*RGTY*\sim DYNA*VOCA + RISK*\sim RGTY*VOCA*MAS + \sim RISK*RGTY*DYNA*\sim VOCA*\sim TERT \rightarrow \sim OOQ$				
	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
RGTY*VOCA*$\sim MAS$	0.3125	0.125	1	DNK, FIN, NDL, NOR, SVN
VOCA*TERT*MAS	0.1875	0.0625	1	CZE, POL, SVK CZE
$\sim RISK*RGTY*\sim DYNA*VOCA$	0.375	0.0625	1	FIN, ITA, NDL, POL, SVN
RISK*$\sim RGTY*VOCA*MAS$	0.0625	0.0625	1	BEL
$\sim RISK*RGTY*DYNA*\sim VOCA*\sim TERT$	0.1875	0.1875	1	CHI, GRE, TUR
solution coverage: 0.8125				
solution consistency: 1.000000				

Source: own work.

Table 1.7: Configurations for perceived overqualification (POQ)

Causal conditions	High perceived overqualification (POQ)				Low perceived overqualification (~ POQ)*		
	a	b	c	d	a	b	c
objective overqualification			■	■	■		□
rigidity		□	■			■	■
tertiary education LFP	■		■				□
risk categories		●		●	■	■	
masculinity	■	■		■	□	□	■
raw coverage	0.4	0.333333	0.133333	0.333333	0.25	0.25	0.25
unique coverage	0.266667	0.066667	0.133333	0.066667	0.166667	0.166667	0.25
consistency	1	1	1	1	1	1	1
solution coverage			0.8			0.666667	
solution consistency		1				1	

■ Core condition present ● Complementary condition present

□ Core condition absent ○ Complementary condition absent

* The “~” sign denotes a negated, absent causal condition or a causal condition having a value lower than its threshold in csQCA.

Source: own work.

The high POQ is explained by four configurational patterns (a – d, Table 1.8). Among them, configurational pattern "a" (Table 1.7) has the highest raw/unique coverage value. It covers seven countries and indicates a high POQ in countries with high augmentation of LFP of tertiary-educated workers and a strong masculinity index. The truth table and the complex solution have also been presented (Appendices 1.7 and 1.8).

The ~ POQ is explained by three configurational patterns (a – c, Table 1.9). Among them, configuration pattern "c" (Table 1.7) has the highest fit parameter values and covers three countries by assigning a low POQ for countries with a low share of overeducated employees, rigid EPL, low augmentation of LFP of tertiary-educated workers, and a strong masculinity index. The truth table and the complex solution have also been presented (Tables 1.9 and 1.10).

This section shows that the resulting QCA configurations distinguish between OQ configurations of antecedents in three ways: between high and low OOQ and POQ, on a country level, and between countries.

Table 1.8: Configurations for high POQ

Model: POQ = f (MAS, TERT, RGTY, RISK, OOQ)				
INTERMEDIATE SOLUTION: frequency cutoff: 1 consistency cutoff: 1				
Assumptions: OOQ (present) RISK (present) RGTY (present) TERT (present)				
TERT*MAS + RISK*~RGTY*MAS + OOQ*RGTY*TERT + OOQ*RISK*MAS → POQ				
Causal conditions	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
TERT*MAS	0.4	0.266667	1	CZE, GBR, IRL, JPN, POL, SVK, BEL
RISK*~RGTY*MAS	0.333333	0.0666667	1	CAN, GBR, IRL, NZL
OOQ*RGTY*TERT	0.1333333	0.133333	1	FRA, LTU,
OOQ*RISK*MAS	0.333333	0.0666667	1	CAN GBR , GER , IRL NZL
solution coverage: 0.8				
solution consistency: 1				

Source: own work.

Table 1.9: Configurations for low POQ

Model: $\sim\text{POQ} = f(\text{OOQ}, \text{RISK}, \text{RGTY}, \text{TERT}, \text{MAS})$
 COMPLEX SOLUTION: frequency cutoff: 1 consistency cutoff: 1

	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
OOQ*RISK*~MAS	0.25	0.166667	1	EST, ISR, SPA
RISK*RGTY*~MAS	0.25	0.166667	1	DNK, NOR, SPA
~OOQ*RGTY*~TERT*MAS	0.25	0.25	1	AUT, GRE, ITA

solution coverage: 0.666667
 solution consistency: 1

Source: own work

1.5 Discussion

This chapter aims to identify configurational patterns composed of macro factors that lead to the occurrence of employee overqualification at the country level. Considering the limited existing literature on country-level employee overqualification, it uses a macro factorial, contextual, and set-theoretic approach. Using configurational logic and QCA procedures, this paper showed how antecedents embedded in the labor market, education, and culture, act as causal conditions that explain the occurrence and absence of overqualification, both objectively and as perceived by employees.

Considering the configurational patterns leading to a high OOQ, it can be observed that this occurrence is specific to countries with non-vocational (general) educational systems. This causal condition appeared in all the configurations and solutions (complex, intermediary, parsimonious) and was also confirmed during the initial necessity analysis. Hence, the first fundamental proposition of the research is that *a non-vocational or general education system is a necessary condition for high country-level objective overqualification*. The high dynamism of inter-sectoral workforce turnover was established as a complementary condition for the low OOQ, which led to fewer and simpler configurational patterns.

It can be observed that the configurations for high POQ do not feature a joint necessary condition. However, the high share of LFP of risk categories is a core condition for the low POQ

and a complementary one for the high POQ. This means that this high share of LFP of risk categories appears every time there is at least one low POQ country covered by the configurations. As for the high POQ, the LFP of high-risk categories led to fewer and simpler configurational patterns.

What is also evident is that although OOQ is a factor included in the configurations predicting POQ, *high country-level objective overqualification is not a necessary condition for high perceived overqualification* (our second fundamental proposition). To put it differently, the POQ can take high or low values without being conditioned by the high or low value of the OOQ at the country level or without even having it be incorporated in the configurations explaining POQ. This also exemplifies the asymmetrical nature of the configurational approach, where the causal conditions generating the presence of a particular outcome do not generate its absence if they take opposite values. Had this paper not used the configurational approach, this would not have been established.

1.5.1 Overqualification archetypes at a county level

By juxtaposing the configurations leading to high and low OOQ and POQ, one can distinguish between four types of countries: two “genuine” and two “apparent” archetypes (Table 1.10).

Genuine Archetype One countries have a high overall country-level overqualification (both OOQ and POQ are high). Prototypical countries include Canada, Great Britain, Ireland, Japan, Lithuania, and New Zealand. By applying the rules of Boolean algebra, one finds that a common configuration leading to Genuine Archetype One includes the following macro factors: a non-vocational education system and masculinity.

Genuine Archetype Two includes countries with a low overall country-level overqualification (both OOQ and POQ are low). Prototypical countries include Denmark, Greece, Italy, and Norway. Again, by applying common Boolean algebra rules, one finds that their typical configuration includes risk categories and vocational education systems in all patterns.

Apparent Archetype One countries are characterized by a low OOQ and a high POQ. Prototypical countries include the Czech Republic, Poland, and Slovakia. The additional algebra of the set's computation revealed that the typical configuration for this archetype includes vocational education and almost always contains a high augmentation of tertiary-educated entrants to the labor market. All countries adhering to this archetype are characterized by a low dynamic of mobility from the industrial to the service sectors.

Apparent Archetype Two includes countries with a high OOQ and a low POQ. Prototypical countries include Estonia, Israel, and Spain. The typical configuration for this archetype contains a high proportion of risk categories in the labor market and a non-vocational education system. In general, all Apparent Archetype Two countries are characterized by high LFP of

migrants, young and "boomer" workers, general education systems, a low increase in LFP of tertiary-educated workers, and a weak masculine culture.

1.5.2 Theoretical implications

This chapter contributes to the existing knowledge base by adopting a configurational approach to bridge the knowledge of antecedents of objective and perceived overqualification at a country level. Indeed, the simultaneous consideration of OoQ and PoQ in the elaboration of employee overqualification is worth highlighting. So far, it has been shown that these two concepts envelop different nomological networks and accumulate different predictors. Even though they have been linked and paired, one does not imply the other. Nevertheless, when both were considered, it became clear that some macro factors were common to the specific archetypes in the selected countries, although no necessity relationship had generally been established between them.

The challenging work of isolating theoretical antecedents from the limited available literature was empirically supported by reference to the higher-level, contextual causal conditions surrounding them. Such a set-theoretic approach is encouraged, along with recourse to QCA, when addressing theoretical scarcities and inconsistencies in other areas of existing management literature, too.

The originality of this chapter also lies in the fact that the term "contextual conditions" has been used in a positive way; here were the macro factors that did not bound, but caused the occurrence of OQ, by level and type, within a country, allowing an analysis between countries on the same ground. It is certainly important to highlight the new proposed aspect of genuine and apparent overqualification as it was previously related to OoQ and one's satisfaction with the job (Chevalier & Lindley, 2009).

Another benefit of this chapter is the illustration of a normative approach (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). to measuring worker country-level overqualification by establishing the OoQ score (Appendix 1.2). It should also be pointed out that this analysis was conducted at the cross-national level and outside the Western world, unlike previous studies which were seen as less diversified (Erdogan & Bauer, 2009), case-oriented, and based on a smaller sample (Alfes, Shantz & Baalen, 2016; Zhang, Law & Lin, 2016).

Furthermore, this chapter shows that OQ is not just individual or temporal, like in the assignment theory, occupational mobility theory, and institutionalism. This is equally due to the new "theorizing tool" of configurational theory, as proposed by Furnari et al. (2020), by which it becomes clear that overqualification does not only arise at the managerial level because there are macro-contextual patterns that imply it (Abraham, 2015; Hu et al., 2015; Zhang, Law & Lin, 2016). Therefore, it is also essential to address this issue at the country level.

Table 1.10: Cross-country overview of objective and perceived overqualification

		Objective overqualification	
		High	Low
Perceived overqualification	High	CAN, GBR, IRL, JPN, LTU, NZL $(RISK* \sim VOCA* MAS +$ $RISK* \sim VOCA* \sim RGTY* MAS +$ $RGTY* \sim VOCA* OOQ* RGTY* TERT$ $+ RISK* \sim VOCA* OOQ* MAS +$ $\sim VOCA* TERT* MAS* DYNA +$ $\sim VOCA* TERT* MAS* \sim RGTY)$	CZE, POL, SVK $(RGTY* VOCA* \sim MAS* OOQ* TERT +$ $VOCA* TERT* MAS +$ $\sim RISK* RGTY* \sim DYNA* VOCA* PPQ* TER$ $T + RISK* \sim RGTY* VOCA* MAS)$
	Low	EST, ISR, SPA $(RISK* \sim VOCA* OOQ* \sim MAS +$ $RISK* \sim VOCA* RGTY* \sim MAS +$ $RISK* \sim VOCA* \sim OOQ* \sim TERT* MAS)$	DNK, GRE, ITA, NOR $(RGTY* VOCA* \sim MAS* RISK +$ $RISK* \sim RGTY* VOCA* MAS* \sim OOQ* \sim TERT)$

Source: own work.

1.5.3 Implications for practice

The differences between the patterns explaining objective and perceived overqualification suggest that the concepts of “being” and “feeling” overqualified are different when it comes to actual work. This could be essential for understanding skill mismatch (Alfes, Shantz & Baalen, 2016). Qualification has often been used as a substitute for skills, another core element of skill mismatch. Another advantage is that the identified configurations capture the contextual embeddedness of POQ, which in turn is seen as a major factor in lower job satisfaction leading to voluntary turnover (Shaw, Delery, Jenkins & Gupta, 1998), a basis for other negative employee outcomes.

National policies addressing objective and perceived overqualification at the country level should focus on its nomological diversity. The first main proposition derived from this chapter stresses that high levels of OOQ necessarily occur in countries with general education systems, although it is not arbitrarily assumed that going back to vocational education could reduce it.

What is in its favor is that the rigid EPL legislation is observed at lower levels for both OOQ and POQ in all the countries in our sample.

Next, our typology of genuine and apparent archetypes provides policymakers with a tool to identify the macro conditions that contribute to the context of high levels of OQ across countries. Seemingly, within these archetypes, one finds common labels for the causal conditions - macro factors that characterize high and low levels of OOQ and POQ, although they are not to be attributed to the propositions derived.

The configurational patterns of causal conditions that bring about OQ have labels that characterize them, which might shed some light on many of the OQ-related problems that practitioners are trying to solve. For example, in Genuine Archetype One countries, one can observe high OOQ and high POQ levels in all but three countries, whereas among the countries with high POQ, only half have a high OOQ as well. It appears that on a country level, overeducation is more often accompanied by perceived OQ, as opposed to the other way around.

Nevertheless, these high levels of OOQ and POQ can be observed in countries with general education systems (in all but one of the high POQ countries). To sum up, the general context of high OQ is often related to non-vocational education systems. On the other hand, a low OQ is evident in countries clustered by rigid EPL. From this aspect, policymakers might resort to measures against mass dismissal, which can be beneficial in tackling high OQ.

As for Apparent Type One countries (low OOQ, high POQ), low dynamics of mobility of employees from industrial to service sectors have become common since the economic crisis of 2009. Moreover, in Apparent Archetype Two, high OOQ and low POQ are typical of countries with a strong LFP of risk categories, non-vocational education systems, a low increase in the LFP of workers with tertiary education, and weak masculine culture. In summary, only one factor simultaneously keeps OOQ at a low level and POQ at a high level, while several factors lead to the reverse case.

1.5.4 Limitations and future research

Like any other study, this chapter, too, has its drawbacks. The first is that contrary to what was suggested by Liu, Luksyte, Zhou, Shi & Wang (2015), the design of the OOQ result merged all academic education levels into one group, rather than separating them into Master's, Doctoral, and Bachelor's degrees. This was done due to the differences in the country-specific levels of education, particularly in terms of duration and levels of secondary education. Moreover, the UK has more than 2.400 respondents in the individual PIAAC data that do not belong to any specific ISCED category of higher academic education, as do 18 other respondents from France. This is problematic for two reasons. Namely, although the 1997 ISCED manual gives a clear picture of educational levels (Appendix 1.2), such a distinction between academic levels of

education poses the challenge of dealing with lower/secondary levels of education in the same way. Although this can be dealt with at the individual country level (see Domadenik et al., 2015), it is virtually impossible to do so across countries. Next is the use of a crisp-set QCA, which relies on dichotomizing variables. However, such a designation for a variable, as being "fully in" or "fully out" of a set, leads to the risk of losing more complex information. csQCA has been adopted to avoid problems with the calibration of more nuanced variables in fuzzy sets (fsQCA). The lack of empirical data on these OQ macro-level outcomes prompted the use of more conservative thresholds when dichotomizing causal conditions.

For example, it is debatable which exact country levels of OOQ or POQ reduce worker productivity at the country level, something that should be used later as a calibrated measure, as they are not always well suited to be dichotomized. Hence, a key question might be, "What level of employee overqualification should be considered relevant at the country level?". Therefore, once such data are available, future research should be done to calibrate the causal condition into a fuzzy set QCA or set its values as the degree of belonging to such a specific OOQ/POQ threshold that should provide more fine-grained, diversified results. Perhaps the net effects resulting from the regression analysis of the incidence of overqualification could respond to and complement the results, as QCA did to them, in return.

This chapter was compiled with caution to ecological fallacy, which can be observed in the streamlining of causal conditions and outcomes and in the analysis and interpretation sections. The resulting conclusions consider country and cross-country aspects of OQ occurrence according to level and type. The relationships observed for countries do not necessarily hold true for individuals, nor has such a claim been made in this chapter.

Nevertheless, the macro-configurational approach to OQ occurrence did not explain all of the OOQ/POQ levels. Known as "limited diversity" (typical of QCA), the solution consistencies have values below 20%, and the existence of "remainder" rows indicates that the theoretical and configurational models are not able to explain all the diversity of cases in the dataset (Legewie, 2013). To illustrate the limited diversity, one can draw on the results for Slovenia, a Genuine Archetype Two country. For this country, there are two configurational patterns that explain the occurrence of low objective overqualification (~OOQ). According to this pattern, low OOQ occurs due to rigid employment protection, a vocational education system, and low masculinity or due to low LFP of risk categories, rigid EPL, low intersectoral labour dynamics, and a vocational education system.

On the other hand, there is no configurational pattern of how the high values of RGTY, MAS, and VOCA could be combined with the low values of OOQ and RISK, all of which leaves unexplained why there are low levels of perceived overqualification in Slovenia.

In addition, not all configurations cover all 27 countries in the sample. High OOQ is not explained for Germany and France, while low OOQ is not explained for four other countries. The same goes for four high POQ and four low POQ countries. Moreover, Austria, France, Korea, and Sweden are not explained by any pattern in any configuration. In summary, the ecological fallacy and limited diversity leave room for additional theoretically plausible configurations leading to the occurrence of OQ, which could be done based on individual or organizational factors or once other countries outside the current OECD sample are added.

2 A CROSS-COUNTRY STUDY ON HIGH PERFORMANCE WORK PRACTICES BUFFERING NEGATIVE OUTCOMES OF EMPLOYEE OVERQUALIFICATION

2.1 Introduction

This chapter is relevant because HPWPs have been presented as a set of organizational HR "black box" practices originally developed to improve employee and organizational performance. The current study shows how these features of HPWPs alleviate both job dissatisfaction and relative income disadvantages, which occur due to objective or perceived overqualification of workers. The successful designation of HPWPs as "organizational" moderators intended to mitigate the two previously mentioned adverse outcomes of overqualification would also benefit academia. It will provide them with a new perspective on existing HPW practices which will be viewed as a counterbalance to the outcomes of more general, individual, and organizational factors, rather than just ones occurring due to employee overqualification.

An additional challenge, but also a benefit, of drawing such a parallel is isolating and naming the individual HPWPs that collectively contribute to the alleviation of the two adverse OOQ/POQ effects. This will explore a new aspect of how and which of these practices benefit performance but also combat negative OQ effects at the same time.

Employee overqualification is embedded in a global constellation where more than 21% of workers are overqualified for their current occupations (OECD, 2013a, 2013b). On the other hand, this occurrence became pertinent and anticipated once it was determined that many countries would face shortages of qualified workers in 2030 (Starck et al., 2014). It is generally found that education, skills, and work experience are the elements that exceed the qualifications required for the job or by the employer (Khan & Morrow, 1991; Maynard, Joseph & Maynard, 2006; Feldman & Maynard, 2011; Kuhn & Shen, 2012; Erdogan et al., 2017). It also reduces job satisfaction (Maltarich, Reilly & Nyberg, 2011; Alfes, Shantz & Baalen, 2016) which leads to increased turnover intentions (McKee-Ryan & Harvey, 2011; Liu, Luksyte, Zhou, Shi & Wang, 2015; Zhang, Law & Lin, 2016), on-the-job search (Quintini, 2011), and psychological stress (CEDEFOP, 2010).

Understandably, the literature that focuses on OQ is on the moderating, alleviating relationship between OQ and these adverse outcomes. More specifically, it is more about moderating the relationship between the perceived overqualification and job dissatisfaction. These moderators often rely on informal relations between employees in a job situation. This is why one must stress the originality of this chapter, which integrates this stance and considers overqualification as objective, just as it considers another one of its negative effects - the relative income loss, per occupation, and per country.

Tackling OQ is also a concern for organizations, as it increases turnover rates (Allen et al., 2007; Quintini, 2011) and counterproductive work behavior (Lukseyte, Spitzmueller & Maynard, 2011) and reduces worker productivity (Allen et al., 2007). On the other hand, organizations tend to put together a set of 'black box' human resource management practices that clearly link their performance to the human resources they have. What is commonly known as HPWP emphasizes the dimensions of HR practices that are believed to influence workforce performance for higher productivity, innovation, and competitive advantage.

If this constellation of confirmed findings is validated, HPWP would be added to the existing OQ literature as a new moderator that would reduce job dissatisfaction - a relative income loss, as a starting point for other individual, organizational, and societal outcomes which occur due to employee overqualification. It is why the focal research question of this chapter is: *“How do the high-performance work practices moderate the relationship between overqualification and its outcomes?”*

If confirmed, the results would call into question the sense of relative deprivation (Crosby, 1984), and the income-enhancing effect of education as assumed in human capital theory (Becker, 1962; Mincer, 1974). More narrowly, as a moderator of OQ outcomes, HPWPs would also provide insights into the segmented features of the AMO model that contrast these outcomes if they are caused by the overeducation of workers.

2.2 Theoretical framework

2.2.1 The job dissatisfaction and relative income loss due to overqualification in theoretical approaches

Various theoretical approaches have been adopted to explain overqualification, such as Person - Job (P-J) Person - Fit/Misfit Environment (Edwards, Caplan & Van Harrison, 1998; Erdogan, Bauer & Karaeminogullari, 2017), Human Capital Theory (Becker, 1962), or the Stress and Coping Model (Lazarus, 1998). These different levels of theoretical approaches to explaining job dissatisfaction and income loss due to overqualification could be fully explained at all levels of the labor market hierarchy, including the exchange of human capital for 'better' work, which is not always work that matches the worker's qualifications.

This chapter resumes the relative deprivation stance (Davis, 1959; Crosby, 1984), which suggests that individuals feel relative deprivation when “they want something they do not have, but believe they deserve to have it compared to someone who has it”. Indeed, investment in education, knowledge, and skills should lead to a certain type of job (Harari, Manapragada & Viswesvaran, 2017). If one is overqualified, he/she perceives that someone else has this outcome while he wants it, feels entitled to it, believes that it is feasible to get it, and does not feel personally responsible for the lack of it (Triana, Trzebiatowski & Byun, 2017). Hence, he/she thinks that this is unfair and feels disappointed because such underemployment is often below what he/she expected, experienced, or was previously promised (Liu, Luksyte, Zhou, Shi & Wang, 2015). Such a feeling of deprivation leads to dissatisfaction at work, psychological stress, frustration, anger and has negative psychological consequences (Johnson & Johnson, 1996; Maynard, Joseph & Maynard, 2006; Liu & Wang, 2012).

Overqualification is also rooted in feelings of deprivation due to relative loss of income in relation to education level (Brynin, 2002), which has led to income inequality overall (Handel, 2003; Di Pietro & Urwin, 2006). It has been found that educational mismatches also have a strong impact on wages (Allen & Van der Velden, 2001). This undoubtedly questions the premise of the human capital theory about the productivity-enhancing effects of education, according to which the skills acquired through education should lead to higher productivity and higher wages in the long run (Becker, 1962; Mincer, 1974). This is also emphasized by the theory of career mobility (Sicherman & Galor, 1990), which considers overqualification as an effect of schooling, which may be rooted in the search for higher wages in relation to the level of qualification in the roots of (intra- and inter-) occupational mobility.

From a macro-empirical perspective, the literature shows that the most significant positive effect on the probability of being satisfied with one's job is that "secure" work is more important in the public sector in low-income countries or the private sector in high-income countries (Allen et al., 2007). Narrower, it has also been emphasized that overqualification (of graduates) is more exclusive to certain occupations (Melink & Pavlin, 2012), regardless of whether the "choice of job or sector creates an intermediate step between the characteristics of the individual and his or her earnings" (Sattinger, 1993, p. 842), or whether working in a large or small enterprise influences this relationship.

As for the individual level, Hofstede (1984) claimed that "the perception (of quality) on which he bases his perceived values is, in reality, a trade-off between his benefits and his costs." Therefore, the perception of overqualification must not lead to a feeling of being deprived when workers are happy to be employed (Triana, Trzebiatowski & Byun, 2017; Budria, 2011). It should be stressed that it is very difficult to know whether the lower earnings observed for unequally paid workers are due to their inequality or whether people with lower earning capacity end up in unequal work. Moreover, Ortiz (2010) showed that, in segmented labor markets, a

permanent contract is a particular asset, and human capital can be exchanged for job security. Paradoxically, overqualification is thus more likely to occur with permanent rather than temporary workers.

Even the gender as a predictor of the relationship between overqualification and outcome is less clear (McKee-Ryan & Harvey, 2011; Liu & Wang, 2012) and is thus worth considering. Women "trade" human capital for social benefits and social capital (Feldman & Maynard, 2011) and are more often overqualified than men (Luksyte, Spitzmueller & Maynard, 2011; Allen et al., 2007), while aiming for a low salary to balance family responsibilities (McKee-Ryan & Harvey, 2011). Men perceive themselves more overqualified than their female colleagues (Erdogan & Bauer, 2009; Maynard, Joseph & Maynard, 2006), although there are studies where an almost zero correlation exists between gender and perceived overqualification (Luksyte, Spitzmueller & Maynard, 2011; Johnson & Johnson, 1996). Moreover, overqualification seems to affect younger workers more (OECD, 2013a; Quintini, 2011), and therefore its generalizability to other groups of workers should also be considered (Erdogan & Bauer, 2009).

All of this indicates why there is still a need for research to understand the individual, group, organizational, and societal facilitators and mediators (Hu et al., 2015) of this relationship and how overqualification varies between countries, or even the fact that this variability is less obvious or not even studied in emerging economies and outside the Western world (Zhang, Law & Lin, 2016; Erdogan & Bauer, 2009).

2.2.2 Conceptual distinction between objective and perceived overqualification

After emphasizing job dissatisfaction and lowered income as results of overqualification, the first discrepancy observed in the previous studies was when such (mitigated) results were due to the employee's perception of overqualification rather than the objective state of overqualification for the job. In fact, after reviewing the literature, only a few studies make a distinction between objective and perceived - subjective overqualification (Chevalier & Lindley, 2009; Maltarich, Reilly & Nyberg, 2011; Liu & Wang, 2012).

With such a taxonomy as a leitmotif, a broader horizon opens that raises the question of whether these two concepts have the same results (Hu et al., 2015) and whether there are equal or even negative relationships between objective and perceived overqualification and these results (Erdogan, Bauer, Peiró & Truxillo, 2011; Maltarich, Reilly & Nyberg, 2011).

First, "perceived" overqualification (POQ) is about one's own awareness (Liu & Wang, 2012; Alfes, Shantz & Baalen, 2016), feelings (Erdogan, Bauer, Peiró & Truxillo, 2011; Hu et al., 2015; Zhang, Law & Lin, 2016) or perceptions (Johnson & Johnson, 1996; Harari, Manapragada & Viswesvaran, 2017) that his qualifications exceed the requirements of his job. These perceived "qualifications" also refer to skills and experience (Martinez, Lengnick-Hall &

Kulkarni, 2014; Abraham, 2015; Kulkarni, Lengnick-Hall & Martinez, 2015; Harari, Manapragada & Viswesvaran, 2017).

Hence, consistently with extant theoretical work and empirical findings and for the purpose of new empirical examination of OQ effects across countries, the first two hypotheses were proposed:

H1a: Perceived overqualification reduces the employee's job satisfaction.

H1b: Objective overqualification reduces the employee's job satisfaction.

This theoretical gap widens even further as POQ does not necessarily reflect an accurate assessment of reality (Alfes, Shantz & Baalen, 2016), as individuals can easily overstate the requirements of their job or inflate the status of their position (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). On the other hand, objective overqualification (OOQ) has typically been operationalized as overeducation (Liu, Luksyte, Zhou, Shi & Wang, 2015), whereas in PIAAC, such "qualification mismatch" considers workers employed in jobs that require lower or higher qualification/education levels than the ones they have (Quintini, 2011; Zhang, Law & Lin, 2016). If the difference between the worker's qualification/education level and the qualification level required for the job is positive, the worker is considered overqualified (Quintini, 2011). This is followed by the hypotheses:

H2a: Objective overqualification reduces the employee's job satisfaction.

H2b: Objective overqualification reduces the relative income.

One can also observe that OOQ takes no account of the fact that people with the same qualifications working in comparable positions often experience different levels of perceived overqualification (Erdogan, Bauer, Peiró & Truxillo, 2011). This is possibly due to differences in the actual job content from person to person or the quality and nature of their training and experience, which differ between individuals (Hu et al., 2015).

2.2.3 The moderating role of the HPWP

The extensive research on mitigating the negative effects of overqualification has provided the empirical field with moderators that reduce these negative relationships primarily with one's own job dissatisfaction. These moderators are induced by the "psychological contract" or mutual beliefs, perceptions, and informal commitments between an employer and an employee (Rousseau, 2000; Hui, Lee & Rousseau, 2004). The negative relationship between OQ and outcomes is found to be moderated by empowerment (Erdogan & Bauer, 2009), organizational citizenship behaviors (Zhang, Law & Lin, 2016), goal orientation (Hu et al., 2015), leader

humility to show stronger career identity (Ma, Ganegoda, Chen, Jiang & Dong, 2020), or even overqualification by colleagues (Alfes, Shantz & Baalen, 2016).

Although there are studies that shed light on the positive sides of worker OQ (Van Dijk, Shantz & Alfes, 2019), its negative effects are much more familiar. When aggregated through job dissatisfaction and income loss, overqualification also reduces the competitive advantage (Quintini, 2011), as it lowers cumulative learning (Lazonick, Moss, Salzman & Tulum, 2014) and reduces the performance or productivity of workers (Ortiz, 2010).

It should be mentioned that competitive advantage and worker productivity are also within the scope of High-Performance Work Systems/Practices (HPWS/P), as organizations quest for competitive advantage is by investments in HR management systems. Emphasizing those dimensions of HR practices is thought to influence workforce and firm performance (Becker & Huselid, 2010). As a follow-up, workers who are dissatisfied due to overqualification are known to be less productive, and, as expected, not-dissatisfied workers are more productive (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). As workers in jobs that benefit from these practices are known to make greater use of their skills, (Jiang, Lepak, Hu & Baer, 2012) found that HR practices are gathered around the ability (skill)-motivation-opportunity (AMO) model. These practices tend to have positive direct and organizational-level effects on human capital and worker motivation. Furthermore, HPWPs have a direct positive effect on job satisfaction.

Posthuma, Campion, Masimova & Campion (2013) made an inventory of these HPW practices by grouping them into nine broad categories: compensation and benefits, job and work design, training and development, recruiting and selection, employee relations, communication, performance management, appraisal, and promotions. Through them, the AMO practices also have distant, mediated effects on voluntary turnover, operational outcomes, and finally, organizations' financial outcomes. Namely, as overqualified workers are prone to reduced motivation and fewer (career) opportunities, these enhancing HPWPs act as the overqualifications' counterweight to balance or even alleviate these adverse effects, regardless of whether the overqualification is objective or perceived or whether it is being treated as an excess of education or skills.

General human resource management practices affect the attractiveness of a current job and the availability of alternatives and thus reduce voluntary turnover (Shaw, Delery, Jenkins & Gupta, 1998). Inducements and investments in employees increase employees' expected outcomes, making a job more attractive. More specifically, the HPW systems expand on the HR "black box" by employing work practices from different individual and organizational aspects of work organization, such as teamwork, autonomy, task discretion, mentoring, job rotation, and applying new learning, as well as various management practices, such as employee participation, incentive pay, training practices, and flexibility in working hours (Johnston &

Hawke, 2002). All these practices are clustered by the AMO model and consider which HPWPs, alone, in aggregate, and through the AMO clusters, directly counteract the feelings of deprivation due to OQ that lead to job dissatisfaction. In summary, by directly and positively affecting worker productivity and performance and by reducing feelings of deprivation, HPWP is the counteracting effect of overqualification on job satisfaction. This led to the the following hypotheses:

H3a: HPWP moderates the relationship between perceived overqualification and job satisfaction in such a way that the relationship is less negative when HPWP is high.

H3b: HPWP moderates the relationship between objective overqualification and job satisfaction in such a way that the relationship is less negative when HPWP is high.

Workers who are overqualified for their actual jobs, for some reason, feel less satisfied and believe that they deserve a higher income, or in turn, see themselves as deprived of that higher income compared to their "matched" colleagues or workers in other organizations who are better paid and have the same level of education. Although the HPWP opportunity was not related to organizational financial outcomes, the capability and motivation dimensions of the HR systems were related to financial outcomes and influenced both, directly and indirectly, human capital and employee motivation. This resulted in the following hypotheses:

H4a: HPWP moderates the relationship between perceived overqualification and relative income in such a way that the relationship is less negative when HPWP is high.

H4b: HPWP moderates the relationship between objective overqualification and relative income in such a way that the relationship is less negative when HPWP is high.

2.3 Methodology

2.3.1 The data and the sources

The PIAAC (Program for International Assessment of Adult Competencies) is targeting a non-institutionalized population, aged 16-65, residing in the country at the time of data collection, irrespective of nationality, citizenship, or language status (OECD, 2013a). The country samples ranged from 4.500 to nearly 27.300 (OECD, 2013d) in two rounds of PIAAC Survey in 2012 and 2015, respectively. This chapter looks at 27 out of the 33 countries included in the Survey, setting the sample size to N=156,068.

One of the features of PIAAC is a background questionnaire which was used here to create the independent (Appendices 1.1 and 1.2), dependent (Appendix 2.1), control (Appendix 2.2), and moderator variables (Appendix 2.3). In total, the PIAAC response rates ranged from 45% to 75% (OECD, 2013d), with an average of 50-60% response rate per country and a level of non-

response bias ranging from minimal to low (OECD, 2016b). PIAAC is more advantageous to this dissertation than other surveys, primarily because it allows the consideration of multiple aspects of the focal boundary conditions with the same globally comparable data. Additionally, PIAAC is better at obtaining data on the same individual in relation to numerous aspects, especially the moderators' aspect of his overqualification, both objective and perceived. Moreover, the dataset refers to the same population in all chapters, so the transition from individual to higher-level data is feasible and complete. A possible drawback is the ISCED standardization, through which numerous individuals are not covered (for example, the UK data was removed due to non-comparability on this variable).

2.3.2 Measurement variables

2.3.2.1 *Outcomes*

The first dependent variable was the job satisfaction found in the Questionnaire, which was measured at a standard five-item scale (Appendix 2.1). As for the worker, country-relative income, a Questionnaire item was used, in which each participating country provided one's monthly earnings (including bonuses) converted into deciles (Appendix 2.1), based on that country's national earnings distribution (OECD, 2013a).

2.3.2.2 *Explanatory variables*

The first explanatory variable – the OOQ was conceptualized as any positive difference between the highest acquired level of education measured on the ISCED scale (OECD 1999; UNESCO, 1976) and the necessary ISCED educational level as stated by the respondents (Appendix 1.1). For this purpose, all ISCED categories were grouped into six broader categories: primary or less, lower secondary, upper secondary, post-secondary non-tertiary, tertiary, and Master's/research level (Appendix 1.2).

I followed the suggestion of (Liu, Luksyte, Zhou, Shi & Wang, 2015) and separated Master's and research levels from lower tertiary education. As a result, 28.9% of individuals turned out to be objectively overqualified, in contrast with the POQ (operationalized as in Appendix 1.1), where 20.8% of individuals considered themselves overqualified. There is a point difference between OOQ and POQ, as there are correspondingly more individuals with an education that exceeds their job requirements than individuals who rate themselves as overqualified for the same job. This claim is valid in two respects. First, this difference is less obvious within countries (Table 1.1 in chapter 1 and Appendix 1.2 OOQ at six levels per country), as many of these countries have more POQ than OOQ individuals. This leads to conclude that regardless of the cluster typology or ISCED classification, one cannot draw any conclusions about the differences between OOQ and POQ, as this is an individual measure that varies from person to person, considering that that the same person reports both OOQ and POQ. Nevertheless, it

allows for a comparison between the general views on the qualification of individuals before and after Bologna or a comparison between the typology before Bologna and the classification after Bologna leading to the possibility of drawing some conclusions.

2.3.2.3 Moderator and control variables

The PIAAC provided data on numerous job aspects associated with the HPWP (OECD, 2106b). Following the Posthuma, Campion, Masimova & Campion (2013) typology, 11 of the Questionnaire items yielding only “core” or “broad” practices were selected to design the HPWP variable. These items-additive index elements were all dummy-coded, named H_{pw1} to H_{pw11} , and added together to create a non-standardized additive index representing the HPWP moderator variable (Appendix 2.3).

H_{pw1} and H_{pw9} considered training and development, such as being trained by co-workers on the job or teaching co-workers for the job. Scale element H_{pw2} represented incentive compensation and benefits, while H_{pw3} indicated employee relations and job security. H_{pw4} - H_{pw6} and H_{pw9} - H_{pw11} were about different features of job or work design: sequence of tasks, how to do work, speed of work, job rotation, organizing own time, and planning own activities. H_{pw8} was about communication and sharing work information, while H_{pw7} was about decentralized participative decisions or co-operation with coworkers.

Next, four main control variables were entered: respondents' age divided into 5-year clusters, gender (male=1), company size, and sector type (private sector = 1). The effects on relative income due to overqualification were also controlled for the acquired education (Appendix 2.2). Finally, in a distinct procedure, I tested the occupational, sectoral sensitivity, and differences results by introducing ISCO occupation as a control variable (Appendices 2.4 to 2.7). For this purpose, ISCO1 and 2 were collapsed into a single category and ISCO 0 and ISCO 6 were omitted due to the small sample size.

2.3.3 Descriptive statistics

Although, on average, an individual benefits from more than five HPWPs within his or her organization (Table 2.1), at the macro level, one finds an uneven national distribution of HPWPs among individuals from the same country. The highest values can be observed in Scandinavian countries and Denmark, where on average, an employee benefits from almost seven HPWPs, but these are particularly the countries with the lowest within-individuals variability (Table 2.2).

On the other hand, heterogeneity in HPWP benefits among individuals is the highest in Greece and Turkey, where individuals benefit from less than four HPWPs. In these countries and Slovakia and Slovenia, the standard deviations of HPWPs are almost equal to the number of HPWPs received by these individuals. Most strikingly, in Turkey, the variability between

individuals receiving HPWPs is larger than the average number of HPWPs received by an individual. This indicates inequality of individuals within organizations who have access to and use HR "black box" practices, originally designed to enhance their performance.

Table 2.1: Descriptive statistics and correlations of the variables in the dataset

Variable¹²	Mean	SD	1	2	3	4	5	6	7	8
job satisfaction	3.9764	.84333								
relative income	5.45	2.889	.108**							
objective overqualification	.2889	.45326	-.105**	-.192**						
perceived overqualification	.2080	.40584	-.075**	-.097**	.068**					
gender	1.52	.500	.020**	-.256**	.026**	-.016**				
sector	1.29	.509	-.085**	-.057**	.069**	.083**	-.169**			
company size	2.40	1.215	n/a ³	n/a	n/a	n/a	n/a	n/a		
age	5.59	2.854	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
HPWP	5.4923	3.94285	.153**	.435**	-.162**	-.102**	-.115**	-.177**	n/a	n/a

¹Means and standard deviation are raw scores, n = 156068.

²Correlations are after grand-mean centering of the predictor variables.

³Cannot be computed because at least one of the variables is constant, has missing correlations or there is no variation or only very small variation to be considered.

* p < .05; ** p < .01, ***p < .001

Source: own work.

The Scandinavian countries, along with Denmark and Singapore, are the ones where the proportion of individuals not benefiting from HPWPs is the lowest (less than 20% on average), in contrast with Greece and Turkey (Slovenia, Slovakia, and Poland are also close by), where 40% or more of respondents do not benefit from any HPWP. In Turkey, almost half of the people do not benefit from any HPWPs (Table 2.2). In contrast, in Belgium, Denmark, and the Netherlands, more than 10% of the respondents benefit from all 11 HPWPs.

Regarding the average cross-country distribution of individual HPWPs, it can be inferred that the most frequent one is H_{pw}8 (permanent work contract) which 65% of individuals have stated to benefit from (Table 2.3). Among them are Sweden and Norway, with up to 80% of people having a permanent work contract, unlike Greece and Turkey where less than half of the individuals have this kind of employment contract. The Scandinavian countries, especially Sweden, have the largest proportion of beneficiaries, per HPWP.

It should also be emphasized that, on average, more than half of the individuals benefit from H_{pw}4, H_{pw}6, and H_{pw}10, broad-based HPWPs for planning one's activities, all of which are core HPWPs and include various features of work design. The HPW practice with the fewest beneficiaries is H_{pw}2, Incentive Compensation and Benefits, with less than 20% of average

beneficiaries per country. Turkey has the lowest value of 5% (not considering that no one from Austria, Ireland, and Singapore reported benefiting from this HPWP), unlike Belgium, where almost half of the individuals receive incentive compensation and benefits.

2.3.4 The procedure and analysis

From the analytical point of view, I considered all the individuals as nested ("level 1" variable), in their respective survey countries ("level 2" variable). This “nesting” or hierarchical data term yielded similarity among the individuals within each group, which had numerous advantages.

Firstly, I simultaneously analyzed the individual-level variables and their clustering countries. This was done without assigning the same higher-level mean to all the individuals in the sample (avoiding aggregation), and not by treating the individual level variables without reference to their higher level (countries) variables (disaggregation) (Heck, Thomas & Tabata 2013). This meant that when people are sampled from similar contexts, the independence of the observations (residuals) is violated (Field, 2013), while standard statistical tests depend heavily on this assumption (Hox, 1995) and are biased by any deviation from simple random sampling (Bryk & Raudenbush, 1992).

As the statistical test of the significance of a variable is defined as the ratio of the size of its parameter coefficient to its standard error, an underestimated standard error could result in false attribution of statistical effects where none should exist or false rejection of the null hypothesis, known as Type 1 errors. To tackle these errors, random coefficients were introduced. They are regression intercepts or slopes that are assumed to vary across higher level variables or countries but also refer to hierarchical multilevel regression modeling. This also explains the switch from OLS to Restricted Maximum Likelihood (RML) when estimating the regression parameters. The RML was more accurate in estimating the variances of the random effects (Twisk, 2006), while the estimates from the maximum likelihood estimation (ML) were used to compare the models.

To this end, I developed five successive hierarchical models with both OOQ and POQ as main predictors. I tested the fits of these models using both the Wald statistic and the chi-squared (χ^2) test. As the Wald test might perform poorly under conditions of extreme multicollinearity or small sample sizes (Heck, Thomas & Tabata, 2013), it is less preferred when there might be a discrepancy between it and a likelihood ratio test (Hox, Maas & Brinkhuis, 2010). Because lower variance models generally fit better than higher variance models (one with the parameter in question included versus one in which the parameter is excluded), the χ^2 -difference test accounted for the change in degrees of freedom and three model fit parameters: Δ df, Δ -2LL, Δ AIC, Δ BIC.

Table 2.2: Share of HPWPs per country (in percents)

Country/ Mean share o	0	1	2	3	4	5	6	7	8	9	10	11	MEAN	SD
Austria	21.9	0.5	1.2	2.1	2.9	5.7	7.4	11.3	15.2	21.7	10.3	0.0	5.92	3.59
Belgium	34.2	0.5	1.4	1.1	2.5	3.8	4.2	6.4	8.5	10.6	14.7	12.0	5.48	4.40
Chile	21.5	1.6	2.2	3.5	4.8	11.2	10.1	10.2	11.0	9.9	8.9	5.3	5.47	3.60
Czech Republic	30.4	0.8	2.3	2.7	4.8	5.8	7.1	9.2	11.1	12.2	9.8	3.8	5.07	3.91
Denmark	18.7	0.9	1.0	1.5	2.6	5.7	3.9	5.5	9.8	16.0	21.7	12.6	6.86	3.9
Estonia	22.4	0.8	1.1	2.0	3.5	5.3	5.2	7.2	13.6	17.2	16.1	5.7	6.18	3.87
Finland	19.3	0.5	1.1	1.5	3.1	5.5	5.1	6.4	11.6	20.7	25.2	0.0	6.53	3.7
France	29.0	0.9	2.6	3.1	4.7	6.5	7.0	8.1	10.8	11.8	11.4	4.1	5.17	3.92
Germany	20.1	1.1	1.7	1.8	3.5	5.2	7.7	10.6	12.9	13.5	13.6	8.4	6.23	3.77
Greece	42.4	1.3	2.4	3.1	5.1	8.4	10.1	9.3	7.9	5.7	3.0	1.3	3.62	3.55
Ireland	31.3	1.5	2.1	2.6	3.7	7.7	6.6	8.1	11.5	13.6	11.4	0.0	4.91	3.85
Israel	27.7	1.2	2.1	3.0	3.6	7.3	6.4	9.0	10.9	11.1	11.4	6.2	5.37	3.95
Italy	32.7	0.8	1.8	2.3	4.1	7.1	7.4	9.4	8.9	10.6	10.7	4.2	4.93	3.97
Japan	21.3	0.9	1.3	2.0	3.3	5.5	7.6	8.5	12.6	15.7	14.6	6.7	6.18	3.80
Korea	27.0	2.5	2.5	3.5	4.7	7.9	7.4	9.2	11.0	9.2	8.8	6.1	5.12	3.86
Lithuania	30.4	1.1	2.6	4.0	5.1	6.7	7.3	7.9	10.8	11.4	9.9	2.8	4.91	3.86
Netherlands	17.4	0.7	1.3	2.2	3.0	4.9	6.2	7.2	9.9	11.5	15.0	15.4	6.72	3.88
New Zealand	18.5	0.9	1.4	2.1	3.0	6.3	6.6	8.6	13.0	16.3	17.9	5.3	6.42	3.68
Norway	16.7	0.4	0.7	1.4	2.2	3.8	4.4	6.9	12.9	26.2	19.8	4.5	6.96	3.58
Poland	35.9	1.2	2.2	2.8	4.8	7.3	5.6	8.6	11.4	9.3	6.9	4.0	4.51	3.92
Singapore	18.5	1.8	2.5	3.6	4.6	7.6	7.8	8.4	15.1	17.6	12.6	0.0	5.84	3.51
Slovak Republic	35.2	1.2	2.9	3.8	4.6	7.3	6.8	7.5	10.4	10.3	7.1	3.0	4.45	3.87
Slovenia	39.2	0.6	1.1	1.6	3.1	5.3	4.8	6.2	8.5	10.1	11.9	7.7	4.81	4.30
Spain	33.3	1.2	2.9	3.1	4.4	7.9	6.1	7.2	8.9	9.4	9.4	6.0	4.78	4.01
Sweden	15.1	0.9	1.3	1.9	3.3	5.5	4.2	6.5	10.9	21.5	21.3	7.6	6.97	3.60
Turkey	48.9	1.3	2.0	2.3	3.7	7.6	5.3	8.0	10.0	6.4	3.4	1.1	3.37	3.69
United States	20.8	0.9	1.6	2.4	3.5	7.4	7.7	9.7	17.1	19.0	10.0	0.0	5.84	3.53
MEAN	27.2	1.0	1.8	2.5	3.8	6.5	6.5	8.2	11.4	13.5	12.5	5.1	5.49	3.94

Source: own work.

Table 2.3: Overview of HPWPs per country, in percents

Country/ HPWP mean	H _{pw1}	H _{pw2}	H _{pw3}	H _{pw4}	H _{pw5}	H _{pw6}	H _{pw7}	H _{pw8}	H _{pw9}	H _{pw10}	H _{pw11}
Austria	20.9	0.0	52.8	68.6	69.7	69.7	65.5	72.0	45.2	67.3	60.0
Belgium	19.6	47.9	48.2	54.9	58.0	58.4	54.3	58.5	36.1	53.9	54.8
Chile	26.8	20.0	30.1	56.2	57.1	60.4	53.6	61.4	50.2	63.6	67.3
Czech Republic	31.1	16.8	36.6	53.0	54.7	55.4	52.7	62.1	25.1	60.9	59.0
Denmark	34.4	35.0	54.7	69.4	69.8	70.1	72.0	75.0	60.5	72.7	72.5
Estonia	32.7	16.3	51.8	64.5	64.6	66.3	64.4	69.2	48.1	70.8	69.3
Finland	41.4	0.0	51.6	66.9	69.0	68.5	70.6	75.7	61.5	75.1	73.3
France	16.4	28.2	47.1	53.8	56.1	50.7	57.2	63.3	33.7	54.4	56.6
Germany	32.4	38.7	50.2	68.5	69.8	70.0	65.1	74.9	37.4	51.3	64.4
Greece	7.2	10.7	19.6	39.2	38.3	40.1	38.9	48.1	26.0	46.1	47.8
Ireland	28.5	0.0	34.3	52.4	53.1	54.5	56.3	60.0	42.8	54.5	54.5
Israel	22.5	30.8	29.3	57.2	57.9	59.4	60.3	63.7	43.9	56.3	55.8
Italy	14.0	35.3	37.4	45.4	50.5	53.1	49.8	57.1	33.3	58.0	59.3
Japan	25.6	24.5	50.6	68.6	68.3	70.2	66.5	70.8	54.1	56.8	61.5
Korea	25.3	26.3	23.9	55.3	56.2	56.1	52.1	58.3	37.8	60.3	60.7
Lithuania	22.0	10.2	51.1	48.9	47.0	52.6	55.7	60.9	31.4	55.8	55.2
Netherlands	39.0	55.0	49.2	69.0	68.6	68.2	66.9	73.8	47.4	68.7	66.1
New Zealand	38.6	11.9	43.2	68.3	68.4	68.6	69.2	74.6	60.8	67.2	71.4
Norway	30.2	12.9	60.8	74.8	75.5	75.6	75.4	80.6	66.2	74.6	68.9
Poland	17.8	17.4	22.4	47.5	47.7	50.7	53.5	55.9	31.9	52.6	53.9
Singapore	33.3	0.0	33.1	63.2	65.1	67.2	69.4	70.6	56.6	60.2	65.5
Slovak Republic	18.1	16.5	37.5	46.3	46.5	49.0	50.3	57.9	28.3	47.3	47.8
Slovenia	22.2	38.6	42.0	47.5	48.0	49.7	52.9	56.5	37.7	42.1	43.8
Spain	23.0	23.2	31.8	47.3	48.8	49.3	51.6	56.1	38.1	52.9	55.6
Sweden	31.6	21.8	56.0	72.3	72.4	71.3	72.6	80.7	68.0	76.7	74.4
Turkey	11.4	5.7	16.3	36.0	37.9	39.5	37.6	41.2	24.6	43.0	43.7
United States	37.0	24.6	0.0	64.6	65.3	66.5	66.8	71.0	61.5	60.5	66.0
MEAN	26.2	21.0	39.2	57.6	58.5	59.5	59.3	64.6	43.6	59.4	60.3

Source: own work.

The first step I took in hierarchical linear regression was to run a Model 1, random effects null model, known as one-way ANOVA or no-predictors model. The intercepts were set at random and allowed to vary around level-2 variables (the respective countries where the individuals come from). I used the random parameter' estimates from this model to calculate the interclass coefficient (ICC) or the proportion of the total variability in the outcome attributable to the classes to assess the necessity of multilevel linear modelling.

The ICC for job satisfaction is 7.30% (Wald $Z = 3.593$, $p < .001$), which is greater than the generally accepted threshold of 5%. In summary, the job satisfaction variable data are nested, maximizing the variance "between countries", resulting from the effect that clustering countries have on the homogeneity of individual job satisfaction. The ICC for relative income is 0.42% (Wald $Z = 3.367$, $p < .001$), meaning that the variability of employee income within countries is heterogeneous, maximizing the variability "within countries." Since countries differ only slightly in income distribution, a simple regression analysis performed at the individual level would be sufficient for the relationship between OOQ or POQ and the relative income.

To draw a comparison with the hierarchical models, I ran OLS multiple linear regressions for the relation between overqualifications and job satisfaction. With POQ as the main predictor, a 1-SD change in POQ resulted in a reduction of 0.68 units in job satisfaction (or a reduction of 0.34-SD). Also, a unit increase of the moderator POQ* HPWP augmented the job satisfaction by an estimate of 0.068 units (reduction of 0.28 SD), *ceteris paribus*.

Model 2 is built upon job satisfaction as an outcome and the control variables. It is essential to state here that gender has been inputted as a factor in SPSS, the reference category being its last label. Hence, the estimate will be for the first category (coded 0), or "male" in this case. The sector type, the age, and the (company) organization size are categorical, so they were all entered in SPSS as covariates, and the parameter estimates consider their value labels as coded other than 0. Thereby, as their referential category is "0", the variable "sector type" was coded by setting its largest category to "0" (the private sector). As a result, the findings concern male workers working in sectors related to the private sector (NGO or the public sector).

In this model, the intercepts showed significant variability across countries. The relationship between gender, sector type and job satisfaction showed significant variance in intercepts across individuals. Because the Wald tests for variability are significant both within and between countries, a substantial amount of variability in the results could still be explained when other predictor variables were to be included in the model. To determine the amount of variance explained, the "variance reduction estimate" was used with the null model estimates instead of the R^2 . Hence, Model 2 explained 1.77% of the variance in job satisfaction within countries and 14.33% of the variance in job satisfaction between countries. Model 3 for the main predictor variables OOQ (Model 3a) and POQ (Model 3b) has been developed separately.

2.4 Results

2.4.1 Job satisfaction as an outcome

2.4.1.1 *The POQ as main effect and job satisfaction as an outcome*

POQ has been included as the primary predictor variable along with the control variables in model 3a. In this model, a significant F value was associated with POQ, and hypothesis H1a is supported. If everything else remains constant, a one-standard deviation (SD) change in POQ will lead to a 0.130-point decrease in job satisfaction, supporting hypothesis H1a. Or, self-perception of being overqualified for the job reduces job satisfaction by 0.13 units compared to those who do not perceive themselves as overqualified. In the model 4a, random slopes were also assumed, but the intercepts and slopes did not co-vary significantly ($\text{Cov}(\beta_{0j}, \beta_{1j}) = -0.0038288$, Wald $Z = 1.489$, $p=0.136$) and model 4a (random slopes and intercepts) was omitted in further development of the hierarchical modelling.

In model 5a (predictor variable POQ, the control variables, and the moderator variable HPWP), the interaction term POQ*HPWP was significant, so it accepted the hypothesis H3a that HPWP moderates the relationship between POQ and job satisfaction. The slope for the POQ*HPWP product term is positive, so a unit change in HPWP results in a 0.016 unit increase in job satisfaction (or a 0.76 increase in SD, *ceteris paribus*, Table 2.4). To explain, those who perceive themselves as overqualified and benefit from the organization's HPWP are less dissatisfied with their job, are male, and work in a sector other than the private sector (Figure 2.1). Model 5b explained 6.20% of the variance in job satisfaction within countries and 21.32% of the variance in job satisfaction between countries. A post hoc analysis (Table 2.5) revealed that only the element H_{pw3} (permanent employment contract) significantly and positively affects job satisfaction.

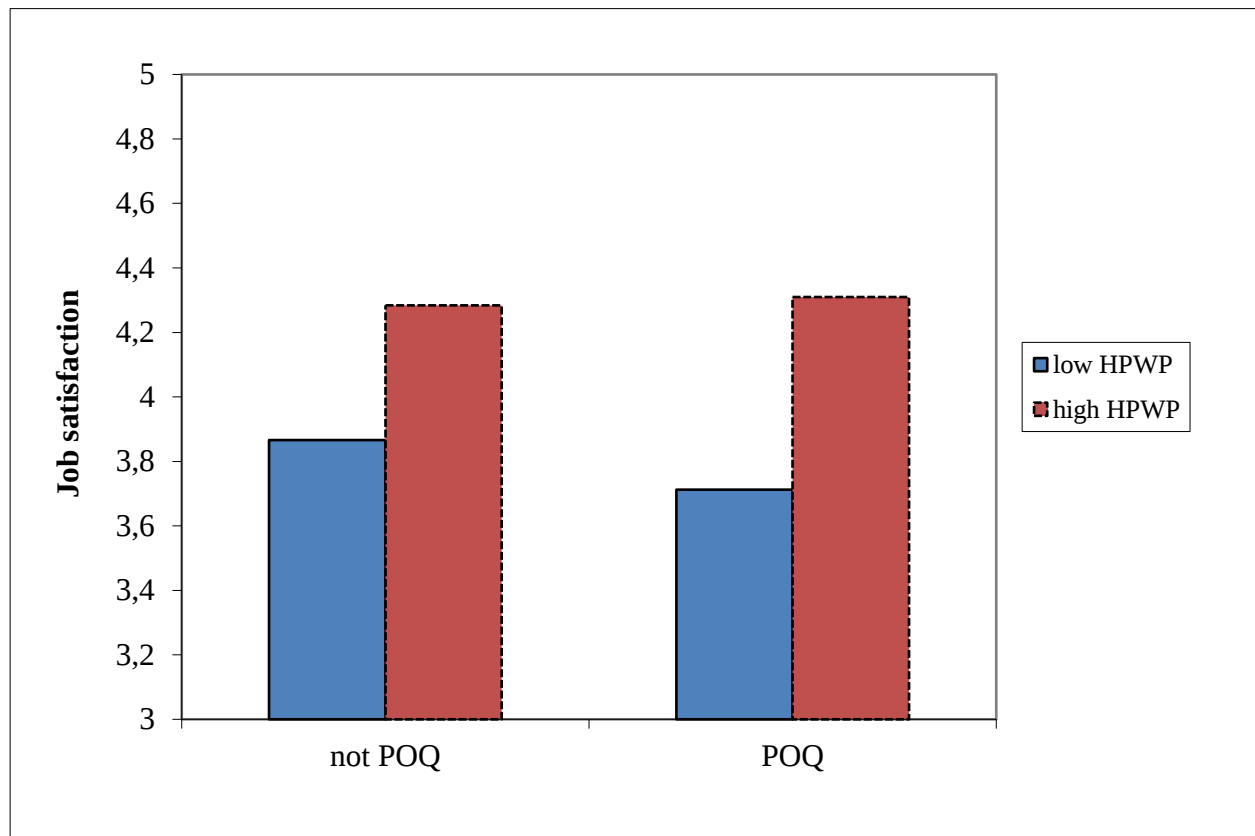
By analyzing these results' sectoral-occupational sensitivity, I find that ISCO as a control variable does not affect the overall direct, control, and moderator relationships found (Appendix 2.4). It does not significantly change the parameters or the values of the variables when added to the model. This "ISCO control model" explains more variance within and between countries (7.3% and 29.33%, respectively). Using ISCO category 2 as a reference (managers and professionals), I find that all other ISCO categories have more substantial adverse effects on job satisfaction compared to ISCO 2, with ISCO 9 (elementary occupations) having the strongest partial effect and ISCO 3 (technicians and associate professionals) having the smallest negative partial effect on job satisfaction.

Table 2.4: Hierarchical moderated regression, POQ as main effect, job satisfaction as an outcome

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3a			M4a			M5a		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.115 (0.020)	204.4	***	3.964 (0.0432)	91.783	***	3.92 (0.413)			3.966 (0.042)	94.508	***				3.866 (0.0396)	97.69	***
gender: male	0.016 (0.006)	2.729	0.006				-0.004 (0.0056)			0.015 (0.0058)	0.259	.796				- 0.011 (0.0057)	- 1.921	0.055
NGO sector							0.158 (0.017)			0.143 (0.0173)	8.231	***				0.123 (0.0172)	7.11	***
public sector	-0.107 (0.006)	-	***				0.126 (0.0063)			0.104 (0.0065)	16.057	***				0.081 (0.0065)	12.532	***
company size									ns									
age									ns									
POQ	-0.151 (0.012)	-13.07	***							-0.130 (0.007)	-18.46	***				-0.154 (0.011)	- 13.730	***
HPWP	0.054 (0.002)	31.197	***													0.038 (0.002)	22.353	***
POQ * HPWP	0.015 (0.003)	4.473	***													0.016 (0.003)	4.907	***
1.2 Model fit																		
total df (Δ df)					3			6 (3)			7 (4)						9 (6)	
- 2LL (Δ -2LL= $\Delta \chi^2$)					247733.908			208721.928 (39011.98)			187033.274 (60700.634)						186212.560 (- 61521.348)	
AIC (Δ AIC)		78833			247739.908			208733.928 (39005.98)			187047.274 (60692.634)						186230.560 (- 61509.348)	
BIC (Δ BIC)					247768.509			208790.147 (38978.362)			187112.200 (60656.309)						186314.036 (- 61454.373)	
2. Reduction in variance estimate																		
within countries		3.2						1.77			5.23					Cov (β_{0j} , β_{1j}) = - 0.03978, Wald Z =	6.20	
between countries								12.54			10.09					1.457, p = 0.145	21.32	

Source: own work.

Figure 2.1: The HPWP moderates the relation between POQ and job satisfaction



Source: own work.

Table 2.5: Post hoc analysis of the POQ*HPWP

Source	Numerator df	Denominator df	F	Sig
Intercept	0	.	.	.
private sector	2	78792.863	93.528	***
gender	1	78789.719	2.970	.085
company size	0	.	.	.
age	0	.	.	.
POQ	1	78783.884	41.278	***
H _{pw} 1	1	78802.684	23.358	***
H _{pw} 2	1	78342.175	67.435	***
H _{pw} 3	1	78743.680	.223	.637
H _{pw} 4	1	78792.185	4.242	.039
H _{pw} 5	1	78790.460	1.803	.179
H _{pw} 6	1	78789.338	14.072	***
H _{pw} 7	1	78784.443	19.298	***
H _{pw} 8	1	78786.382	1.027	.311
H _{pw} 9	1	78806.500	17.547	***
H _{pw} 10	1	78796.895	29.415	***
H _{pw} 11	1	78790.163	31.236	***
H _{pw} 1 * POQ	1	78782.932	.751	.386
H _{pw} 2 * POQ	1	78783.554	1.540	.215
H _{pw} 3 * POQ	1	78783.406	15.969	***
H _{pw} 4 * POQ	1	78782.078	3.792	.052
H _{pw} 5 * POQ	1	78781.556	.344	.557
H _{pw} 6 * POQ	1	78781.530	.368	.544
H _{pw} 7 * POQ	1	78781.443	3.015	.082
H _{pw} 8 * POQ	1	78781.885	.154	.695
H _{pw} 9 * POQ	1	78782.018	.331	.565
H _{pw} 10 * POQ	1	78781.921	.136	.712
H _{pw} 11 * POQ	1	78781.550	.914	.339

a. Dependent Variable: JS.

Source: own work.

2.4.1.2 The OOQ as main effect and job satisfaction as an outcome

I also initially performed multiple linear regression for OOQ as the main predictor for the relationship between overqualification and job satisfaction. As a result, a one-SD change in OOQ resulted in a 0.64-point decrease in job satisfaction (or a 0.35- SD reduction). Similarly, a

one-unit increase in the moderator OOQ* HPWP increases job satisfaction by an estimated value of 0.059, *ceteris paribus*.

The null model (M1) and the M2 (control variables model) have the same parameter estimates for OOQ as for POQ. Furthermore, in Model 3b, the fixed-effects parameter estimates, I observed a large F-ratio associated with OOQ, supporting hypothesis H1b. If everything else remains constant, a one-SD change in OOQ will result in a 0.183-point decrease in job satisfaction. To sum up, objective overqualification (overeducation) reduces job satisfaction when compared to the non-overqualified male individuals by more than 0.183 points than working in the private sector.

In a Model 4b, I assumed both random intercepts and random slopes. The intercepts and slopes did not co-vary significantly ($\text{Cov}(\beta_{0j}, \beta_{1j}) = -0.003146$, Wald $Z = -1.206$, $p = 0.228$) and this model was omitted for further consideration.

The last model to be developed was Model 5b, in which large F-values were observed for OOQ) and the interaction term OOQ*HPWP, thus accepting hypothesis H3b that HPWP moderates the relationship between OOQ and job satisfaction. The slope for the OOQ*HPWP is positive ($\beta = 0.011982$, $p < .001$), and one-unit change in HPWP leads to a 0.012 unit increase in job satisfaction or a 0.56- SD increase in job satisfaction, *ceteris paribus* (Table 2.6). In summary, males who are objectively overqualified or overeducated and who work in a sector other than the private sector but benefit from the organization's HPWP are less dissatisfied with their jobs (Figure 2.2). Model 5a showed a significant variance of intercepts and explained 3.93% of the job satisfaction variance within and 22.42% of the variance in job satisfaction between countries. A post hoc analysis (Table 2.7) revealed that elements H_{pw1} (training for firm-specific skills), H_{pw3} (permanent employment contract), and H_{pw8} (formal information sharing) significantly and positively affect job satisfaction.

In an additional analysis of these results' sectoral and occupational sensitivity, I find that ISCO as a control variable does not affect the observed direct and moderating relationships overall (Appendix 2.7). ISCO increases the value of the intercept in the HMLR models and has a positive effect on job satisfaction in the linear model, while it has a negative effect in the HMLR model, in contrast to the changes in the value of the sectoral variables in the same two models. It does not significantly change the parameters or the values of the variables when added to the model. This "ISCO control model" explains more variance within and between countries (22.42% and 31.35%, respectively). Again, using ISCO category 2 as a reference (managers and professionals), I find that all other ISCO categories have more substantial adverse effects on job satisfaction compared to ISCO 2, with ISCO 9 (elementary occupations) having the strongest partial effect and ISCO 3 (technicians and associate professionals) having the smallest negative partial effect on job satisfaction.

Table 2.6: Hierarchical moderated regression, OOQ as main effect, HPWP as moderator, job satisfaction as an outcome

1. Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3b			M4b			M5b		
	Estimate	t	sig	Estimate	t	sig	Estimate	t	sig	Estimate	t	sig	Estimate	t	sig	Estimate	t	sig
1.1. Parameters	(SE)			(SE)			(SE)			(SE)			(SE)			(SE)		
Intercept	4.115 (0.020)	210.36	***	5.461 (0.037)	145.8	***	3.92 (0.413)	94.810	***	3.978 (0.042)	95.645	***				3.881 (0.039)	98.81	***
gender: male	0.026 (0.006)	4.490	***				-0.004 (0.006)	-0.814	.416	-0.008 (0.006)	-1.553	0.12				-0.002 (0.006)	-3.621	***
NGO sector							0.158 (0.017)	9.445	***	0.152 (0.017)	9.038	***				0.130 (0.017)	7.825	***
public sector	-0.108 (0.005)		***				0.126 (0.006)	19.903	***	0.109 (0.006)	17.221	***				0.083 (0.006)	13.089	***
company size									ns									
age									ns									
OOQ	-0.156 (0.010)	-16.215	***							-0.182833 (0.0062)	-29.68	***				-0.184 (0.009)	-19.570	***
HPWP	0.055 (0.002)	32.212	***													0.038 (0.002)	22.501	***
OOQ*HPWP	0.005 (0.003)	1.71	.087													0.013 (0.003)	4.213	***
1.2 Model fit																		
total df (Δ df)				3			6 (3)			7 (4)			9 (6)			9 (6)		
- 2LL (Δ -				247733.908			208721.928			205618.690			205631.1			204688.388		
85788							(- 39011.98)			(- 42115.218)			(- 42102.808)			(- 43045.520)		
AIC (Δ AIC)				247739.908			208733.928			205632.690			205639.1			204706.388		
							(- 39005.98)			(- 42107.218)			(- 42100.808)			(- 43033.520)		
BIC (Δ BIC)				247768.509			208790.147			205698.207			205676.54			204790.625		
							(-38978.362)			(- 42070.302)			(- 42091.969)			(- 42977.884)		
2. Reduction in variance estimate																		
within countries							1.77			2.89			Cov (β_{0j} , β_{1j}) = -			3.93		
													0.003146, Wald Z = -					
between countries							14.33			11.66			1.206, p=.228			22.42		

Source: own work.

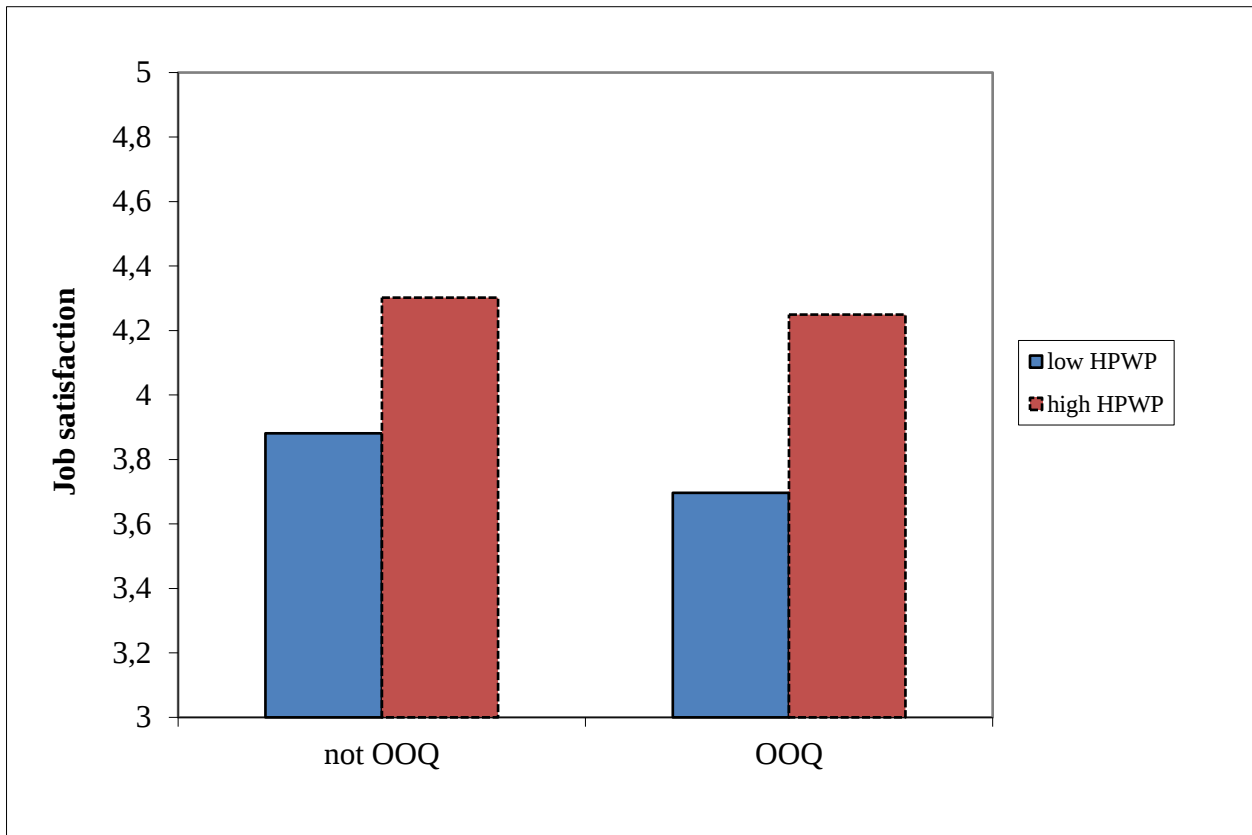
Table 2.7: Post hoc analysis of the OOQ* HPWP

Source	Numerator	Denominator df	F	Sig
Intercept	0			
private sector	2	85747.238	105.875	***
gender	1	85744.349	11.569	0.001
company size	0			
age	0			
OOQ	1	85741.805	52.294	***
H _{pw1}	1	85756.402	14.411	***
H _{pw2}	1	85327.439	83.493	***
H _{pw3}	1	85682.203	0.067	0.796
H _{pw4}	1	85747.139	3.666	0.056
H _{pw5}	1	85744.316	1.236	0.266
H _{pw6}	1	85742.636	14.175	***
H _{pw7}	1	85738.652	3.854	0.050
H _{pw8}	1	85742.580	9.059	0.003
H _{pw9}	1	85761.636	12.327	***
H _{pw10}	1	85751.810	22.605	***
H _{pw11}	1	85744.767	45.508	***
H _{pw1} * OOQ	1	85738.207	5.613	0.018
H _{pw2} * OOQ	1	85742.709	0.073	0.787
H _{pw3} * OOQ	1	85741.005	14.623	***
H _{pw4} * OOQ	1	85737.164	1.322	0.250
H _{pw5} * OOQ	1	85736.520	2.282	0.131
H _{pw6} * OOQ	1	85736.664	0.442	0.506
H _{pw7} * OOQ	1	85736.831	0.273	0.601
H _{pw8} * OOQ	1	85736.935	4.954	0.026
H _{pw9} * OOQ	1	85737.584	1.081	0.298
H _{pw10} * OOQ	1	85737.223	2.774	0.096
H _{pw11} * OOQ	1	85737.102	1.525	0.217

a. Dependent Variable: JS.

Source: own work.

Figure 2.2: The HPWP moderates the relation between OOQ and job satisfaction



Source: own work.

2.4.2 The employee relative income as an outcome, POQ and OOQ as main effects

As for the income effects due to OQ, multiple linear regression was conducted. The hypothesis H1b is supported, or the POQ is a significant, negative predictor of the relative income ($\beta_1 = -0.036$, $t = -10.74$, $p < .001$). However, the POQ*HPWP interaction did not affect the relationship between POQ and income, so hypothesis H4a is rejected ($\beta_1 = 0.017$, $t = 1.704$, $p = 0.88$). As in the hierarchical model, when job satisfaction was an outcome, a separate step was taken to introduce an ISCO occupation as a control variable to test the research results (Appendix 2.5). Although this “ISCO-controlled model explained more variance than the previous model, it did not significantly affect the direct, control, and moderator relationships found compared to the previous model. Again, the POQ*HPWP interaction term did not affect the country relative income.

As for the OOQ, hypothesis H2b is supported, or the OOQ is a significant, negative predictor of the wages ($\beta_1 = -1.61$, $t = -33.057$, $p < .001$). The OLS regression parameter estimates showed that the moderator OOQ*HPWP is negative (Table 2.8) but significant, so hypothesis H4b is

accepted that the HPWP moderates the relationship between the OOQ and the relative income. This indicates that for the overeducated employees, a unit increase in utility from the HPWP leads to a reduction of 0.067 relative income deciles. Or, they are penalized more relative to their non-OOQ counterparts by benefiting less from the HPWP than them, just because by being overeducated for their job (Figure 2.3).

Similarly, as for the POQ*HPWP interaction term, in a distinct procedure, the findings were tested for ISCO sensitivity (Appendix 2.6), but it did not significantly affect the direct, control, and moderator relationships found compared to the existing model, face the relative income.

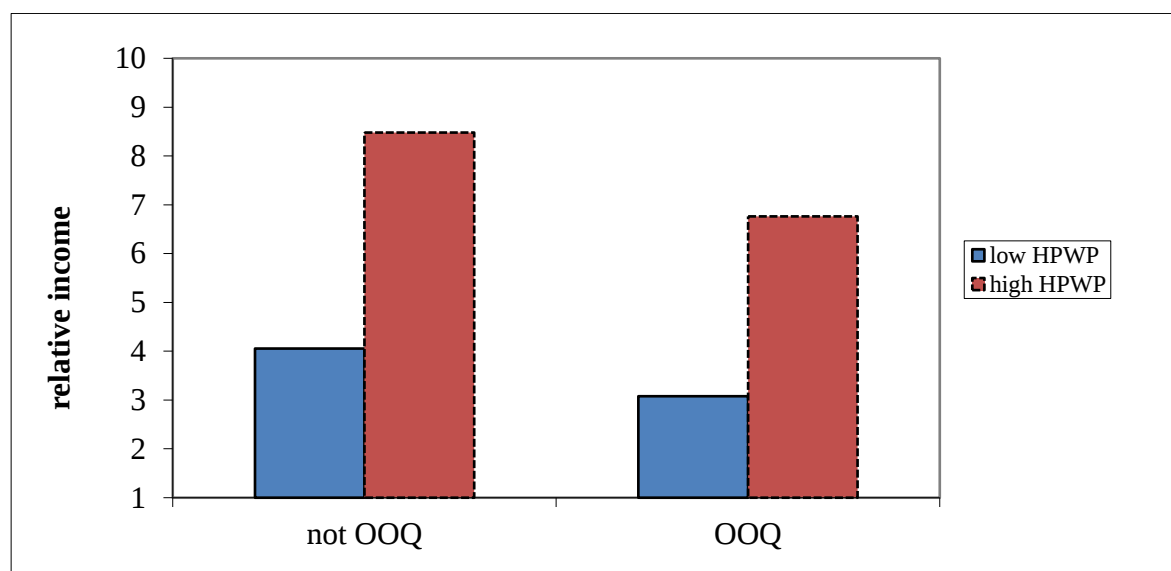
Table 2.8: Multiple linear regression, OOQ as main effect, HPWP as moderator, country relative income as an outcome

Model ^a	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	Sig
(Constant)	4.055	.061		66.932	***
acquired education	.700	.006	.345	108.276	***
gender	-1.590	.016	-.284	-98.732	***
sector	.163	.016	.031	10.413	***
objective overqualification (OOQ)	-.977	.028	-.158	-34.824	***
HPWP	.402	.005	.293	77.945	***
OOQ*HPWP	-.067	.008	-.038	-8.081	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles

Source: own work.

Figure 2.3: The HPWP moderates the relation between OOQ and relative income



Source: own work.

2.5 Discussion

The AMO model confirmed that the HPWP alleviated the negative relation between both OOQ and POQ and job satisfaction. The dissatisfied and overeducated individuals, as well as the individuals who perceive themselves as overqualified are prone to reduced motivation and opportunities, which on the other hand, are positively affected by all the AMO enhancing HPWPs.

Initially, what needs to be stressed is that both the OOQ and POQ have direct negative effects on both job satisfaction and country relative income. Although deprivation theory, which refers to feelings of deprivation, suggests that POQ has a more substantial effect on job satisfaction, I find that OOQ also has negative, somewhat stronger effects on job satisfaction and a much stronger effect on relative income. I support this statement with the help of two perspectives.

First, I note that it is the OOQ that has long-term effects and that the POQ is an individual perception that varies from person to person. In addition, "the effects of overqualification extend beyond short-term feelings of wage inequality and relative deprivation" (Feldman & Maynard, 2011, p. 234). Second, I particularly emphasise that overeducation lies at the roots of the feelings of deprivation felt by individuals: "entitlement, past feasibility, future feasibility, and personal responsibility" (Crosby, 1984). Specifically, when it comes to the overeducated, their unrealised investment in education does not lead them to achieve a certain type of work (Harari, Manapragada & Viswesvaran, 2017).

In summary, although they wished and expected it, while someone else had that type of job, these individuals believed that it would be possible to get it in the future and did not feel personally responsible for not getting it (Triana, Trzebiatowski & Byun, 2017, p. 3). Thus, the five conditions for triggering relative deprivation are met, and all this leads to job dissatisfaction. From the findings section, OOQ also has a more substantial negative impact on income than POQ, especially when compared to these individuals' professional peers and relative income in the country regarding that profession.

Looking at relative income as an effect of OOQ, it is observed that an increase in utility from the HPWP leads to a reduction of relative income. This is a two-sided effect, as the HPWP positively affects human capital, which in AMO models is actually measured by the level of education of employees.

On one side, the income of non-OOQ workers who do not benefit from the HPWP is one decile higher than that of OOQ workers who do not benefit from the HPWP. From a second angle, this is a positive effect because the relative income level for the OOQ workers who benefit from these HPWPs is three deciles higher than for the OOQ workers who do not benefit from these HPWPs. Furthermore, for non-OOQ workers who benefit from the HPWP, their relative income

is two deciles higher than that of OOQ workers benefiting from the HPWP. Finally, the HPWP makes the penalizing effect that overeducation has on relative income most evident when the non-OOQ individuals have a relative income which is, on average, five deciles higher than for the OOQ workers who do not benefit from the HPWP.

What has not been confirmed in this chapter is that the HPWP moderates the relationship between POQ and relative income. One explanation for this is that POQ individuals are denied career opportunities that can also be measured by relative income (as in the theory of occupational mobility). What is worth considering is that although the strongest partial effect of HPWP is given by the element of “job security” or permanent employment contract, this does not compensate for the awareness of income loss due to POQ, especially as this is an example of the trade-off between human capital and job security.

On the other hand, the AMO model suggests that the “opportunity” HPWP has no impact on financial outcomes. Although in all cases, the AMO model supports both the direct and distant effects of this HPWP on organizational financial performance, I stress that this performance is about sales growth and return on assets, equity, market return, or total financial performance (Jiang, Lepak, Hu & Baer, 2012) but not about the increase in individual relative income.

Finally, controlling for occupational sensitivity, I find that ISCO models explain more variance but have no impact on the present results. Nonetheless, belonging to an ISCO group of elementary occupations makes individuals most dissatisfied facing the occupational cluster of managers and professionals.

2.5.1 Theoretical implications

This chapter contributes to the existing theoretical framework by demonstrating that the HPWP reduces the negative effects due to overqualification. From a broader aspect, I demonstrated that the OOQ (overeducation) also has significant, negative effects on job satisfaction and relative income as the POQ, which were not known before. I exemplified this on a large sample of individuals from developing or developed countries, with respect to their gender, age, sector type and company size, and such a comprehensive approach was not evident in the past research.

The results supported the anchoring of feelings of deprivation in the OOQ or POQ as predictors of dissatisfaction and income loss. From an initial standpoint, all 11 isolated HPWPs attenuated deprivation effects attributable to objectivity or employee perceptions of overqualification. This was accomplished by simply allowing these OOQ or POQ individuals to enjoy organizational HR practices that might otherwise have been expected had they not been overqualified. When human capital is measured by education, there are even more benefits in terms of earnings that were previously considered when seeking higher wages or jobs or organizations that offer higher wages for a given level of education.

Notably, by clustering HPWPs, the AMO framework shows that it mainly attenuates job satisfaction arising from feelings of deprivation due to OQ. The post hoc analysis regarding job satisfaction showed that a permanent employment contract positively affects both predictors OOQ and POQ. Or, as an element of motivation HR practices, job security compensates for feelings of deprivation due to perceived or objective overqualification. Nonetheless, given OOQ, even the partial positive/mitigating effects of it and those of training (as ability HPWP) and information sharing (as opportunity HPWP) initially on deprivation, total HPWPs do not fully compensate for income loss. I find an explanation in the three AMO dimensions, which positively impact human capital, but this is already seen as reducing income for overeducated workers, as being genuinely measured by their education.

In addition to adding to theoretical standpoints, I contributed to the empirical approaches in considering the data as linear or nested through this chapter. The introduction of varying, random coefficients and RML estimation face to the OLS indeed provided more considerable standard errors and explained more variance. If the hierarchical structure of the data had been omitted, this might have led to a different conclusion as when using OLS, but this is not demonstrated in this chapter. Paradoxically, it turned out that the HPWP in the OLS model were an insignificant moderator for the relation between OOQ and job satisfaction, unlike the HMLR model, leading to a different conclusion.

From this point, the design of the HPWP and OOQ variables themselves should also be emphasised. The HPWP was computed as an additive index composed of 11 elements - practices engendered under six of the broad or core practices (Posthuma, Campion, Masimova & Campion, 2013). Also, the design of the OOQ variable followed the path suggested by (Liu & Wang, 2012) to consider the master and PhD levels apart from other tertiary education.

2.5.2 Implications for practice

By the research findings of this chapter, I offer the HPWP to the professionals concerned with overqualification as a tool in the set of formal measures under their organisation's governance to tackle dissatisfaction and wage loss, apart from the known psychological contracts.

As for the governments and policymakers, the expected OQ is not only self-inflicted by management (Abraham, 2015) but it can also be observed at a macro level. As far as they and organizations are concerned, OOQ and POQ should be considered separately in the work setting, as they obviously do not have the same effect size on outcomes. Moreover, this chapter has clarified that "being overqualified" and "feeling overqualified" are different constructs with different nomological networks and should be considered as such.

It should be emphasized that turning to these formalized tools under the HPWP hat is beneficial to organizations as it certainly alleviates job dissatisfaction and, to some extent, income loss. Alleviating both prevents other negative organizational outcomes resulting in attrition, job withdrawal, loss of productivity, and many other adverse organizational effects.

For those individuals who perceive themselves as overqualified, the HPWP seemingly mitigates the loss of income, in part due to job security as a motivation HPWP. However, for the overeducated (OOQ) individuals, it is the opposite case, for which none of the AMO practices helped achieve similar or equal outcomes as for the not overeducated workers.

2.5.3 Limitations and future research

The first limitation of this chapter is that no level-2 moderators were introduced in the hierarchical models; therefore, no cross-level interactions were tested, which would certainly be welcome as an opportunity for further research. The AMO models align with the organizational outcomes but do not fully capture why HPWP does not moderate the relationship between POQ and relative income. Therefore, this study suggests further segmentation of the theoretical AMO model into empirical, measurable, and specific HPWP practices.

In the same line, the context and propriety space generated by the control and independent variables in both hierarchical and OLS models should not be neglected. They provide for the OOQ or POQ effects on job satisfaction and relative income to occur in the first place. Here we should mention the non-significant effects of the company (organization) size and age on overqualification in general, which was also discussed in the previous research. In the same line, a promising venue for researchers would be to consider the HPWP as a moderator for women working in sectors other than the private sector. Finally, the overqualified individuals (both OOQ and POQ) have lower job satisfaction than other individuals, but surprisingly are not dissatisfied with their job. I perceive that the HPWP' buffering effect rendered them from being more indifferent towards being more satisfied with their job.

3 MODERATING EFFECTS OF QUALIFICATION PERCEPTION AND SKILLS MISMATCH ON EMPLOYEE OVERQUALIFICATION, JOB SATISFACTION AND RELATIVE INCOME

3.1 Introduction

As the main objective of this chapter, I set to test whether skills mismatch affects job dissatisfaction and country-relative income due to objective or perceived overqualification of employees. Similarly, it examines whether perceived overqualification moderates the

relationships between objective overqualification and job satisfaction and country-relative income.

Starting from a seemingly etymological view of what constitutes employee overqualification, I develop a meaningful discussion with important implications for employee outcomes that have not been adequately addressed in the literature but are somewhat scattered. In management, only subjective or perceived overqualification (in a broad sense) has been discussed, unlike in labour economics, for example, where other forms have been discussed.

With the theoretical embedding in the relative deprivation theory (Crosby, 1984), this chapter also aims to shed some light on the conjunctive and partial effects perceptions of overqualification and overeducation have on job satisfaction, just as their direct effects on relative income loss face human capital theory. The ultimate step is to test the perception of overqualification itself and skills mismatch as moderators to the abovementioned relations.

On a macro level, just like the OQ, the skills mismatch was seen as a form of vertical employee mismatch rooted in the labour market imbalances between the supply and demand for skills (Handel, 2003) or oversupply and undersupply of skills. From an individual level perspective, skills mismatch is important because, on the one hand, education used to be used to define and measure skills mismatch and, on the other hand, the perceived overqualification of employees could speak more about their education mismatch than skills mismatch does.

In addition, it is vital to link the results to the Global Alliance to monitor learning (GAML), particularly by offering the PIAAC framework as a standard cross-national measure of literacy (Murray, 2018), but also to respond to the GAML framework for Sustainable Development Goal 4 (SDG 4) by linking literacy and overqualification to effective learning outcomes.

By testing for direct and moderating effects, I also clarify an existing theoretical tension, as the education mismatch is neither a sufficient nor a necessary condition for skill mismatch (Van der Velden, 2001), as only 14% of the largest sample of the population studied mismatched on both skills and qualifications (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). Such a view would also challenge the premises of human capital theory (Becker, 1962), which relies on enhancing the effects of education to achieve greater skills and higher earnings for workers. While breaking down worker overqualification to its basic elements, I simultaneously demonstrate an empirical approach to measuring skill mismatch through literacy. Remarkably, the dilemma raised as to whether the overqualified employees suffer income losses from underemployment could be further clarified, as an important departure from surveys of such income effects has previously been found at all levels for skills mismatch and only at high levels for education mismatch (Quintini, 2011).

To this end, my first aim is to disentangle overeducation from perceptions of overqualification to answer question 3.1: *How do the perceptions of overqualification affect the objective overqualification - outcomes relationship?*

The skill mismatches and their conjunctural effects and importance will also be made clear, which, in turn, are juxtaposed with job dissatisfaction and decreased earnings, attempting to answer question 3.2: *How does the skill mismatch affect the overqualification - outcomes relationship?*

The confirmed hypothesized findings of this chapter would contribute to the overqualification literature with a key moderator that alternates between mitigating and emphasizing its impact on job dissatisfaction or income loss in terms of occupational level and per country. In demonstrating this claim on hierarchically structured data, at the same time, I draw a parallel between such data and viewing the data as linear, intending to illustrate the discrepancies related to the research findings and results that would occur in the second case.

This chapter provides managers and policymakers with a tool to disentangle the qualification-skills mismatch in measuring worker mismatch in the labour market; primarily, how literacy manifests as a direct effect of schooling along with objective or perceived overqualification and for two of its main outcomes. In this chapter, I also intend to provide insights into the actors involved in the skill formation process (Sung, Turbin & Ashton, 2000; Cunha, Lochne & Masterov, 2006; Busemeyer & Trampusch, 2012; Emmenegger & Seitzl, 2020) mainly due to direct overqualification effects as well as moderation effects of it. By elaborating on the PIAAC framework, I would like to give an example of cross-national measurement of education and qualifications as one of the open issues in the qualification process (Mayer & Solga, 2008).

3.2 The theoretical framework on employee overqualification

3.2.1 Employee overqualification outcomes and supporting literature

One of the overqualifications' most known negative effects is the employee' job dissatisfaction (Maltarich, Reilly & Nyberg, 2011; OECD, 2013a; Alfes, Shantz & Baalen, 2016), itself leading to increased turnover intentions (Allen & Van der Velden, 2001; Erdogan & Bauer, 2009; McKee-Ryan & Harvey, 2011; Liu, Luksyte, Zhou, Shi & Wang, 2015; Zhang, Law & Lin, 2016), on-the-job search (Quintini, 2011) and psychological strain (CEDEFOP, 2010; Ortiz, 2010). This is a concern for organizations as well; it increases the turnover rate (Allen et al., 2007; Quintini, 2011), the counterproductive work behaviours (Luksyte, Spitzmueller & Maynard, 2011), and it reduces the productivity of workers (Allen et al., 2007).

In addition, the relative deprivation theory (Crosby, 1984) argues that overqualification leads to feelings of being deprived of a particular type of job (Harari, Manapragada & Viswesvaran,

2017) beneath what one had been promised before (Liu, Luksyte, Zhou, Shi & Wang, 2015) after he had pursued the investment in education, knowledge, and skills. Perceiving that someone else has this job, while he feels entitled to it and believes that he deserves to get it (Triana, Trzebiatowski & Byun, 2017), he/she thinks this is unfair and feels disappointed resulting in job dissatisfaction, psychological stress, frustration, anger, which further lead to negative psychological consequences (Johnson & Johnson, 1996; Maynard, Joseph & Maynard, 2006; Liu & Wang, 2012).

Finally, the overqualification challenges the human capital theory (Becker, 1962; Mincer, 1974) or the hypothesized productivity-enhancing effects of education from several aspects. I argue against the claim that these effects should have been raised when education develops skills that lead to higher productivity and higher pay, all on a single, efficient, and fair labour market that distributes jobs and pay based on these workers' qualifications. To this end, I argue that for the overqualified employees, more education would not lead to higher wages either, but rather to a wage penalty relative to qualification level (Brynin, 2002) and wages inequality (Handel, 2003; Di Pietro & Urwin, 2006; OECD, 2013a).

3.2.2 Theory and hypotheses development on objective overqualification (overeducation) and subjective (perceived) overqualification

In the baseline of this chapter, I set the standard definition, which designates overqualification as education, skills and work experience that exceed those required by the job post or by the employers (Erdogan, Bauer, Peiró & Truxillo, 2011; Kuhn & Shen, 2012; Hu et al., 2015; Erdogan, Bauer & Karaeminogullari, 2017). The main challenges were set up to break down and explain the overqualification taxonomy, which is due to its empirical and theoretical fundaments, and that it is this duality that provided the existing theoretical framework with different concepts of overqualification.

Some studies also made a clear distinction between the OOO and POQ (Maltarich, Reilly & Nyberg, 2011) in order to distinguish them as a result of possibly different predictors and outcomes (Erdogan, Bauer, Peiró & Truxillo, 2011; Hu et al., 2015), whereas some approaches distinguish “genuine” or “apparent” mismatch, between qualification and skills mismatch (Chevalier & Lindley, 2009), a stance from where this chapter proceeds. This chapter emphasises the importance of drawing a clear line between the concepts and contents of overqualification.

Conceptually, the most common is the recurrence of overqualification as being perceived (POQ) which is about one's awareness (Erdogan & Bauer, 2009; McKee-Ryan & Harvey, 2011; Liu & Wang, 2012; Alfes, Shantz & Baalen, 2016), feelings (Erdogan, Bauer, Peiro & Truxillo, 2011; Hu et al., 2015; Zhang, Law & Lin, 2016), or perceptions (Johnson & Johnson, 1996; Harari, Manapragada & Viswesvaran, 2017) that his qualifications exceed his job requirements. Just as

in the previous chapter, the argumentation considers the same baseline hypotheses in relation to the overqualification's two main, negative outcomes:

H1a: Perceived overqualification reduces job satisfaction.

H1b: Perceived overqualification reduces the relative income.

However, when asked directly, employees tend to be overly confident as being qualified to perform more demanding jobs, to overstate the requirements of their job or to inflate the status of their position (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014) so their perceptions of overqualification do not necessarily reflect an accurate assessment of reality (Alfes, Shantz & Baalen, 2016).

Regarding the concept as well, I find it well-suited that in PIAAC, an assumption was made that all jobs with the same title have the same requirements, that the countries are using the same occupational classification (ISCED 1997 manual) and that cross-country comparison is easily feasible (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). Thereby, an objective overqualification (or overeducation - OOO) is considered by individuals (workers) being employed at job posts that require a lower or higher level of qualification/education than they have (Quintini, 2011; Zhang, Law & Lin, 2016). Any positive difference between the worker's qualification/educational level and the qualification level required in her/his job sets him as overqualified (Quintini, 2011). Hence, being a different concept than the POQ, it is not known whether the OOO or the overeducation reduces the job satisfaction and the wages as well, so it was equally considered whether:

H2a: Objective overqualification reduces job satisfaction.

H2b: Objective overqualification reduces the relative income.

I find that the concept and content of overqualification collide by the OOO, which does not consider that people with the same qualifications working in comparable positions often experience different levels of perceived overqualification (Erdogan, Bauer, Peiró & Truxillo, 2011). This is possibly due to variation in actual job content from person to person and differences in the quality and type of their education and experience between persons (Hu et al., 2015). From this stance, I distinguish between when the negative effects on job satisfaction and relative income arising from the effective, measurable state of being overqualified for the job post or due to "perceptions of quality" as a baseline modality of POQ.

This perceived quality or values are conceptualized as a trade between one's benefits and costs, upon which he sets his perceived values (Hofstede, 1984) or just as a trade between the attractiveness of a current job and the availability of alternatives, as in the context of voluntary worker turnover (Shaw, Delery, Jenkins & Gupta, 1998). It also signals that the POQ as

derivative of these perceptions of quality aggravates the eventual OQ's negative relation to job satisfaction, as assumed in the first place:

H3a: The POQ moderates the negative relationship between OQ and job satisfaction by making it more negative.

If job satisfaction is a subjective outcome of POQ, the question is whether someone's POQ contributes to an objective loss of income per occupation in a country since he/she already tends to have a lower income due to being objectively overqualified for his/her job:

H3b: The POQ moderates the negative relationship between OQ and relative income by making it more negative.

3.2.3 Theory and hypotheses development on the moderating role of skills mismatch

Regarding the content of employee overqualification, I consider that the general definition, which includes perceptions and feelings, but also skills are a constitutive element (Martinez, Lengnick-Hall & Kulkarni, 2014; Kulkarni, Lengnick-Hall & Martinez, 2015; Harari, Manapragada & Viswesvaran, 2017). Furthermore, POQ was largely used in the literature as a standard measure (proxy) of skills mismatch, which derives from one's self-reported mismatch, which might be arguable from few aspects. What it is known is that skill underutilization and skill deficits certainly exist and have important consequences on job satisfaction, turnover and wages and account for some of the effects of qualification mismatch on these outcomes (Quintini, 2011).

As the relation between skills and social outcomes has been largely left unexplored (OECD, 2013d) I find that this literature's ambiguity permits to hypothesize these relationships. On the one hand, employee's dissatisfaction is due to the feeling that his overall qualifications exceed his job requirements. On the contrary, his skillset might be setback behind these same requirements or exceed them just as well. Hence, it should be considered whether being mismatched in skills affects one's perceptions of overqualification or one's concept of perceived quality, upon which he sets his values.

In a general instance, it should be examined whether and how the excess or the lack of literacy skills is related to job satisfaction and the wages when paired with overqualification. Correspondingly, dissatisfied for being deprived of the quality of job and income relative to his qualification, it would be expected to add up to this negative relationship if he is also overskilled, knowing the important impact the skills mismatch has on job satisfaction (Quintini, 2011), especially the under-utilization of skills:

H4a: The skills mismatch moderates the relationship between perceived overqualification and job satisfaction in such a way that the overskilling makes this relationship more negative.

On the other hand, although self-perceiving as overqualified, when his skills (here, in literacy) are lower than the other employees' are, it might be expected for him to be less dissatisfied with his job and his deprivation feelings to be lessened:

H4b: The skills mismatch moderates the relationship between perceived overqualification and job satisfaction in such a way that the underskilling makes this relationship less negative.

When it comes to employee income, it should be noted that among the workers who perceive themselves as overqualified, the underskilled workers tend to earn more than the not-underskilled workers, while the overskilled workers tend to earn less than their underskilled or matched-skills counterparts. The employees who are overqualified for their actual job post for any reason and believe that they deserve higher earnings or see themselves as deprived of these higher earnings, at least are in accord with their "matched" colleagues or workers in other organizations who are paid better and have the same educational level.

Moreover, without a previously available and standardized tool to measure skills mismatch, the qualifications were seen as an imperfect substitute for skills (OECD, 2013d). Hence, more qualifications should have meant more skills; if not else, it would be expected for the worker to be more literate after more schooling. In addition to the impact on job satisfaction, the skills mismatch also has an important impact on wages (Quintini, 2011), the point of having a more significant impact on them than qualification mismatches (Van der Velden, 2001), so the following hypotheses were made:

H5a: The skills mismatch moderates the relationship between perceived overqualification and relative income in such a way that the overskilling makes this relationship more negative.

H5b: The skills mismatch moderates the relationship between perceived overqualification and relative income in such a way that the underskilling makes this relationship less negative.

The previous overqualification literature did not elucidate whether the wage penalties arise from educational mismatches known for strong effect on wages (Budria, 2011; ILO, 2014) or are considered to be more affected by skills (Lucifora & Origo, 2002; Di Pietro & Urwin, 2006) whether the skills mismatches also have a distinct effect (Chevalier & Lindley, 2009) or are affected by the both (Right, 2016; Hanushek, Schwerdt, Woessmann & Zhang, 2017). In addition to asking whether these disadvantages are due solely to POQ or OQ or possibly to the underutilization of skills, I want to find out whether there is overlap or alignment between all three factors. This ambiguity between the possible overlap of education and skills concerning low dissatisfaction and income orients the framework of this chapter towards the skills that are supposed to result directly from schooling or literacy.

Although expected for the same hypotheses to be true for the job dissatisfaction/wage penalty due to overeducation (OQ), I also consider that it just might not be the case. Just as for POQ,

overeducated does not mean overskilled employee. If on average, 22% of workers reported that they are overeducated and 13% reported that they are undereducated for their jobs, but only 11% are overskilled, and 4% are underskilled in literacy (OECD, 2013a). To argue further, only 14% of the overeducated (OOQ) workers are also overskilled in literacy (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014) so I do not assume overlap between overeducation (OOQ) and overskilling and it is hypothesized:

H6a: The skills mismatch moderates the relationship between objective overqualification and job satisfaction in such a way that overskilling makes this relationship more negative.

H6b: The skills mismatch moderates the relationship between objective overqualification and job satisfaction in such a way that the underskilling makes this relationship less negative.

I find that the expected moderating effects of literacy mismatch on the relation between OOQ and relative income per occupation/country are even more complex and ambiguous. Needed to say that qualification mismatch and skills mismatch may have distinct effects on wages, because jobs with similar qualification requirements may have different skill requirements, which were difficult to measure (OECD, 2013d). As I already stated that the qualifications were seen as an imperfect substitute for skills, it should be noted that the education and skill mismatch does not seem to measure the same thing. One amendment is that an important variance of wage effects is previously found on all levels for the skills mismatch but only on high levels for the education mismatch (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014).

Paradoxically, others have found that skill mismatches account for only a small proportion of the wage effects of educational mismatches. Thus, workers suffer a strong wage penalty only when they are overqualified but not overskilled (OECD, 2016a). Also, the inclusion of direct measures of required and provided skills does not substantially affect the estimated coefficients of the return to investment in education (Cainarca & Sgobbi, 2012).

Furthermore, wage losses due to a lack of literacy skills are known to have a stronger impact on income than educational differences, although a one-SD increase in literacy skills is also associated with an 8% increase in hourly wages (OECD, 2013d). From a different point of view, in this chapter, skills are empirically illustrated by literacy skills, which demonstrate that the median hourly wage of employees with the highest skills on the literacy scale is 65% higher than that of workers scoring at the lowest level or below (OECD, 2016a), hence the hypothesis:

H7a: The skills mismatch moderates the relationship between objective overqualification and relative income, in such a way that overskilling makes this relationship more negative.

Nevertheless, the amount of the negative impact overskilling has on wages, unlike for such under-utilization of skills, just the opposite would be expected:

H7b: The skills mismatch moderates the relationship between objective overqualification and relative income, in such a way that underskilling makes this relationship less negative.

To allow for comparison between the pre-and post-Bologna qualification periods, all ISCED categories have been grouped into six broader categories: primary or below, lower secondary, upper secondary, post-secondary non-tertiary, tertiary, master's/research level (Appendix 1.2).

3.3 Methodology

3.3.1 The data and sources

The main data was extracted from the PIAAC Questionnaire (50 to 60% response rates, per country) and the module on skills use - literacy. It was sampled in two among a non-institutionalized population, aged 16-65 years, residing in the country at the time of data collection (OECD, 2013a) from which 27 countries were retained, setting the sample size to N=156068. PIAAC is advantageous over other datasets primarily for having data on OOQ, POQ and skills mismatches regarding the same individuals.

3.3.2 Measurement variables

3.3.2.1 Outcomes

The first dependent variable was the job satisfaction found in the Questionnaire, which was measured at a standard five-item scale (Appendix 2.1). As for the income level per country, a Questionnaire item was used, in which each participating country provided one's monthly earnings (including bonuses) converted into deciles (Appendix 2.1), based on that country's national earnings distribution (OECD, 2013a).

3.3.2.2 Explanatory variables

The present choice of empirical tools in assessing overqualification types and overskilling exemplified three measurement approaches of vertical (used for education) mismatch (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014; Maer-Matei, 2014). First, the direct self-assessment (self-reported) approach was used to create the POQ measurement variable (Appendix 1.1) resulting in 20.8% of workers perceiving themselves as overqualified.

Next was the recurrence towards the normative (job analysis) approach for the OOQ measure, as a common operationalization of this construct (Liu, Luksyte, Zhou, Shi & Wang, 2015). It was conceptualized as any positive difference between the highest acquired level of education measured on the ISCED scale (OECD 1999; UNESCO, 1976) and the necessary ISCED educational level as stated by the respondents (Appendices 1.1 and 1.2). Following (Liu, Luksyte, Zhou, Shi & Wang, 2015), the master and research educational levels were set as

distinct from other and lower tertiary education. As a result, 28.9% of the individuals turned out to be objectively overqualified or overeducated (Table 3.1). To allow for comparison between the pre-and post-Bologna qualification periods, I have grouped all ISCED categories into six broader categories: primary or below, lower secondary, upper secondary, post-secondary non-tertiary, tertiary, master's/research level (Appendix 1.2).

3.3.2.3 Moderator and control variables

I have chosen to examine the skills mismatch using literacy skills for several reasons, both conceptual and empirical. From a conceptual perspective, I think it is important to examine the skills-education mismatch. Moreover, I find that literacy seems to be the most general and fundamental skill, and it relates, conceptually, more directly to educational attainment than other skills measured in PIAAC. In addition, the relationships between the use of literacy and job satisfaction are statistically significant in almost all countries. At the same time, this is not always the case for the use of numeracy and problem-solving skills (which are not applicable if measuring skills are used on the job), which limits my choice of moderator variables (OECD, 2016a, p. 101).

Empirically, I chose to implement skills proficiency and not skills use because the latter is a perceived measure that is not appropriate for illustrating the statistical approach to measuring skills mismatches. Due to this nature, the use of skills at work should have been designed as an additional index scale (like the HPWP variable), as it relies on several indicators from Module on skills use. Most importantly, why I choose literacy proficiency over skills use at the job is that "there is no direct correspondence between the questions on tasks performed at work (or in everyday life) and those asked in the direct assessment of skills in the survey" (OECD, 2016a, p. 97).

That is why a robust, four-step measure for literacy (skills) mismatch was developed, which relied on the "statistical/realized" match (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). In this chapter, literacy relies on PIAAC definition as: "one's ability to understand, evaluate, use, and engage with written texts to participate in society, to achieve his goals, and to develop his knowledge and potential (OECD, 2016a, p. 38). For the empirical consideration, the mean value for one's ten available PIAAC literacy scores was calculated for each of the Module respondents. Next, every individual was set as matched if he self-reported neither feeling he neither has the skills to perform a more demanding job nor feels the need for further training to perform his current jobs satisfactorily.

The average literacy scores for matched workers per country and ISCO served as references to construct the dummies for mismatched workers. Further on, the 5th and the 95th percentile scores of self-reported well-matched workers were identified by country and within each 1-digit ISCO code. Because of sample size, ISCO group 0 (armed forces) and ISCO group 6 (skilled

agricultural workers) were dropped, and ISCO group 1 was merged to ISCO group 2 for the purpose of calculating skill requirements.

In a last step, the workers were classified as underskilled if their proficiency (literacy score) is lower than the mean 5th decile in their ISCO occupation and country (one's literacy score – mean 5th decile score < 0). Analogically, they were set as overskilled if their proficiency is higher than the 95th decile score in their occupation and country (mean literacy score – 5th decile score > 0). To sum up, workers are overskilled in a domain if their score is higher than the maximum score of self-reported well-matched workers, and they are underskilled in a domain if their score is lower than the minimum score of self-reported well-matched workers (Quintini, 2011). When these two terms were multiplied, all the negative products-results were dummy coded as 1 to create a general “not-mismatched in literacy” variable-category and the opposite (positive product term's) cases, being coded as 0, were set as “mismatched” (Appendix 3.1).

Previous literature made it evident that there is still a need for research to understand individual, group level, organizational and societal moderators and mediators (Hu et al., 2015) to this relationship, how overqualification varies between countries, and this variability is less evident or even studied in emerging economies and outside of the Western world (Erdogan & Bauer, 2009; Zhang, Law & Lin, 2016).

I stress that in that literature, gender as an overqualification-outcomes relation predictor resulting from relative deprivation is rather ambiguous (McKee-Ryan & Harvey, 2011; Liu & Wang, 2012) and worth considering in the chapter. Women “trade” human capital for social benefits and social capital (Feldman & Maynard, 2011), settle for a low salary to balance family duties (McKee-Ryan & Harvey, 2011), and are more likely to be overqualified than men (Allen et al., 2007; Luksyte, Spitzmueller & Maynard, 2011). However, men perceive higher levels of overqualification than their female coworkers (Maynard, Joseph & Maynard, 2006; Erdogan & Bauer, 2009). In some studies, there is even an observed near-zero correlation between gender and perceived overqualification (Johnson & Johnson, 1996; Luksyte, Spitzmueller & Maynard, 2011). That is why the hypothesized relationships for gender (male = 1) is dummy-controlled.

What is also worth considering is when overqualification results in instances when human capital is traded for job security (Ortiz, 2010). This can be achieved, for example, by working in the public sector (Allen et al., 2007), or it is simply a proneness of certain professional sectors (Melink & Pavlin, 2012) to generate overqualified workers, such that the “choice of job or sector creates an intermediate step between individuals' characteristics and their earnings” (Sattinger, 1993; Ortiz, 2010).

Similarly, Hofstede (1984) claimed that “one's perceptions (of quality) upon which he sets his perceived values is, in fact, a trade between his benefits and costs or his or her general goals” (Zhang, Law & Lin, 2016). Hence, perceptions of overqualification may not lead to feeling

deprived if workers are glad to be employed (Triana, Trzebiatowski & Byun, 2017). It is why the hypothesized effects for sector type of the participants of the PIAAC (NGO = 1, public sector = 2, private sector = 0, referential category) are controlled.

Also, overqualification seemed to affect the younger employees more (OECD, 2013a; Quintini, 2011) and the generalizability to other employee groups is to be considered as well (Erdogan & Bauer, 2009). Thereby, the existing relationships were controlled for the respondents' age divided into 5-year clusters (Table 3.1). Finally, the relative income effects of overqualification were also controlled for the acquired education (OOQ as in Appendices 1.2 and 1.3).

3.3.3 Descriptive statistics

As for the descriptive statistics, just as with PIAAC, there are no patterns between overqualification and overskilling types. Neither high nor low overqualification types imply over- or under in literacy (Table 3.1), whereas both modalities of skills mismatches were related to job satisfaction and relative income (Table 3.2).

3.3.4 The procedure and analysis

In this chapter, I considered all the individuals empirically as “level one” variables being nested in their respective countries of Survey (level-2 variable). This assumption led to hierarchical data in which individuals within each group were similar (homogeneity of residuals), which was advantageous in many ways.

The consideration of the data as hierarchical means partitioning the variance of an outcome variable into its within- and between-group components to determine the homogeneity and whether hierarchical, multilevel analysis is even necessary (Heck, Thomas & Tabata, 2013). If this homogeneity is confirmed, it signals that when people are sampled from similar contexts, the independence of the observations (residuals) is violated (Field, 2013) while statistical tests rely exclusively on this assumption (Hox, 1995). This underestimated standard error further leads to false attribution of statistical effects where none should exist or false rejection of the null hypothesis, also known as Type 1 error.

Table 3.1: Cross-country overview of perceived, objective overqualification and skills mismatch

Country	POQ	OOQ	overskilled in literacy	underskilled in literacy
Austria	16.5	25.5	13.9	0.9
Belgium	23.5	22.7	6.6	3.8
Chile	15.8	22.1	15.4	2.9
Czech Republic	25.7	26.0	9.4	2.4
Denmark	15.5	25.2	7.3	5.1
Estonia	17.3	37.4	6.7	16.8
Finland	23.9	20.8	6.4	3.1
France	24.3	37.7	6.1	3.3
Germany	21.8	27.8	15.9	3.3
Greece	15.5	31.0	21.8	1.1
Ireland	20.6	35.6	9.1	3.9
Israel	19.3	45.6	7.3	2.9
Italy	15.9	21.4	17.7	4.0
Japan	22.3	35.2	7.2	2.7
Korea	28.2	27.9	8.1	3.5
Lithuania	23.9	35.5	13.9	1.6
Netherlands	15.4	20.5	7.0	4.2
New Zealand	28.6	48.0	6.9	3.5
Norway	18.5	29.6	6.5	2.5
Poland	26.9	25.0	9.4	4.6
Singapore	18.2	23.5	7.1	2.0
Slovak Republic	21.2	22.3	9.4	1.8
Slovenia	14.2	15.5	10.0	3.0
Spain	17.8	34.4	19.2	1.2
Sweden	23.5	23.1	5.8	2.9
Turkey	13.1	21.8	11.2	4.1
United States	26.8	26.5	12.1	1.7
MEAN	20.8	28.9	9.8	3.6

Source: own work.

Table 3.2: Descriptive statistics/correlations

Variable ¹²	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1. job satisfaction	3.9764	.84333											
2. relative income	5.45	2.889	.108**										
3. objective overqualification	.2889	.45326	-.105**	-.192**									
4. perceived overqualification	.2080	.40584	-.075**	-.097**	.068**								
5. gender	1.52	.500	.020**	-.256**	.026**	-.016**							
6. sector type	1.29	.509	-.085**	-.057**	.069**	.083**	-.169**						
7. company size	2.40	1.215	n/a ³	n/a	n/a	n/a	n/a	n/a					
8. age	5.59	2.854	n/a	n/a	n/a	n/a	n/a	n/a	n/a				
9. overskilling	.0980	.29736	-.037**	.020**	.056**	.012**	-.034**	.025**	n/a	n/a	.837**	-.837**	
10. underskilling	.0363	.18707	.005**	-.026**	-.005**	.001**	-.034**	.010**	n/a	n/a	.493**	-.493**	-.064**

¹Means and standard deviations are raw scores, n = 156068.

²Correlation after grand-mean centering of the predictor variables.

³Cannot be computed because at least one of the variables is constant, has missing correlations or there is no variation or only very small variation to be considered.

* p<0.05; ** p < 0.01

Source: own work.

In summary, avoiding such discrepancy in results, I assumed the regression intercepts or slopes to vary across level-2 variables, which are called random coefficients. Together, these random coefficients and homogeneous residuals violate the linear regression/OLS estimation assumptions, and that is why restricted maximum likelihood (RML) is introduced. Additionally, the maximum likelihood estimation (ML) parameters consider the comparison of the models.

Within a hierarchical multilevel linear regression (HMLR) modelling procedure, I develop five consecutive hierarchical models for both OQ and POQ as main predictors. These models' fits were assessed upon parameter estimates from both Wald statistic and Chi-squared test (χ^2). Next, as models with lower deviance generally fit better than models with higher deviance (one with the parameter in question included versus one with it excluded), the χ^2 difference test considered the change of degrees of freedom and three model fit parameters: Δ df, Δ -2LL, Δ AIC, Δ BIC.

In an initial stage, I ran OLS multiple linear regressions for the relation between objective and perceived overqualifications and job satisfaction to compare them later with the hierarchical models. For these purposes, I began with a no-predictors Model 1 with fixed slopes and random intercepts (varying per country) to determine the extent of groups' homogeneity through an interclass correlation coefficient (ICC). The ICC, which is 7.30% for job satisfaction (Wald $Z=3.593$, $p < .001$) is larger than the commonly accepted threshold of 5%, so I find the data on job satisfaction to be hierarchical, or the clustering countries have effects on the homogeneity of individuals' reported job satisfaction. In contrast, I calculated an ICC of 0.42% for relative income (Wald $Z=3.367$, $p < .001$), or within-country income variability is minimized, so a simple individual-level regression analysis would be sufficient to assess relative income loss due to overqualification.

3.4 Results

3.4.1 The job satisfaction as an outcome

Model 2 is designed solely on job satisfaction as an outcome and the control variables. In hierarchical linear modelling in SPSS, the predictor variables can be inputted as factors or covariates. Gender has been set as a factor, and the reference category is its last label (coded "1"), so the estimate will be for the first category (coded 0), or "male" in this case. The sector type, the age and the company size were all entered as covariates, and the parameter estimates consider all their value labels as coded other than 0, which served as reference. In addition, the variable "sector type" was previously coded in order to set its largest category to "0" (the private sector), so all the findings concern male workers working in sectors related to the private sector (NGO or the public sector).

In Model 2, the gender, sector type and job satisfaction showed significant variance in intercepts between countries (Wald $Z = 3.588$, $p < .001$). Although the M2 model presented a better fit than the null model, as the Wald tests were significant, there was still some within/between countries variability in the outcomes to be explained, by adding other predictor variables to the model.

To determine this amount of explained variance, the “Reduction in variance estimate” (with reference to the variance estimates from the null model) was used instead of the determination coefficient R^2 . Thereby, Model 2 explained 1.77% of the variance in job satisfaction within countries and 12.54% of the variance in job satisfaction between countries. Model 3 was developed separately in the next stage, with POQ (Models 3.1.a and 3.1.b) and OOQ (Models 3.2.a, 3.2.b and 3.2.c) as the main predictor variables.

3.4.1.1 POQ as main effect and the job satisfaction as an outcome

In Model 3.1, POQ was incorporated as the main predictor variable along with the control variables. In this model, a big F ratio was associated with the POQ which confirmed that POQ is a significant predictor of job satisfaction. If everything else remains constant, one SD change in POQ results in a reduction of 0.13 points in job satisfaction, which supported hypothesis H1a. Alternatively, self-perception as overqualified for the job post reduces job satisfaction by 0.13 units, compared to the individuals who do not perceive themselves as overqualified, males, working in a sector other than the public sector. I also tested model 4a with random slopes and intercepts to reach a hierarchical model with less deviance. However, the intercepts and slopes in model 4a did not significantly co-vary ($\text{Cov}(\beta_{0j}, \beta_{1j}) = 0.003978$, Wald $Z = 1.457$, $p = 0.145$), so this model was omitted from further development in hierarchical modelling.

Model 5.1.a incorporated the main predictor variable POQ, the control variables and the moderator variable-overskilling in literacy (OS). The interaction term POQ*OS was significant as well, so hypothesis H4a that overskilling in literacy moderates the relationship between POQ and job satisfaction is accepted. The slope for the interaction term POQ*OS suggested that it is a negative, significant predictor of job satisfaction ($\beta = -0.047$, $p < 0.05$). A unit change in POQ results in a reduction of 0.047 units of job satisfaction (Table 3.3) or a decrease of 0.055 SD, ceteris paribus. Or, the individuals who perceive themselves as overqualified and are more literate (than their counterparts within the same ISCO and country) are more dissatisfied with their job, considering men working in other than the private sector (Figure 3.1). Model 5.1.a explained 5.70% of the variance in job satisfaction within countries and 11.18% of the variance in job satisfaction between countries.

Regarding the multiple linear regression models with the same variables in question, this model explained more variance, leading to the same conclusion, just like the OLS model. Compared to the ISCO controlled effects (Appendix 3.2), there are no changes in the results, except for the larger variance explained by this model (6.77% and 23.64% explained variance within and

between countries, respectively). As in the previous chapter, elementary occupations (ISCO 9) have the strongest negative effect on job satisfaction (ISCO 9), while technicians and associate professionals (ISCO 3) have the smallest negative effect, face to the managers and professionals (ISCO 2).

Model 5.1.b incorporated the main predictor variable POQ, the control variables and the moderator variable underskilling in literacy (US). The interaction term POQ*US was significant as well, so hypothesis H4b that underskilling in literacy moderates the relationship between the POQ and job satisfaction is accepted. The slope for the interaction term POQ*US suggested that it is a significant, positive predictor of job satisfaction ($\beta = 0.0087$, $p = 0.026$). A unit change in US results in an increase of 0.087 units of job satisfaction (Table 3.4), or an increase of 0.098 SD, *ceteris paribus*. The individuals who perceive themselves as overqualified, but are less literate than their counterparts in the same ISCO and country, are less dissatisfied with their job, as for man working in a sector other than the private sector (Figure 3.2). Model 5.1.b explained 5.65% of the variance in job satisfaction within countries and 10.31% of the variance in job satisfaction between countries.

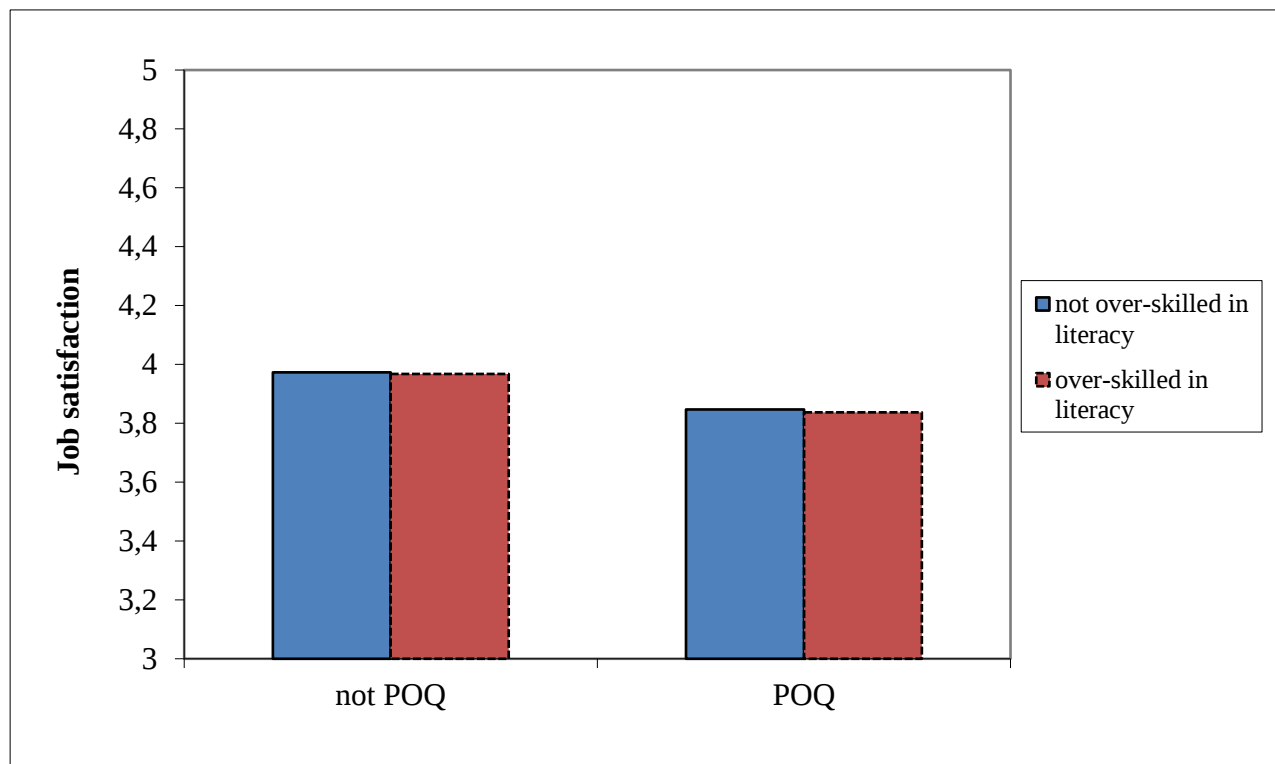
Compared to the ISCO-controlled effects (Appendix 3.3), there no changes in the results and the parameter estimates, except for the larger variance explained by this model (6.75% and 19.03% explained variance within and between countries, respectively). With reference to ISCO 2, the ISCO 9 had the most negative and the ISCO 3 had the least negative effect on job satisfaction.

Table 3.3: Hierarchical moderated regression, POQ as main effect, OS as a moderator, job satisfaction as an outcome

1. Estimates of Fixed Effects ^a	Linear regression model			Hierarchical multilevel linear regression models														
	Estimate (SE)	t	sig	M1			M2			M3.1a			M4.1.a			M51.a		
Estimate (SE)				t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	
Intercept	4.385 (0.019)	227.517	***	3.964 (0.0432)	91.783	***	3.92 (0.413)	26.396	***	3.966 (0.042)	94.508	***				3.973 (0.042)	95.198	***
gender: male	-0.002 (0.006)	-0.26	0.8				-0.004 (0.0056)	-0.814	0.516	0.015 (0.0058)	0.259	.796				0.029 (0.0059)	0.481	0.63
NGO sector							0.158 (0.017)	9.445	***	0.143 (0.0173)	8.231	***				0.14 (0.017)	7.947	***
public sector	-0.135 (0.006)	-23.604	***				0.126 (0.0063)	19.903	***	0.104 (0.0065)	16.057	***				0.102 (0.0066)	15.446	***
company size									ns									
age									ns									
POQ	-0.126 (0.008)	-5.599	***							-0.130 (0.007)	-18.46	***				-0.126 (0.075)	-	***
OVERSKILLED (OS)	-0.088 (0.011)	-7.913	***													-0.057 (0.011)	-5.272	***
POQ*OS	-0.029 (0.024)	-1.241	.215													-0.047 (0.023)	-2.056	0.04
1.2 Model fit																		
total df (Δ df)	76350			3			6 (3)			7 (4)						9 (6)		
- 2LL (Δ -2LL= Δ χ2)				247733.908			208721.928 (- 39011.98)			187033.274 (- 60700.634)						180812.948 (- 66920.960)		
AIC (Δ AIC)				247739.908			208733.928 (- 39005.98)			187047.274 (- 60692.634)						180816.948 (- 66922.96)		
BIC (Δ BIC)				247768.509			208790.147 (- 38978.362)			187112.200 (- 60656.309)						180835.434 (- 66933.075)		
2. Reduction in variance estimate																		
within countries	1.4						1.77			5.23			Cov (β _{0j} , β _{1j}) = - 0.03978, Wald Z =			5.70		
between countries							12.54			10.01			1.457, p= 0.145			11.18		

Source: own work.

Figure 3.1: The overskilling in literacy moderates the relation between POQ and job satisfaction



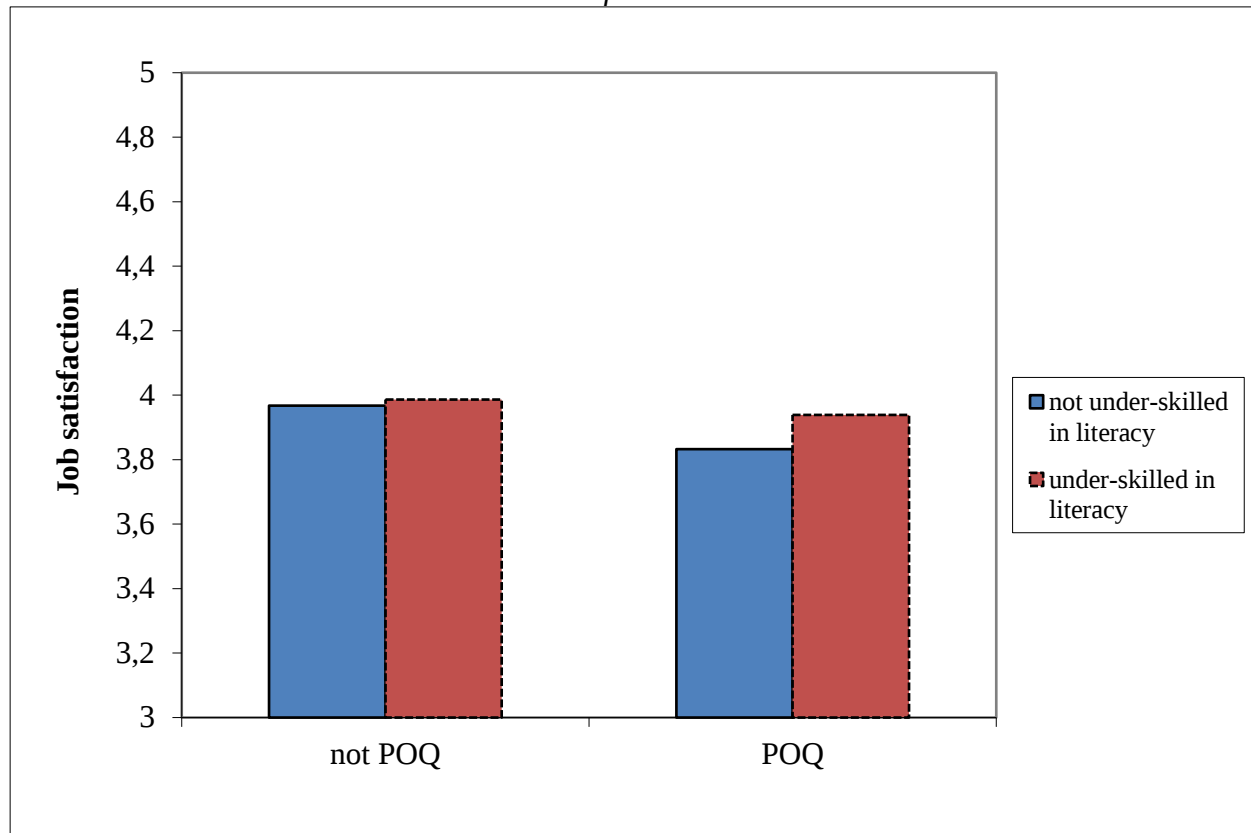
Source: own work.

Table 3.4: Hierarchical moderated regression, POQ as main effect, JS as an outcome, US as a moderator, job satisfaction as an outcome

1. Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
1.1.Parameters	model			M1			M2			M3.1.b			M4.1.b			M5.1.b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.375 (0.019)	227.024	***	3.964 (0.0432)	91.783	**	3.92 (0.413)	26.396	***	3.966 (0.042)	94.508	***				3.967 (0.042)	94.623	***
gender: male	0.001 (0.006)	-0.114	0.91				-0.004 (0.0056)	-0.814	0.516	0.015 (0.0058)	0.259	.796				0.001 (0.0059)	0.174	0.862
NGO sector							0.158 (0.017)	9.445	***	0.143 (0.0173)	8.231	***				0.141 (0.018)	8.020	***
public sector	-0.136 (0.006)	-23.862	***				0.126 (0.0063)	19.903	***	0.104 (0.0065)	16.057	***				0.103 (0.0067)	15.585	***
company size									ns									
age									ns									
POQ	-0.141 (0.007)	-18.881	***							-0.130 (0.007)	-18.46	***				-0.135 (0.072)	-	***
UNDERSKILLED (US)	0.027 (0.018)	1.465	0.143													0.0197 (0.018)	1.088	***
POQ*US	0.071 (0.040)	1.766	0.077													0.087 (0.039)	2.228	0.026
1.2 Model fit																		
total df (Δ df)	76350			3			6 (3)			7 (4)						9 (6)		
- 2LL (Δ -2LL= Δ χ2)				247733.908			208721.928 (- 39011.98)			187033.274 (- 60700.634)						180807.573 (- 66926.335)		
AIC (Δ AIC)				247739.908			208733.928 (- 39005.98)			187047.274 (- 60692.634)						180825.573 (- 66914.335)		
BIC (Δ BIC)				247768.509			208790.147 (- 38978.362)			187112.200 (- 60656.309)						180908.761 (- 66859.748)		
2. Reduction in variance estimate																		
within countries							1.77			5.23			Cov (β _{0j} , β _{1j}) = - 0.03978, Wald Z = 1.457, p= 0.145			5.65		
between countries	1.3						12.54			10.01						10.31		

Source: own work.

Figure 3.2: The underskilling in literacy moderates the relation between POQ and job satisfaction



Source: own work.

3.4.1.2 The OOQ as main effect and job satisfaction as an outcome

When OOQ was considered the main effect, POQ was first tested as moderator. In developing the HMLR models, the null and M2 models remain the same for OOQ as for POQ, while in Model 3.2, OOQ has been included as the main predictor variable along with the control variables.

In this model, a big F ratio is associated with the OOQ, showing that OOQ is a significant predictor of job satisfaction, which was not known previously. If everything remains constant, a unit change in OOQ results in a reduction of 0.182 points in job satisfaction, supporting hypothesis H2a. Alternatively, having a higher educational level than the one required for the job post reduces one's job satisfaction by 0.182 units, compared to the individuals who are not overeducated, males, working in a sector other than the public sector. Model 4.2 with random slopes and intercepts was also assumed to achieve a model with a possibly lower deviance. However, that model's intercepts and slopes did not co-vary significantly ($\text{Cov}(\beta_{0j}, \beta_{1j}) = -$

0.0031, Wald $Z = -1.206$, $p = 0.228$), so the OOQ model with random slopes and intercepts has been omitted from further development of hierarchical modelling.

Model 5.2.a incorporated the main predictor variable OOQ, the control variables and the moderator variable POQ. The interaction term OOQ*POQ was significant, so hypothesis H3a that perceived overqualification moderates the relationship between the OOQ and job satisfaction is accepted. The slope for the interaction term OOQ*POQ suggested that it is a significant, negative predictor of job satisfaction ($\beta = -0.0398$, $p = 0.011$). A unit change in POQ results in a reduction of 0.039 units of job satisfaction (Table 3.5) or a decrease of 0.049 SD, *ceteris paribus*. Alternatively, the individuals who perceive themselves as overqualified and have an excess of education in relation to their job posts are more dissatisfied with their job, men rather than women, working in a sector other than the private sector (Figure 3.3). Model 5.2.a explained 6.04% of the variance in job satisfaction within countries and 11.77 % of the variance in job satisfaction between countries. When controlled for ISCO sensitiveness (Appendix 3.4), it turns out that the moderation effect OOQ*POQ is an insignificant predictor of the relation between overeducation and job satisfaction.

Models 5.2.b and 5.2.c were also tested where overskilling and underskilling in literacy were tested as moderators. Overskilling in literacy does not affect the relation between OOQ and job satisfaction and neither does underskilling, so hypotheses H6a and H6b were rejected.

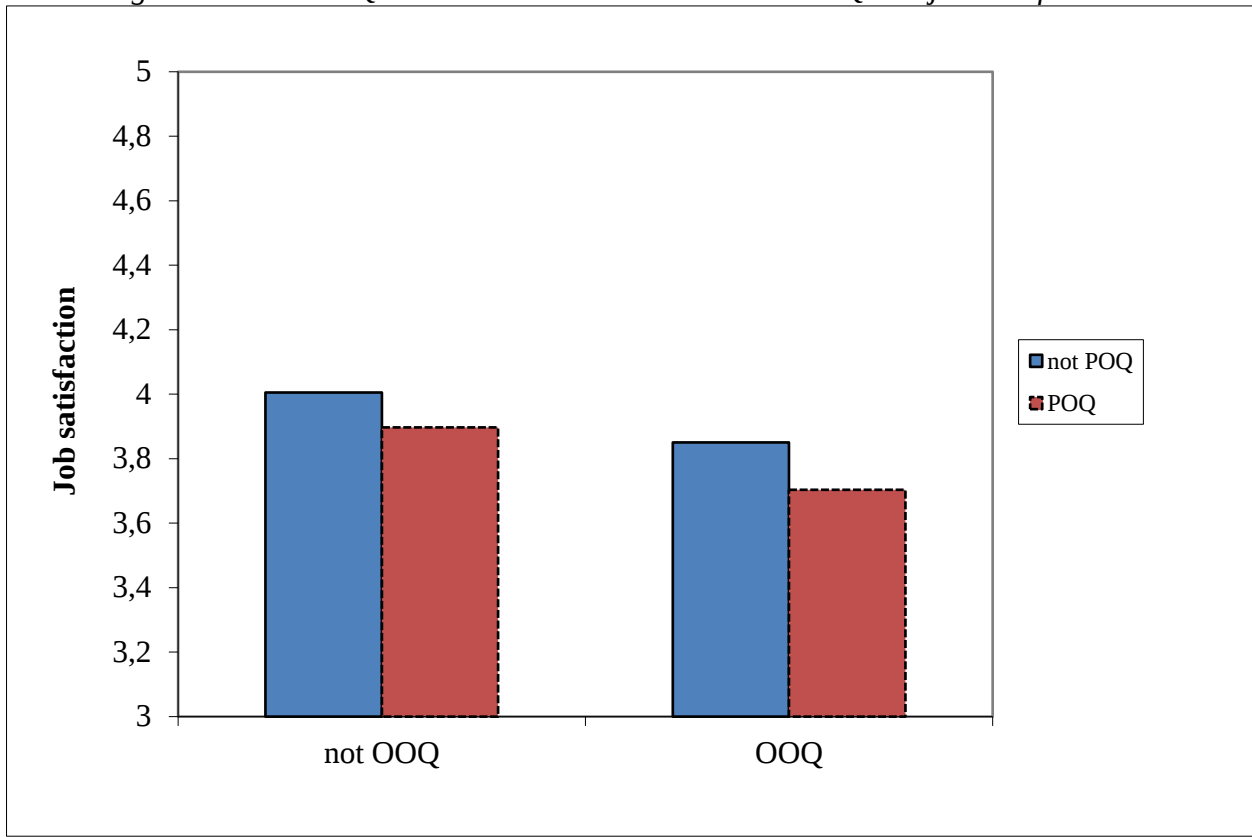
After controlling for ISCO sensitivity (Appendix 3.5 and 3.6, respectively), there are no changes in the results and parameter estimates, so the POQ*OS and OOQ*US remain non-significant moderators of the relationship between overeducation and job satisfaction even after controlling for occupational type.

Table 3.5: Hierarchical moderated regression, OOQ as main effect, POQ as a moderator, job satisfaction as an outcome

1. Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3.2.a			M4.2.a			M5.2.a		
1.1.Parameters	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.388 (0.019)	233.943	***	3.964 (0.0432)	91.783	***	3.92 (0.413)	26.396	***	3.978 (0.041)	95.645	***				4.005 (0.041)	96.241	***
gender: male	0.006 (0.006)	1.012	.312				-0.004 (0.0056)	-0.814	0.516	-0.0087 (0.0056)	-1.553	.120				-0.031 (0.0057)	-0.055	0.581
NGO sector							0.158 (0.017)	9.445	***	0.151 (0.0167)	9.038	***				0.139 (0.017)	8.039	***
public sector	-0.129 (0.006)	-21.206	***				0.126 (0.0063)	19.903	***	0.109 (0.0063)	17.221	***				0.096 (0.0064)	14.839	***
company size									n/a									
age									n/a									
OOQ	-0.166 (0.008)	-21.206	***							-0.182 (0.0061)	-29.68	***				-0.155 (0.077)	-	***
POQ	-0.107 (0.008)	-12.691	***													-0.108 (0.008)	-	***
OOQ*POQ	-0.059 (0.016)	-3.65	***													-0.039 (0.016)	-2.557	0.011
1.2 Model fit																		
total df (Δ df)	78745			3			6 (3)			7 (4)						9 (6)		
- 2LL (Δ -2LL=				247733.908			208721.928 (- 39011.98)			205618.69 (- 42115.218)						186151.234 (- 61582.674)		
AIC (Δ AIC)				247739.908			208733.928 (- 39005.98)			205632.69 (- 42107.218)						186169.234 (- 61570.674)		
BIC (Δ BIC)				247768.509			208790.147 (- 38978.362)			205698.207 (- 42070.302)						186252.7 (- 61515.809)		
2. Reduction in variance estimate																		
within countries	2.2						1.77			2.89			Cov (β _{0j} , β _{1j}) = -			6.04		
between countries							12.54			11.66			0.031, Wald Z = -			11.77		
													1.206, p= 0.228					

Source: own work.

Figure 3.3: The POQ moderates the relation between OOQ and job satisfaction



Source: own work.

3.4.2 Country relative income as an outcome

3.4.2.1 POQ as main effect and the country relative income as an outcome

When relative income effects (wages related to a country level decile) were considered an outcome, the acquired education was added as the control variable along with and the estimates from the OLS multiple linear regression. Hypothesis H1b is supported, meaning that POQ is a significant, negative predictor of wages ($\beta_1 = -0.457$, $t = -20.745$, $p < .001$). Hypothesis H5a (Table 3.6) is also supported, so the POQ*OS interaction affected this relationship between POQ and the wages negatively ($\beta_1 = -0.392$, $t = -5.455$, $p < .001$). Alternatively, workers who perceive themselves as overqualified and overskilled compared to the other workers in their country and the ISCO have a lower relative income compared to the workers who are not overskilled, are male, and work in a sector other than the private sector (Figure 3.4). After controlling for the ISCO (Appendix 3.7), no significant changes in the results or parameter estimates were found. The axis value is higher in this ISCO control model than in the HMLR reference model, while the type of sector and the type of occupation (ISCO variable) are not significant even in the control model, which also explains more variance.

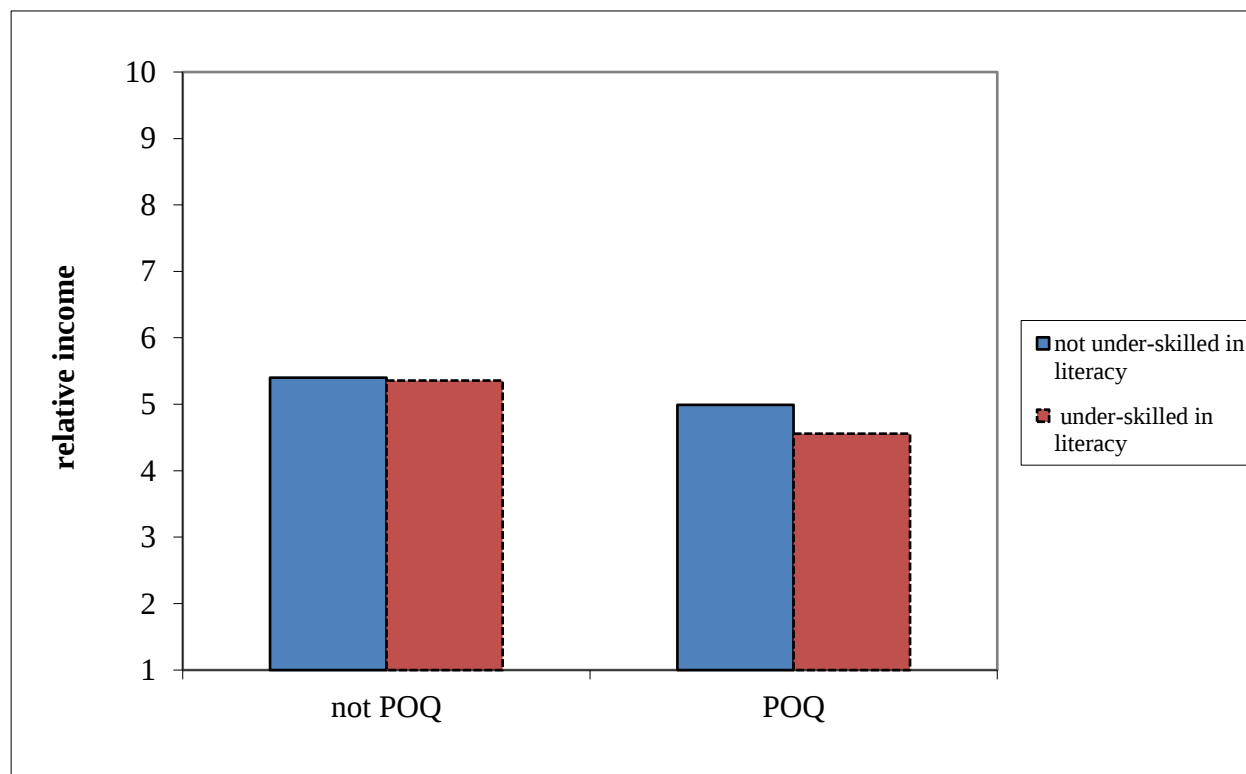
Table 3.6: Multiple linear regression POQ as main effect, overskilling in literacy as moderator, country relative income as an outcome

Model ^a	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	Sig
(Constant)	5.402	.068		78.968	***
acquired education	.823	.007	.402	119.706	***
gender	-1.783	.018	-.322	-97.221	***
sector type	-.029	.018	-.006	-1.645	0.100
perceived overqualification (POQ)	-.410	.024	-.060	-17.413	***
overskilling in literacy (OS)	-.043	.034	-.005	-1.264	0.206
POQ*OS	-.392	.072	-.021	-5.455	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles

Source: own work.

Figure 3.4: The overskilling moderates the relation between POQ and the relative income



Source: own work.

On the contrary, it was found that the POQ*US interaction positively affected the relationship between POQ and relative income ($\beta_1 = 0.369$, $t = 2.925$, $p = 0.003$), hence supporting hypothesis H5b (Table 3.7). Alternatively, workers who perceive themselves as overqualified and are less literate than the other workers in their country and the ISCO tend to have higher relative income than the workers who are not under-literate, are male, and work in a sector other than the private sector (Figure 3.5). The occupation type analysis (Appendix 3.8) also revealed that there are no significant changes in the results and parameter estimates, but this conctoral model explains for greater variance.

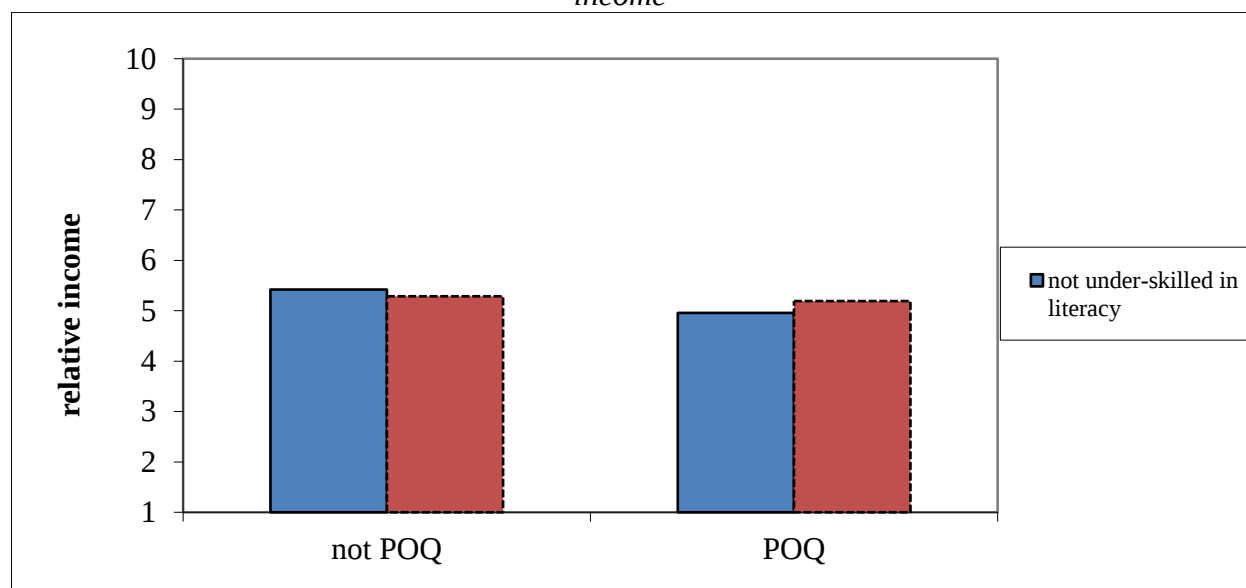
Table 3.7: Multiple linear regression, POQ as main effect, underskilling in literacy as moderator, country relative income as an outcome

Model ^a	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	Sig
(Constant)	5.421	.069		79.026	**
acquired education	.819	.007	.401	119.280	**
gender	-1.781	.018	-.322	-97.111	**
sector type	-.033	.018	-.006	-1.838	0.066
perceived overqualification (POQ)	-.465	.023	-.068	-20.546	**
underskilling (US)	-.135	.058	-.009	-2.347	0.019
POQ * US	.369	.126	.011	2.925	0.003

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles

Source: own work.

Figure 3.5: The underskilling in literacy moderates the relationship between POQ and relative income



Source: own work.

3.4.2.2 The OOQ as main effect and country relative income as an outcome

When considering the relative income as an explained variable and OOQ as the main predictor, the OLS estimates were again taken into account. Hypothesis H2b is supported as OOQ is a significant, negative predictor of relative income ($\beta_1 = -1.5$, $t = -80.740$, $p < .001$). The OOQ*POQ interaction affected this relationship between POQ and the s negatively ($\beta_1 = -0.353$, $t = -7.406$, $p < .001$), so hypothesis H3b (Table 3.8) is also supported. Alternatively, the workers who are overeducated and perceive themselves as overqualified tend to have lower relative income than the workers who do not perceive themselves as overqualified, are male, and work in a sector other than the private sector (Figure 3.6). Apart from explaining more variance there are no significant results in sensitivity, when this model is controlled for the ISCO (Appendix 3.9).

The confirmation that OOQ is a significant, negative predictor of relative income ($\beta_1 = -1.5$, $t = -80.740$, $p < .001$), also demonstrated that the OOQ*OS interaction has negatively affected the relationship between OOQ and relative income ($\beta_1 = -0.209$, $t = -3.586$, $p < .001$). In turn, hypothesis H7a is supported (Table 3.9). Alternatively, the workers who are overeducated and are overskilled in literacy compared to their counterparts from the same country and ISCO, tend to have lower relative income than the workers who are not overskilled in literacy, are male, and work in a sector other than the private sector (Figure 3.7). Again, apart from explaining more variance, there are no significant results in sensitivity when this model is controlled for ISCO (Appendix 3.10).

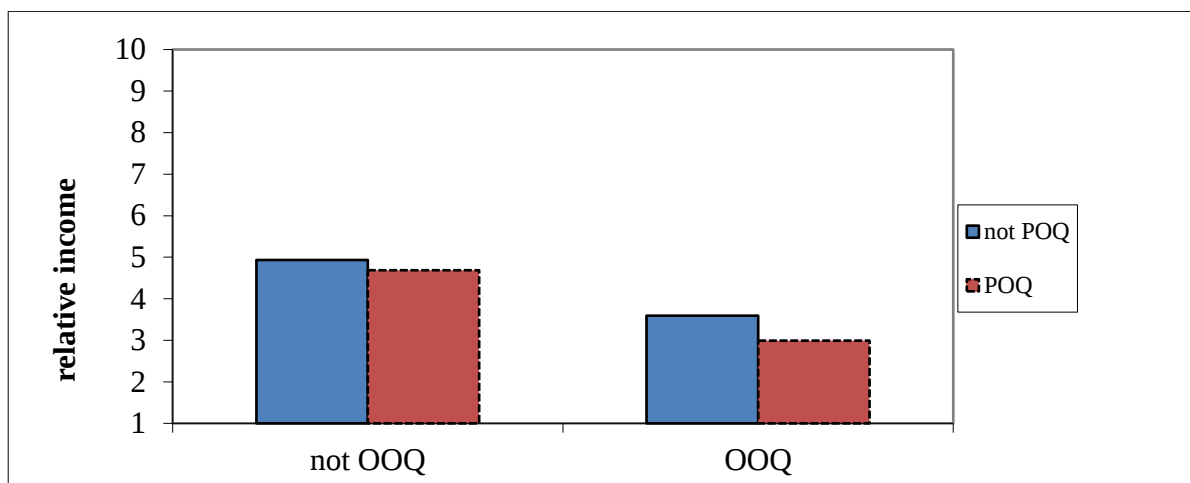
Table 3.8: Multiple linear regression, OOQ as main effect, POQ as moderator, country relative income as an outcome

Model ^a	Unstandardized		Standardized Coefficients		
	B	SE	Beta	t	sig
(Constant)	4.931	.065		75.312	***
acquired education	.927	.007	.453	137.265	***
gender	-1.736	.018	-.314	-98.905	***
sector type	.077	.017	.015	4.539	***
objective overqualification (OOQ)	-1.342	.024	-.206	-56.453	***
perceived overqualification (POQ)	-.245	.025	-.036	-9.745	***
OOQ*POQ	-.353	.048	-.030	-7.406	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles

Source: own work.

Figure 3.6: The POQ moderates the relationship between OOQ and relative income



Source: own work.

On the other hand, the underskilling in literacy did not affect the relation between OOQ and relative income, so hypothesis H7b is not supported. Even after controlling for ISCO (Appendix 3.11), there are no significant changes in the results.

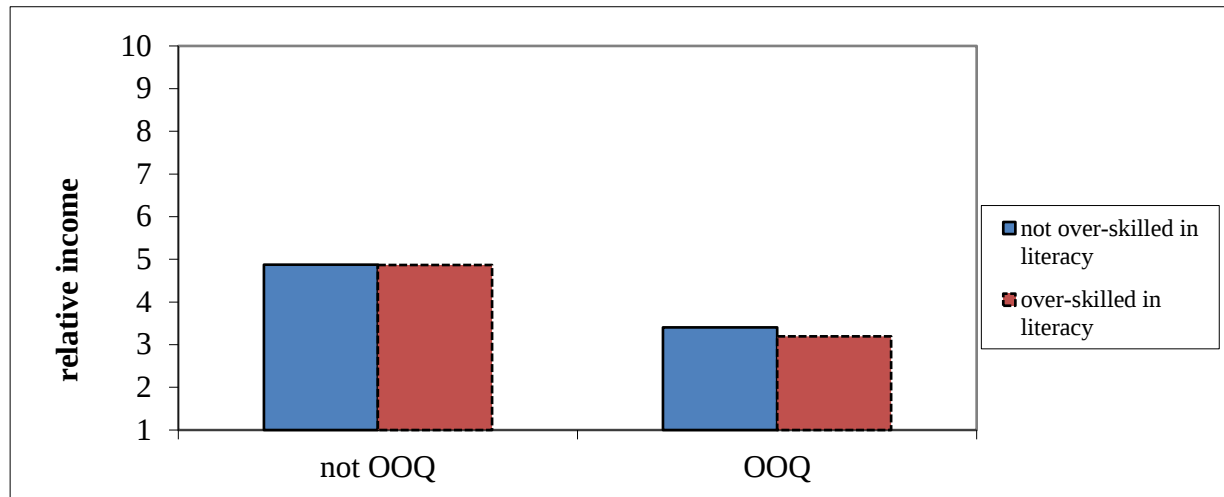
Table 3.9: Multiple linear regression, OOQ as main effect, overskilling in literacy as moderator, country relative income as an outcome

Model ^a	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	sig
(Constant)	4.876	.064		76.516	***
acquired education	.923	.006	.455	145.478	***
gender	-1.730	.017	-.309	-101.412	***
sector type	.083	.017	.016	4.964	***
objective overqualification (OOQ)	-1.468	.020	-.237	-73.432	***
overskilling in literacy (OS)	-.007	.035	-.001	-.196	.844
OOQ*OS	-.209	.058	-.014	-3.586	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles

Source: own work.

Figure 3.7: The overskilling in literacy moderates the relation between OOQ and the relative income



Source: own work.

3.5 Discussion

This chapter contributed to the existing body of knowledge from several aspects. First, POQ as a moderator makes the negative relationship between OOQ and job satisfaction more evident, although the non-overeducated individuals who perceive themselves as overqualified are more satisfied with their jobs than those who are both objectively and subjectively overqualified. In fact, the perception of being overqualified is not always due to the actual state of overqualification, and there are differences in how individuals perceive, feel or are aware of being overqualified. It also suggests that perceived overqualification may be the result of overskilling or excess of work experience, which also affects feelings of deprivation.

The perceived overqualification as a moderator also exacerbates the negative relationship between OOQ and wages because it lowers income for more than one decile in a country setting, while individuals who are not overeducated remain within an equal income decile. I will again refer to the overskilling as one modality of perceptions of overqualification, which has been shown to have a significant partial effect on wage losses here (Allen & Van der Velden, 2001; Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014).

Seemingly, being underskilled in relation to the other individuals in the country and in the occupation buffers the negative relationship POQ has with job satisfaction and relative income. Nevertheless, overskilling does not imply opposite moderating effects because the overskilled individuals who do not perceive themselves as overqualified are more satisfied with their jobs than the overskilled individuals perceiving themselves as overqualified.

This paradox becomes even more apparent when OOQ is considered as the main effect. Since it was previously known that the overeducated are not also overskilled, one contribution of this

chapter is that the literacy mismatch, through any of its modalities, does not affect the relationship between OOQ and job satisfaction. In fact, the overeducated individual's job (dis)satisfaction would not change because he is overskilled, underskilled or literacy mismatched. From this perspective, overeducation and overskilling do not lead to the same or the opposite, OOQ does not trigger overskilling, and skill mismatch does not moderate the relationship between OOQ and job satisfaction. The feeling of deprivation due to OOQ cannot be moderated by overskilling because the surplus of education is not the surplus of skills, and both cannot be expected to trigger feelings of deprivation at the same time.

Concerning reduced relative income, it is true that overskilling reduces it and underskilling increases it if this loss of income is due to perceived overqualification. Consequently, overeducated and overskilled individuals receive a lower income than those who are also overeducated but not overskilled. This could be due to the inability of the education system to provide the labour market with the necessary skills, or the mismatch between education and training systems that have been widely argued (Desjardins & Rubenson, 2011) or even the inability of employers to assess the skills of potential employees. Such lack of impact of skill mismatch on wages seriously challenges human capital theories that education and earnings should rise based on overall acquired skills.

3.5.1 Theoretical implications

The present research contributed to the existing body of knowledge from several theoretical stances. The biggest one is in providing the literature with a moderator that alternates between alleviating and augmenting the negative relationships between objective and perceived overqualification and job satisfaction and relative income. This thesis takes an etymological stance that OOQ, POQ and skills exemplified through literacy (as a direct effect of schooling) rely on different nomological networks. In further considerations, they should all be considered separately.

It clarifies the two relevant theories by exemplifying that the literacy mismatch, as a direct skill resulting from schooling, does not affect the feelings of deprivation equally (or not at all) when considering OOQ or POQ. It also does not moderate the relationship between them and the relative income loss.

This chapter also exemplified the simultaneous use of the three known methods for measuring vertical mismatch (Quintini, 2011; Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014), i.e. self-assessment (POQ), job analysis (OOQ), and a statistically-realized match (literacy mismatch). Thereby, the adequate choice of an empirical measurement technique might affect the research results. For example, there are more overeducated individuals (less than 29%) than individuals perceiving themselves as overqualified (less than 21%).

The findings also exemplify how the introduction of varying random coefficients and RML estimation relate to the OLS. This provided bigger or similar standard errors but certainly explained more variance in the outcomes. Had the hierarchical structure of the data been omitted, this might have led to a different conclusion compared to the one reached when using OLS. Paradoxically, although one would expect smaller standard errors in the OLS model and Type 1 errors, here we are faced with the complete opposite. Namely, both the over-skilling and under-skilling in literacy were insignificant moderators of the POQ – job satisfaction in relation to the OLS models, whereas, in the HMLR model, they alleviated or augmented the job dissatisfaction. Unlike for the POQ, the moderation effects from OLS and HMLR on OOQ led to the same conclusions, emphasising the more substantial effect the OOQ*POQ moderator has in the OLS compared to the HMLR model.

More important is the dissemination of the general definition of overqualification. Being OOQ, POQ, or over-skilled are rather different concepts, but they all lead to the same outcomes. Their consideration in this chapter stressed the deviation from the stance that they are different operationalizations of the same “overqualification” construct, particularly because their confirmed direct effects on job satisfaction and relative income do not always overlap. In the end, the division of OOQ into six clusters certainly provided more variance in the confirmed direct and moderator effects.

3.5.2 Practical implications

This chapter is beneficial to professionals, as well, because it sheds light on a moderator that engenders employees' skills through literacy and impedes the adverse effects caused by overqualification. Considering all of them simultaneously and apart at the same time made it clear that HR policies and practices that focus on only one aspect of employee overqualification do not comprehend its embeddedness and do not know how to tackle it. The lack of literacy moderating effects in relation to the OOQ revealed that on an individual level, the mismatch does not recompense or aggravate the deprivation feelings caused due to exceeding education. Seemingly, the under-skilling in literacy has a confirmed positive effect on POQ and job satisfaction and relative income, but it does not recompense for the wage loss incurred due to exceeding education.

This chapter also offers a tool, an unbiased measure of literacy mismatch and proficiency assessment, which was challenging to determine before. Furthermore, it is vital to separate skills from education and subjective feelings of overqualification, something an employer should consider when assessing vertical employee/job-candidate-job fit. One should also not disregard the more substantial effect OOQ has on job satisfaction and relative income when compared to POQ. It is also essential that OOQ and the skills mismatch do not overlap. Alternatively, being mismatched in both cases does not imply any effect on job satisfaction or relative income.

The conclusions drawn in this chapter are also valuable for stakeholders in the skills formation process, especially regarding the involvement of companies and the commitment of countries to vocational training. Regardless of the strength of the duality between business (organization) participation and country engagement in VET and corporatist decision-making bodies (Emmenegger & Seitzl, 2020), this chapter provides a common ground to illustrate the intersection of education and skills through literacy. By setting out the boundary conditions for the occurrence of OQ, it provides all stakeholders - individuals, unions, employers, and political authorities - with a corresponding life cycle: "skill begets skills" (Cunha, Lochne & Masterov, 2006) by illustrating the unbiased approaches to simultaneous measurement at the individual and cross-national levels. To this end, one should also emphasize that the surplus of the former does not imply the surplus of the latter, something that should also be considered in policymaking in the skill formation process.

The same has been done for the GAML and SDG-4 effective learning outcomes, particularly for targets 4.1.1 and 4.6, by illustrating the use of the PIAAC framework to assess skills proficiency and overqualification, rather than using scattered national reports that require additional benchmarks (Altintok, 2017). In doing so, this paper has illustrated the various characteristics of the overqualification types, particularly overeducation associated with above-average literacy skills, in relation to job satisfaction and relative earnings, both individually and at the country level, where possible.

3.5.3 Limitations and future research

The first limitation of this chapter is that although skill mismatch in literacy seemed theoretically accurate as a moderator, it was not empirically applied to OQ-job dissatisfaction. Furthermore, neither social moderators nor level 2 moderators were tested for any of the hypothesized relationships, as there was no covariation of slopes and intercepts within the hierarchical models. It should also be emphasized that gender, age, and organization-company size, although accounted for, were not significant predictors of objective or perceived overqualification of workers. The same goes for the occupational sensitivity of the results because when the results are controlled for ISCO, it turns out that it does not affect them at all but simply explains more variance. Although overqualified individuals (both objective and perceived OQ) have lower job satisfaction than other individuals, the confirmed buffer effects of the skill mismatch have led them to be satisfied with their jobs rather than indifferent (neither satisfied nor dissatisfied).

However, this chapter offers several implications that could be retained as starting points for future research, such as, first and foremost, the distinction between objective and perceived overqualification and skill mismatch. A good starting point would be to look theoretically at the content of perceived overqualification, which is often based on the employee's work experience in addition to education and skills.

The unsupported hypothesized moderating effects that skills mismatch has on the relationships between objective overqualification and job satisfaction or relative earnings suggest that skills and education should be considered separately with respect to these two outcomes. This is emphasized because both education and skills (and mismatches for both) were previously known to directly affect these outcomes. Here, however, skills were exemplified through literacy, and it is quite challenging to consider whether problem-solving or numeracy skills (from PIAAC) or even some other skills affect any of the current hypothesized relationships. It would also be valuable if one could identify other skill mismatches that have confirmed moderation effects on the relationships, as was the case with the literacy mismatches.

4 THE MODERATING ROLE OF ELABORATIVE LEARNING STRATEGIES ON EMPLOYEE OVERQUALIFICATION, JOB SATISFACTION AND RELATIVE INCOME

4.1 Introduction

The main objective of this chapter is to examine whether the dual cognitive processes on which elaborative learning strategies (ELS) are based affect job dissatisfaction and country-relative income due to perceived overqualification of employees and whether these ELS moderate the relationships between objective overqualification and job satisfaction and relative income.

Taken to a higher level, such a constellation of two opposing processes is also worthy of theoretical consideration. Are these elaborative learning strategies, a derivative of self-regulation, the counterbalance to the relative deprivation theory. In a nutshell, such a theoretical tension is also notable because this self-regulation, a modality of environmental modelling processes, opposes the processes that are the roots of feelings of deprivation.

Although human capital theory emphasizes the enhancing effects that training and education have on workers' earnings (Becker, 1962; Mincer, 1974), paradoxically, the overqualification of workers (OQ) leads to wage losses and inequality. Through job dissatisfaction, OQ also triggers feelings of deprivation (Crosby, 1984), leading to other negative individual and organizational outcomes. The ELS, as a modality of self-regulation, are opposed to these two (Artlet, Baumert, Julius-McElvany & Peschar, 2003; Kirby, Knapper, Evans, Carty & Gadula, 2003; Zhang, Law & Lin, 2016), as achievement- (or goal-) oriented people who employ ELS also show improved performance (Artlet, Baumert, Julius-McElvany & Peschar, 2003), reduced anxiety (Schmeck, 1983), and proactive behavior (Zhang, Law & Lin, 2016). Thereby, the starting point is the following research question: *“How do elaborative learning strategies moderate the relationship between overqualification and its outcomes?”*

From a theoretical perspective, this chapter's originality consists of it making it clear that the distinction between objective overqualification (overeducation) and perceived (subjective) overqualification is necessary, as well as conceptual rather than etymological. It considers two different constructs of overqualification of workers that lead to the same negative results.

In this regard, one can argue that this set framework raises a double discrepancy. From a theoretical perspective, it is worth considering whether ELS, which guarantees academic success, would also benefit overqualified employees. The second, empirical aspect, is equally motivating, as it may be necessary to specify a model, a measurement scale of ELS for these two populations since they rely on measurement variables from PISA (academic population) (Kirby, Knapper, Evans, Carty & Gadula, 2003) and a measurement scale for the worker population. Furthermore, this chapter's originality also lies in the conceptualization and measurement of ELS, which would also complement the existing theoretical framework by comprehensively bridging the theoretical and empirical antecedents of ELS.

The confirmed hypothesized findings would contribute to the OQ literature with a substantial moderator that mitigates or augments the impact on job dissatisfaction or wage loss in terms of occupational level and country, which is demonstrated in terms of the hierarchical structure of the data. I also draw a parallel between such data and view the data as linear to highlight discrepancies in the research findings and results in the second case.

This chapter would also be of use to the professional community in clarifying the extent to which modelling the environment through self-regulation (in this case, through ELS) impacts OQ outcomes. This chapter will also identify the learning processes through which this occurrence operates in order for the professionals to deal with employee overqualification.

All of this adds value to this chapter because it meets the research needs and helps to understand this relationship between the individual, group, organizational, and societal moderators and mediators (Hu et al., 2015), as well as how OQ varies between countries (OECD, 2013d), and even the fact that this variability is less obvious or not even studied in emerging economies and outside the Western world (Erdogan & Bauer, 2009; Zhang, Law & Lin 2016).

4.2 A theoretical framework on employee overqualification

4.2.1 The main employee overqualification outcomes

The employees' OQ is education, skills, and work experience that go beyond the qualifications required for the job or by the employer (Feldman & Maynard, 2011; Erdogan, Bauer, Peiró & Truxillo, 2011; Kuhn & Shen, 2012; Hu et al., 2015; Erdogan, Bauer & Karaeminogullari, 2017).

The practical significance of the chapter lies in mitigating the negative effects of overqualification since the most common one is employee dissatisfaction (Ortiz, 2010; Erdogan & Bauer, 2009; CEDEFOP, 2010; Quintini, 2011; Maltarich, Reilly & Nyberg, 2011; Alfes, Shantz & Baalen, 2016). This dissatisfaction at work leads to increased turnover intentions (Allen & Van der Velden, 2001; Erdogan & Bauer, 2009; McKee-Ryan & Harvey, 2011; Liu, Luksyte, Zhou, Shi & Wang, 2015; Zhang, Law & Lin, 2016), on-the-job-search (Quintini, 2011), and psychological stress (CEDEFOP, 2010; Ortiz, 2010). This is of concern to organizations due to the increased turnover rate (Allen et al., 2007; Quintini, 2011), counterproductive work behaviors (Luksyte, Spitzmueller & Maynard, 2011), and lower productivity of workers (Allen et al., 2007). Additionally, the OQ employees suffer a wage penalty according to their education levels (Brynin, 2002) and wage inequality (Handel, 2003; Di Pietro & Urwin, 2006).

4.2.2 Theory and hypotheses development on objective overqualification (overeducation) and subjective (perceived) overqualification

The theory of relative deprivation (Crosby, 1984) points out that overqualification leads to a feeling of being deprived of a certain type of job below what was promised before. One's perception that someone else has this job while feeling entitled to it and believing that they deserve to get it leads to job dissatisfaction, psychological stress, frustration, anger, and negative psychological consequences.

Overqualification also challenges the human capital theory on the hypothetical productivity-enhancing effects of education from several aspects, as there are income penalties that arise from a mismatch between education and income, which has a substantial impact on wages. It is why in this chapter, just as in chapters two and three, the challenge is to examine whether these penalties result from the perception of overqualification alone.

The empirical framework used in considering OQ and testing moderators confronted with their negative outcomes rarely deviates from the designation of OQ as self-reported or perceived (Erdogan & Bauer, 2009; Liu, Luksyte, Zhou, Shi & Wang, 2015; Zhang, Law & Lin, 2016; Alfes, Shantz & Baalen, 2016). This "perceived" overqualification (POQ) is about one's own awareness, feelings, or perceptions that his qualifications exceed the requirements of his job. Given the fertile theoretical background supporting this construct, the sample of this chapter needs to be used to validate whether:

H1a: Perceived overqualification reduces job satisfaction.

H1b: Perceived overqualification reduces the relative income.

Next, in PIAAC, the qualification mismatch is more "objective" (OOQ), as it considers workers employed in jobs that require lower or higher skills/education levels than the ones they have

(Quintini, 2011; Zhang, Law & Lin, 2016). If the difference between the worker's skills/education level and the skill level required for the job is positive, the worker is considered overqualified (Quintini, 2011). Hence, it is challenging to find out whether two concepts achieve the same results (Hu et al., 2015), as OOQ does not consider the fact that people with the same qualifications who work in comparable positions often experience different levels of POQ (Erdogan, Bauer, Peiró & Truxillo, 2011). This leads to the following hypotheses:

H2a: Objective overqualification reduces job satisfaction.

H2b: Objective overqualification reduces the relative income.

4.2.3 Theory and hypotheses development on the moderating role of elaborative learning strategies

Learning strategies are derived from learning styles, the predispositions to use a particular learning strategy independent of the task, or as a "translation of personality and cognitive style traits into learning behaviours" in the face of the task (Schmeck, 1983; Boyce, Williams, Kelly & Yee, 2001). Learning strategies are embedded in the theoretical perspective of self-regulation (Mithaug, 1993), as people optimize their adaptations to get what they expect from their environment. The ability to do so characterizes competent learners who can regulate their learning (Zimmerman & Martinez-Pons, 1990; Brown, Bransford, Ferrara & Campione, 1983).

When considering learning strategies as moderators, I stress the earliest taxonomy developed by (Weinstein & Mayer, 1983), which is used empirically in this chapter, since there were initially distinct "deep" and "elaboration" learning processes. Further on, these deep and elaboration processes are combined into ELS, which is defined as "the need for active cognitive processing by the learner by adding or modifying in some way the material one is trying to learn to make it more meaningful and memorable by paraphrasing and summarizing it as an underlying cognitive process", as in (Weinstein, Acee & Jung, 2011).

Elaboration processing goes beyond the given content and expands it to include additional information from the learner (Weinstein & Mayer, 1983; Simsek & Balaban, 2010). It translates new information into the learner's terminology and generates concrete examples from the learner's own experience (Schmeck, 1983). The learner uses new words in a sentence (Weinstein, Acee & Jung, 2011) or acquires an understanding of the new material by relating it to prior learning and knowledge (Artlet, Baumert, Julius-McElvany & Peschar, 2003). Schmeck (1983) emphasized that elaborative processing also involves the use of visual imagery to "encode new ideas" and refers to the ability to write, use mental imagery, subjectively organize words, and use visual and auditory orientations to organize information. (Weinstein, Acee & Jung, 2011) related it to applying new information to one's life, matching, using analogies, generating metaphors, making comparisons, and writing questions.

Next, although this self-regulatory perspective on learning (self-efficacy in learning) is always performance-oriented (Weinstein, Acee & Jung, 2011; Liem, Lau & Nie 2008; Sitzmann & Ely, 2011) and widely regarded as an academic achievement resulting from the implementation of learning strategies (Simsek & Balaban, 2010). It is also about employee performance (Kirby, Knapper, Evans, Carty & Gadula, 2003).

Indeed, the "academic" perspective of this self-regulation emphasizes the importance of students' metacognitive skills and information processing strategies (Kolb, 1984) through the modulation of affective, cognitive, and behavioral processes throughout the learning experience to achieve a desired level of performance (Sitzmann & Ely, 2011). These academic learners are said to be strategic to take more responsibility for their own learning processes, metacognitive control, motivation and other generative learning thoughts and behaviors (Artlet, Baumert, Julius-McElvany & Peschar, 2003; Weinstein, Acee & Jung, 2011). Adopting ELS has many positive effects, such as a strong positive relationship with students' test scores and an increase in the impact of education and training on skills (OECD, 2013d). Successful students use more varied and better learning strategies than unsuccessful ones (Artlet, Baumert, Julius-McElvany & Peschar, 2003; Simsek & Balaban, 2010).

From an "employee" perspective, self-regulation is crucial for the overqualified to practice constructive behaviours within the organization proactively and not be distracted by suboptimal working conditions (Zhang, Law & Lin, 2016). This sheds a positive light on certain overqualification outcomes, such as the ability to perform a broader range of work tasks beyond prescribed job requirements (also known as RBSE-role breadth self-efficacy (Parker, 1998), and indirectly on their proactive behaviours through RBSE, too (Zhang, Law & Lin, 2016). Furthermore, it also highlights the deep approach to learning at work as more necessary and desirable than in school, as "the deep approach to learning seeks meaning and understanding" (Kirby, Knapper, Evans, Carty & Gadula, 2003, p. 33) and is positively associated with greater productivity, leading to more management support, good supervision, and choice.

Seemingly, a supportive and challenging environment promotes deeper learning. However, if the paradox that POQ through RBSE and proactive behaviour has a positive effect were true, then it would be a double paradox that, for POQ workers, the learning goal orientation (LGO) mitigates this positive effect (Zhang, Law & Lin, 2016). Indeed, they emphasized that a strong LGO suggests that by continuously focusing on learning new things on the job, workers can develop higher self-confidence to build self-efficacy when exploring new and challenging tasks, regardless of how many work-related skills and qualifications they perceive to have. Although, inversely, Zhang, Law & Lin, (2016) claimed that OQ employees with a high LGO (as opposed to those with a performance GO) might not favour their POQ, unlike those with a low LGO. Nevertheless, a baseline stance is that workplace learning negatively contributes to POQ, so it is hypothesized that:

H3: The elaborative learning strategies moderate the relationship between perceived overqualification and job satisfaction by making it less negative.

On the other hand, as there is neither theoretical nor empirical embeddedness that ELS affect the POQ–relative income relationship, it has not been hypothesized that the ELS would, in any way, affect the relationship between POQ and relative income.

As for the OOQ, when one's educational credentials overwhelm those required for the job post, presumably leading to job dissatisfaction, it is worth considering whether the process of learning at work itself or the ELS are more likely to affect this relationship. However, because ELS are the purposeful process by which individuals regulate their cognitions, emotions, and behavioural efforts to manage their discrepancies and achieve their personal goals (Zhang, Law & Lin, 2016), it is expected for them to mitigate this negative relationship:

H4a: The elaborative learning strategies moderate the relationship between objective overqualification and job satisfaction by making it less negative.

Not considering the wage penalty which exists due to one's educational level, it should be noted that, for the employees who do learn at work, the ELS enhances the positive effects education has on their skills (Zhang, Law & Lin, 2016). When controlled by ELS, the effect education has on skills significantly changes, as education, too, has a distinctly positive effect on income. Therefore, the following hypothesis is formed:

H4b: The elaborative learning strategies alleviate the negative relation between the objective overqualification and relative income.

4.3 Methodology

4.3.1 The data and sources

The main data was extracted from the PIAAC Questionnaire (50 to 60% response rates), per country, which sampled 33 countries represented by a non-institutionalized population, aged 16-65, residing in the country at the time of data collection (OECD, 2013a). This thesis looks at 27 out of the 33 countries included in the Questionnaire, setting this study sample size to N=156,068. Apart from having data on the main variables of the dissertation, PIAAC is also appropriate for developing and proposing a new measure of deep and elaborative processing as a modality of learning strategies, both for students and workers.

4.3.2 Measurement variables

4.3.2.1 Outcomes

The first dependent variable was the job satisfaction found in the Questionnaire, which was measured at a standard five-item scale (see Appendix 2.1 for the design of the dependent variable). As for the (relative) income level per country, a Questionnaire item was used, in which each participating country provided one's monthly earnings (including bonuses) converted into deciles, based on that country's national earnings distribution (OECD, 2013a).

4.3.2.2 Explanatory variables

Perceived overqualification (POQ) was operationalized upon the answers of the respondents' stated necessary level for doing the job satisfactorily. The results showed that 20.8% of employees perceived themselves as overqualified.

Objective overqualification (OOQ) was conceptualized as any positive difference between the highest acquired level of education measured on the ISCED scale (OECD, 1999; UNESCO, 1976) and the necessary ISCED educational level as stated by the respondents (Appendix 1.1). For this purpose, all ISCED categories were grouped into six broader categories, whereas, following (Liu, Luksyte, Zhou, Shi & Wang, 2015) the master and research educational levels were set as distinct from one another and lower tertiary education. As a result, 28.9% of the individuals turned out to be objectively overqualified or overeducated (Table 4.1).

4.3.2.3 Moderator variables

The measurement model of this chapter for the design of the ELS moderator variable(s) was based on the PIAAC questionnaire items on in-depth work learning (Questionnaire Cronbach's $\alpha=0.78$) (OECD, 2013a). Nevertheless, most of these existing scales have been developed for students, on the concept of self-regulated learning, as in PISA 2000 (OECD, 2010), unlike other approaches which deal explicitly with learning in the workplace (Kirby, Knapper, Evans, Carty & Gadula, 2003), as these two aspects are not always consistent.

Therefore, after consideration, the exploratory factor analysis (EFA) model was abandoned with one ELS latent variable loaded on all six indicators - the PISA questionnaire items for "deep elaborative learning". This was also due to existing criticism that the EFA approach on the "eigenvalues ≥ 1.00 rule "overestimates/underestimates" the number of components extracted, and therefore does not always result in reliable factors. The present ELS-EFA model supported this claim, as when a single latent factor was loaded, it showed poor fit of the measurement model or significant differences between values predicted by the model and the values observed from the environment that was being modelled (RMSEA=.114) (Table 4.2).

For dealing with the inconsistency of these discrepancies in EFA/ELS empirical approaches, in this chapter, the ELS variable was designed using a confirmatory factor analysis (CFA) in the AMOS software represented by two latent factors (Appendix 4.1), as it was the earliest ELS

taxonomy (Figure 4.1). The first latent factor led to Weinstein's taxonomy of deep processing through summarizing, critically evaluating, conceptually organizing, comparing, and contrasting the information studied (Schmeck, 1983; Boyce, Williams, Kelly & Yee, 2001). The latent factor on elaborate processing included paraphrasing, translating new information into one's own terminology, generating concrete examples from one's own experience, applying new information to one's own life and using visual images to encode new ideas, or thinking of new ways to solve a problem and relating the problem to existing knowledge (Artlet, Baumert, Julius-McElvany & Peschar, 2003).

The measurement sub-model, which related the unobserved (latent) variables to their observed indicators, showed factor loadings above .71. The indices of the structural sub-model showed a good fit ($RMSEA < .08$) and a good observed/predicted correlation of the latent variables to the structural model ($SRMR \sim 0$, Table 4.2).

4.3.2.4 Control variables

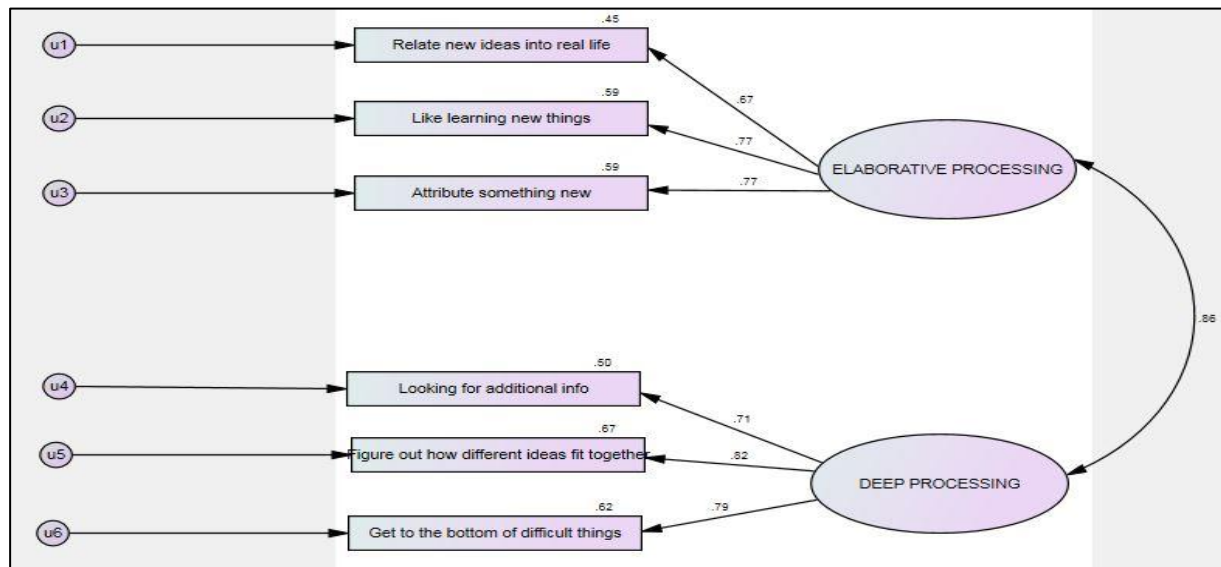
Four control variables were considered for the relationships between predictor, moderator, and outcome variables, including respondents' age divided into 5-year clusters, gender, and company size and sector type (Table 4.2). The effects on relative income due to overqualification were also controlled for the acquired education (Appendices 1.2 and 1.3).

This is due to the fact, that the overqualification seemed to affect younger employees more (Quintini, 2011) and the generalizability to other employee groups is to be considered as well (Erdogan & Bauer, 2009).

What was analyzed next was the sector type and company (organization) size so as to check if overqualification occurs when human capital is traded for job security (Ortiz, 2010) by working in stable, long-term jobs in the public sector (Allen et al., 2007), or it is simply a weakness of certain professional sectors (Melink & Pavlin, 2012) to generate overqualified workers, such that the "choice of job or sector creates an intermediate step between individuals' characteristics and their earnings" (Sattinger, 1993; Ortiz, 2010). As in the previous two chapters, the hypothesized relationships were tested for gender, which is ambiguous.

In a separate procedure, the results were tested for their sensitiveness to sectoral/occupational differences based on ISCO standardization (Appendices 4.2 to 4.4).

Figure 4.1: AMOS CFA model of elaborative learning strategies



Source: own work.

4.3.3 Descriptive statistics

There seems to be a negative correlation between the two types of ELS and the two types of overqualification of workers (Table 4.3) when it comes to the level of OOQ and POQ per country and the level of deep and elaborative processing ELS (Table 4.1). However, there are no patterns between the degree of overqualification and the degree of ELS, regardless of the type of the first one or the second one.

Although on average, more than three ELS (both DP and EP) are employed by one person, it is again the Scandinavian countries that report the most ELS on average. Finland leads the way with an average of 3.9 deep ELS per person and an average of four elaborative ELS per person. The countries with the lowest scores in these two areas are Japan and Korea, with an average of three and fewer ELS per person. Other countries below average are Belgium, Estonia, Lithuania, the Netherlands, Singapore and Turkey, scoring less than 3.5 for deep processing ELS and elaborative processing ELS. The same is true for Estonia, Lithuania and Singapore.

Table 4.1: Cross-country overview of perceived, objective overqualification and deep, elaborative processing learning strategies

Country	POQ	OOQ	Deep processing ELS	Elaborative processing ELS
Austria	16.5	25.5	3.68	3.59
Belgium	23.5	22.7	3.31	3.52
Chile	15.8	22.1	3.85	3.77
Czech Republic	25.7	26.0	3.64	3.53
Denmark	15.5	25.2	3.86	3.82
Estonia	17.3	37.4	3.45	3.46
Finland	23.9	20.8	3.90	4.00
France	24.3	37.7	3.77	3.61
Germany	21.8	27.8	3.63	3.54
Greece	15.5	31.0	3.58	3.72
Ireland	20.6	35.6	3.79	3.56
Israel	19.3	45.6	3.64	3.72
Italy	15.9	21.4	3.74	3.75
Japan	22.3	35.2	2.84	3.13
Korea	28.2	27.9	2.77	3.02
Lithuania	23.9	35.5	3.35	3.45
Netherlands	15.4	20.5	3.27	3.52
New Zealand	28.6	48.0	3.90	3.77
Norway	18.5	29.6	3.80	3.78
Poland	26.9	25.0	3.78	3.57
Singapore	18.2	23.5	3.44	3.37
Slovak Republic	21.2	22.3	3.66	3.54
Slovenia	14.2	15.5	3.65	3.58
Spain	17.8	34.4	3.72	3.72
Sweden	23.5	23.1	3.77	3.90
Turkey	13.1	21.8	3.35	3.52
United States	26.8	26.5	3.98	3.88
MEAN	20.8	28.9	3.60	3.60

Source: own work.

Table 4.2: Confirmatory factor analysis: indices of structural sub-model fit

model	ADEQUACY OF THE FACTOR LOADINGS / STANDARDIZED RESIDUALS		DEGREE OF MODEL FIT									Explained variances for the measurement variables (x 100%)
	Regression Weights	Regression Weights/ covariances	CMIN	CMIN/DF	NFI	RFI	IFI	TLI	CFI	RMSEA	SRMR	
single latent factor model	(.630 - .781)	n/a, only one latent factor	18126.442	2014.049	.954	.892	.954	.892	.954	.114	0.0374	.496 - .61
two latent factors model	(.668 - .816)	(.371 -.862 corrected)	5539.461	692.433	.986	.963	.986	.963	.986	.067	0.0216	.446 - .617

Source: own work.

Table 4.3: Descriptive statistics/correlations

Variable ¹²	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. job satisfaction	3.9764	.84333										
2. relative income	5.45	2.889	.108**									
3. objective overqualification	.2889	.45326	-.105**	-.192**								
4. perceived overqualification	.2080	.40584	-.075**	-.097**	.068**							
5. gender	1.52	.500	.020**	-.256**	.026**	-.016**						
6. acquired education	3.47	1.41	.057**	.367**	.131**	-.084**	.035**					
7. sector type	1.29	.509	-.085**	-.057**	.069**	.083**	-.169**	-.205**				
8. company size	2.40	1.215	0 ³	0	0	0	0	0	0			
9. age	5.59	2.854	0	0	0	0	0	0	0	0		
10. elaborative processing	3.6	.80	.120**	.143**	-.037**	-.056**	-.019**	.279**	-.081**	0	0	
11. deep processing	3.6	.87	.118**	.135**	-.035**	-.053**	-.036**	.231**	-.059**	0	0	.687**

¹Means and standard deviations are raw scores, n = 156068.

²Correlation after grand - mean centering of the predictor variables.

³Cannot be computed because at least one of the variables is constant, has missing correlations or there is no variation or only very small variation to be considered.

** p < 0.01

Source: own work.

4.3.4 The procedure and analysis

The data initially tested was on job satisfaction and wages to determine whether they have a hierarchical structure or are nested in some level-2, higher-order variable.

Distinguishing the hierarchical from the linear data structure of the outcome variables is important because, in the case of multilevel data, the independence of the observations (residuals) is violated (Field, 2013), thereby compromising the standard statistical test (Hox, 1995). Such discrepancy in underestimating standard errors leads to Type 1 errors, attribution of statistical effects where none should exist, or false rejection of the null hypothesis. All of this showed that the multilevel analysis is necessary and means partitioning the variance of the outcome variable into its within- and between-group components (Heck, Thomas & Tabata, 2013).

In addition, all the individuals in PIAAC and any other large-scale survey were not chosen at random, and these individuals' responses within each group might be similar, at least per country. For this purpose, in an initial, no-predictors, or null Model, the regression intercepts were assumed to vary across countries (also known as random coefficients). These varying intercepts were used to do the interclass correlation test (ICC) or whether the clustering countries affect the homogeneity of individuals' job satisfaction and wages. The ICC turned out to be 7.30% for job satisfaction (Wald $Z = 3.593$, $p < .001$) and 0.42% for relative wages (Wald $Z = 3.367$ $p < .001$).

In conclusion, the analysis used for job satisfaction was hierarchical multilevel linear regression modelling (HMLR modelling). Its fixed and random parameter estimates were obtained from both restricted maximum likelihood estimation and Wald tests. The comparison of the models was made using parameter estimates from maximum likelihood estimation and chi-square test parameters (-2LL, AIC, BIC). The amount of the explained/partitioned variance within and between countries was calculated by reducing the variance estimate. When viewing the relative wages as outcomes, this thesis considered the parameter estimates from multiple linear regressions and the OLS estimation.

4.4 Results

4.4.1 The job satisfaction as an outcome

Four HMLR models, with OOQ and POQ as the main predictors, have been separately developed to assess the main and moderation effects that overqualification has on job dissatisfaction. The initial stage used an OLS, a multiple linear regression, to determine the relationship between objective and perceived overqualifications and job satisfaction, later comparing them with the hierarchical regression models.

Model 2 is built upon job satisfaction as an outcome and the control variables. In all the models, gender is inputted in the software as a factor, so the estimate will be for the first category (coded 0), or “male” in this case. The sector type, age, and company size were all entered as covariates, and the parameter estimates consider all their value labels as coded other than 0, which served as reference. In addition, the variable “sector type” has been recoded to set its largest category to “0” (the private sector), so all the findings on job satisfaction concern male workers working in sectors related to the private sector (NGO or the public sector).

In this model (Model 2), the gender, sector type, and job satisfaction showed significant variance in intercepts between countries. Model 3 was developed separately in the next stage, with POQ (Model 3a) and OOQ (Model 3b) as the main predictor variables.

4.4.1.1 The POQ as main effect and job satisfaction as an outcome

In Model 3.1, POQ was incorporated as the main predictor variable along with the control variables. In this model, a big F ratio was associated with the POQ, which supported the H1a hypothesis that POQ is a significant predictor of job satisfaction. If everything else remains constant, one SD change in POQ results in a reduction of 0.130 points in job satisfaction. Alternatively, the individuals who perceive themselves as overqualified for the job post have reduced their job satisfaction by 0.13 units, compared to those who do not perceive themselves as overqualified, males, working in a sector other than the public sector. Another model, Model 4a, with random slopes and intercepts, was also used to reach a model with much less deviance. However, the intercepts and slopes in Model 4a did not significantly covary ($\text{Cov}(\beta_{0j}, \beta_{1j}) = 0.003978$, Wald $Z = 1.457$, $p = .145$), so this model was omitted from further development in hierarchical modelling.

Model 5.1.a incorporated the main predictor variable POQ, the control variables, and the moderator variables-elaborative processing and deep processing. Neither the interaction term $\text{POQ} \times \text{elaborative processing}$ nor $\text{POQ} \times \text{deep processing}$ was significant, so the hypothesis H3a that the learning strategies moderate the relationship between POQ and job satisfaction (Table 4.4) is not accepted. The same is true even after controlling for ISCO, which does not affect the results (Appendix 4.2).

4.4.1.2 The OOQ as main effect and job satisfaction as an outcome

Model 3.2b incorporated OOQ as the main predictor variable along with the control variables. The big F ratio was associated with the OOQ supporting hypothesis H2a that OOQ is a significant predictor of job satisfaction, which was not known before. If everything else remains constant, a unit change in OOQ results in a reduction of 0.182 points in job satisfaction. Alternatively, having a higher educational level than the one required for the job post reduces one's job satisfaction by 0.182 units, compared to the individuals who are not overeducated,

males, working in a sector other than the public sector. Same as when POQ was considered the main effect, the ELS did not moderate the relationship between OOQ and job satisfaction (Table 4.5). Again, after controlling for ISCO, the main relationships remained the same (Appendix 4.3).

Table 4.4: Hierarchical moderated regression, POQ as main effect, the ELS as moderators, job satisfaction as an outcome

Hierarchical multilevel regression models															
1.1 Parameters*	M1			M2			M3a			M4a			M5a		
	Estimate (SE) (0.043)	t	sig	Estimate (SE) (0.413)	t	sig	Estimate (SE) (0.042)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	3.964 (0.043)	91.783	**	3.92 (0.413)	26.396	**	3.966 (0.042)	94.508	**				3.96 (0.040)	97.983	**
Gender: male				-0.004 (0.006)	-0.814	0.516	0.015 (0.006)	0.259	0.796				-0.0003 (0.006)	-0.068	0.945
NGO sector				0.158 (0.017)	9.445	**	0.143 (0.0173)	8.231	**				0.132 (0.017)	7.658	**
public sector				0.126 (0.006)	19.903	**	0.104 (0.0065)	16.057	**				0.095 (0.006)	14.76	**
perceived OQ							-0.130 (0.007)	-18.46	**				-0.122 (0.007)	-	**
elaborative processing													0.042 (0.005)	7.336	**
deep processing													0.043 (0.005)	8.005	**
POQ* elaborative processing													-0.005 (0.012)	-0.428	0.668
POQ * deep processing													-0.018 (0.011)	-1.619	0.105
1.2 Model fit															
total df (Δ df)	3			6 (3)			7 (4)						11 (8)		
- 2LL (Δ -2LL= $\Delta \chi^2$)	247733.908			208721.928 (- 39011.98)			187033.274 (- 60700.634)						186652.054 (- 61181.854)		
AIC (Δ AIC)	247739.908			208733.928 (- 39005.98)			187047.274 (- 60692.634)						186574.054 (- 61165.854)		
BIC (Δ BIC)	247768.509			208790.147 (- 38978.362)			187112.200 (- 60656.309)						186676.075 (- 61092.434)		
2. Reduction in variance estimate															
within countries				1.77						Cov (β_{0j} , β_{1j}) = -					
between countries				12.54			5.23			0.03978,			5.7		
							10.01			Wald Z = 1.457,			16.7		
										p= 0.145					

* In tables 4.3 and 4.4, the parameter estimates from OLS models were not included. This is due to the same conclusions these estimates provided when compared to the parameter estimates from hierarchical multiple linear regression

Source: own work.

Table 4.5: Hierarchical moderated regression, OOQ as main effect, ELS as moderators, job satisfaction as an outcome

Hierarchical multilevel linear regression models															
1.1 Parameters	M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	3.964 (0.043)	91.783	***	3.92 (0.413)	26.396	***	3.966 (0.042)	94.508	***				3.975 (0.04)	99.299	***
Gender: male				-0.004 (0.006)	-0.814	0.516	0.015 (0.006)	0.259	.796				-0.010 (0.006)	-1.874	0.061
NGO sector				0.158 (0.017)	9.445	***	0.143 (0.017)	8.231	***				0.141 (0.016)	8.471	***
public sector				0.126 (0.006)	19.903	***	0.104 (0.006)	16.057	***				0.099 (0.006)	15.669	***
objective OQ							-0.182 (0.006)	-29.68	***				-0.177 (0.006)	-28.783	***
elaborative processing													0.046 (0.005)	7.924	***
deep processing													0.046 (0.005)	8.547	***
OOQ* elaborative processing													-0.02 (0.01)	-1.879	0.06
OOQ * deep processing													-0.018 (0.01)	-1.905	0.057
1.2 Model fit															
total df (Δ df)	3			6 (3)			7 (4)						11 (8)		
- 2LL (Δ -2LL= Δ χ2)	247733.908			208721.928 (- 39011.98)			205618.69 (- 42115.218)						204999.221 (- 42734.867)		
AIC (Δ AIC)	247739.908			208733.928 (- 39005.98)			205632.69 (- 42107.218)						205021.221 (- 42718.687)		
BIC (Δ BIC)	247768.509			208790.147 (- 38978.362)			205698.207 (-42070.302)						205124.17 (- 42644.339)		
1.3 Reduction in variance estimate															
within countries				1.77			2.89			Cov (β0j, β1j) = -0.031,			3.42		
between countries				12.54			11.66			Wald Z = -1.206, p= 0.228			18.28		

Source: own work.

4.4.2 Relative income as an outcome

4.4.2.1 The OOQ as main effect and relative income as an outcome

When the effect on wages was considered an outcome, the acquired education was also added as a control variable, and the estimates from the OLS multiple linear regression were also considered (Table 4.6). Hypothesis H2b is supported, meaning that OOQ is a significant, negative predictor of wages ($\beta_1 = -1.477$, $t = -79.305$, $p < .001$). The OOQ* elaborative processing interaction did not affect this relationship between POQ and relative income, while the OOQ* deep processing moderated it negatively ($\beta_1 = -.072$, $t = -2.451$, $p = .014$) so hypothesis H4 is rejected (Table 4.6). Alternatively, although deep processing itself has a partial positive effect on relative income, those who are overeducated and learn by deep processing tend to have lower relative income per occupation and per country, compared to the workers who learn less by deep processing, male, working in a sector other than the private sector (Figure 4.2). Hence, deep processing ELS are making the wage penalty due to overeducation more negative. After controlling for the ISCO, the results remained the same (Appendix 4.4).

Table 4.6: The relative income as outcome, OOQ as main effect, elaborative learning strategies as moderator, country relative income as an outcome

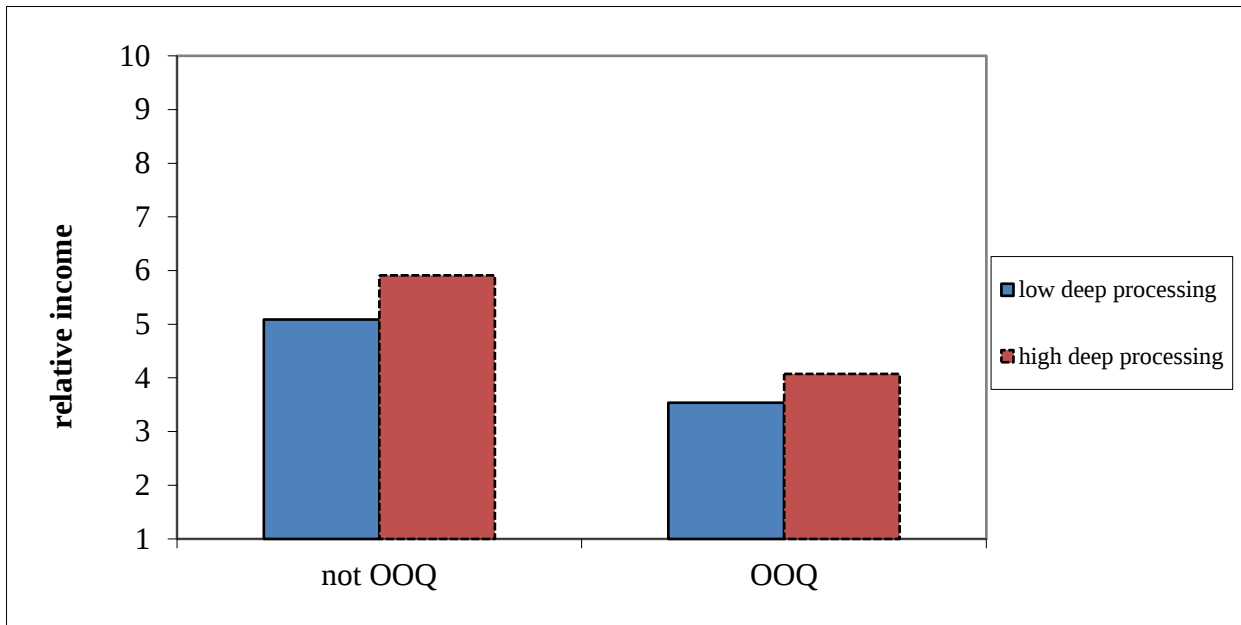
Model ^a	Unstandardized Coefficients		Standardized Coefficients		
	B	SE	Beta	t	sig
(Constant)	4.883	.062		78.259	**
acquired education	.900	.006	.443	138.829	**
gender	-1.705	.017	-.305	-101.434	**
sector type	.091	.016	.017	5.559	**
objective overqualification (OOQ)	-1.477	.019	-.239	-79.305	**
elaborative processing	-.004	.018	-.001	-.200	.841
deep processing	.206	.016	.061	12.830	**
OOQ*elaborative processing	-.035	.032	-.005	-1.082	.279
OOQ*deep processing	-.072	.029	-.012	-2.451	.014

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles.

** $p < .01$; *** $p < .001$

Source: own work.

Figure 4.2: The deep processing ELS moderates the relationship between OOQ and relative income



Source: own work.

4.5 Discussion

This chapter contributed to the existing knowledge base in several ways. First, it confirmed that workers are dissatisfied and have lower income, whether they perceive themselves as overqualified or simply are objectively overqualified (overeducated).

It also showed that ELS does not reward dissatisfaction at work either because of overeducation or the perception of overqualification, although it is well known that learning at work alleviates anxiety and promotes proactive behaviour. However, when this learning was represented by the "two-latent factor model" of ELS and then paired with the two overqualification constructs, job satisfaction was not worsened. In general, self-regulating the surrounding environment through employing ELS does not recompense for the deprivation feelings which arise due to overqualification of employees. The deep and elaborative learning processes may not be robust enough to deal with job dissatisfaction due to overqualification, whether objective or perceived. The empirical results of this chapter do not support the findings of (Zhang, Law & Lin, 2016) that learning goal orientation as a substitute for ELS can act as a substitute for perceived overqualification, as it does not affect job dissatisfaction.

The common findings in the literature on overqualification have been confirmed, as the adverse effects of POQ on relative income, in contrast to the effects of OOQ, require a more robust moderator to initially affect and then possibly attenuate this relationship. In the second case, the

income loss incurred due to overeducation was presented by setting the incomes of OOQ-ELS workers below those of non-overeducated workers, as opposed to the income of overeducated workers who do not practice ELS, setting it two income deciles lower. Obviously, among the non-overeducated workers, those who practice ELS - deep processing receive a higher income than the non-overeducated workers who practice deep processing and have a higher income decile. It should also be emphasized that age and company (organization) size, even when considered, were not significant predictors of the overqualification of workers, whether being objective or perceived or whether job satisfaction or wages were the result.

However, this claim has two features. Firstly, the overeducated employees who learn by deep processing are between the 3rd and 4th wage decile, while the non-overeducated workers are all within the 5th decile, regardless of whether they learn by deep processing or not (Figure 4.2). To sum up, the ELS for the OOQ, deep processing learners/employees alleviates the relative income loss due to their overeducation but does not equate them to the non-overeducated employees, regardless of whether these workers employ ELS/deep processing or not. Moreover, the non-deep processing and non-overeducated workers are one wage decile above them, and the deep processing non-overeducated workers who learn through deep processing are almost two wage deciles above them. Secondly, this paper emphasizes the positive effect of deep processing ELS on relative income. From this stance, learning by deep processing fails to recompensate enough for the wage losses incurred due to employees' exceeding education in relation to the job post. So, it is more notable to speak about the general impeding effects on wages that ELS have for the overeducated, deep processing employees, rather than just about wage penalties due to overeducation..

4.5.1 Theoretical implications

This chapter initially contributed to the existing theoretical framework by highlighting two different constructs of overqualification of workers - POQ and OOQ - both related to job dissatisfaction and lower relative income. The findings support that self-regulating the surrounding environments through the employment of ELS does not counter the relative deprivation theory, specifically, the deprivation feelings which arise due to overqualification of employees, and it makes the income penalty of the overeducated individuals more negative and visible. From a general perspective, self-regulation, when exemplified through ELS, does not account for relative deprivation. In one specific case, ELS/deep processing further counters the human capital theory by augmenting the paradox of income loss due to overqualification.

These two findings were illustrated by suggesting a measurement model for ELS for the general population, which was previously operationalized exclusively for the educated population. Thereby, the suggested CFA model relies on reasonable measures of fit: between the modelled

environment and the model representing it and the robustness of the two measurement variables/latent factors.

The empirical spread of OOO across six labels is also worth highlighting, as it certainly provided more variability and also showed the highest levels of education at ISCED (Masters and PhD) separated from other, lower academic qualifications, which was emphasized as necessary in the literature used to date (Zhang, Law & Lin, 2016).

The introduction of varying, random coefficients and the RML estimate versus the OLS did indeed lead to more significant or similar standard errors but did not lead to a different conclusion, although expected. Nevertheless, it certainly provided greater variance in results within and between the survey countries. In the end, the large sample size makes the results generalizable for at least these 27 developing and industrialized countries, representing a total population of over 400 million individuals. The inclusion of control variables, such as gender and organization size, once again confirmed that they remain arguable as precursors of overqualification of employees without confirmed control effects in the current hypothetical relationships. The ISCO controlled effects do not contribute to the findings either.

4.5.2 Practical implications

The solely confirmed effect in this chapter suggests to the professionals concerned by the wage/relative income loss incurred due to OOO that learning through deep processing would make a difference by compensating for the wage loss among overqualified workers. At this point, one must again emphasize the amplifying effects of ELS on the relationship between education and skills, especially since both factors are determinants in many wage equations.

As far as policymakers are concerned, this chapter identified the cognitive processes by which deep processing (as a feature of ELS) should be integrated into workplace learning policies and methods. On the other hand, elaborate processing through the pursuit of novelty and the acquisition of new knowledge, although significant for the educated population, does not have the same impact on the workforce population (not at all, in fact), at least not on job dissatisfaction and loss of pay due to overeducation.

4.5.3 Limitations and future research

The first limitation of this chapter is that it assumed that a basic CFA model and an improved model adaptation could not be achieved. This is due to the modification indices that were not calculated because of the CFA software (AMOS 22), which cannot imply modified models. Furthermore, neither societal moderators nor level 2 moderators in HMLR were tested for the overqualification - outcome relationship (no cross-level effects were considered) since the slopes and intercepts in the hierarchical models 4.1 and 4.2 were not covariant.

The lack of a theoretical framework of an OOQ predicting job satisfaction and wages limited this chapter's hypothetical relationships to the results known only for the POQ. It would be desirable, if in the future, the cognitive processes that contribute most to specific (or clustered) ISCED- education levels could be identified, organized, and linked, as they are a direct measure of OOQ.

Finally, overqualified people (both OOQ and POQ) have a lower job satisfaction than others but are surprisingly not dissatisfied with their work. It should also be emphasized that the results of this chapter were limited to male employees in NGOs or the public sector, while women and the private sector were accordingly considered as reference categories. It is a fruitful path to follow in future studies by including these two categories and the HMLR on the results of overqualification.

5 GENERAL CONCLUSION AND DISCUSSION

The whole work aimed to identify the nomological network of workers' overqualification through its antecedents, its relationship with the two main effects, and four groups of moderators that influence these relationships. Initially, by considering overqualification simultaneously and differentially as objective or subjective, the boundary conditions that cause the adverse effects of overqualification on job satisfaction and relative country income were presented. Based on a qualitative and quantitative analysis of the occurrence of overqualification among workers, the direct effects, and the moderators of these effects, I conclude that there is objective and perceived overqualification, both distinct factors related to job dissatisfaction and relative income loss.

Furthermore, this study showed that the boundary conditions that lead to the occurrence of these two types of overqualification are not the same, as neither are the conditions under which their direct and moderated effects occur. Although the direct effects of both OOQ and POQ are exemplified and confirmed throughout the chapters, the moderating effects were different for both. In other words, the edges of these adverse effects are contrasted with the moderators that alternately mitigate, attenuate, or do not affect them at all and which do not have the same significance and effect for OOQ and POQ. Thus, I conclude that their nomological networks are genuinely distinct and should be treated as such in future studies.

Although it was expected that the same direct and moderating effects would be confirmed for OOQ and POQ, this was not the case. The empirical and methodological approaches undoubtedly provided the results, and even though hierarchical regression limits it to a particular group, it still provides insights to test the research findings and hypothesized relationships on new groups. While the direct and moderating effects apply only to men, and not women, for sectors other than the private sector for ISCO, the question of women working in sectors related

to NGOs or the public sector or related to other ISCOs still remains. The latter group showed that the choice of occupation does not directly affect the demonstrated direct, control, and moderator effects. Without going into further detail, the main findings of each chapter in this dissertation have been summarized in the tables titled "Summary of Main Findings" (see next section). The above limitations of this dissertation are certainly feasible recommendations for future work on overqualification.

Based on these conclusions, practitioners should consider the findings of the dissertation as their own contribution to the question of why, how, and what level of overqualification occurs in each country so as to identify national patterns and specific and common configurations that lead to a particular type of overqualification, but also to relate these to other countries with their own or opposite archetypes. To better understand the implications of these findings, future studies could examine the occurrence of overqualification at a fuzzy level and its impact on other, even more diversified, or even larger populations. In this way, future studies could confirm, build on, or enrich these conclusions and hopefully underscore them.

The problem of overqualification and the examination of its effects in the context of this study is solved by the set-theoretic approach and the hierarchical view of the data. This could fill the knowledge gap by suggesting ways to approach the issue and possibly further challenge the theories developed, particularly the human capital theory and the reinforcing effects of employee qualifications.

5.1 Summary of main findings across chapters

To answer the initial research question of which (macro) factors determine employee overqualification, in the first chapter, I elaborated that objective and subjective overqualification are caused by different macro factors and are two separate constructs that only seem to overlap. Indeed, by contrasting the configurations that lead to high and low OOQ and POQ, we were able to distinguish between four types of countries: two "genuine" and two 'apparent' archetypes.

Genuine Type One countries, particularly the "high objective and perceived overqualification" configurations, always include a non-vocational education system and a strong masculinity index per country. As for Genuine Type Two countries, the common macro factor configuration leading to low objective and perceived overqualification included risk categories and vocational education systems in all their patterns.

It was designated that the countries belonging to Apparent Archetype One exhibit low overeducation and high perceived overqualification and are all characterized by low dynamics of mobility from the industrial to the service sector. Their typical configuration includes vocational education systems as antecedents. In contrast, the Apparent Archetype includes two countries with high overeducation and low perceived overeducation, both characterized by high

LFP of at-risk labour market categories, general education systems, low growth in LFP of tertiary-educated workers, and a culture labelled as "low masculinity." Their typical configuration contains a high share of risk labour market categories and a general (non-vocational) education system.

In the second chapter, I considered the HPWP moderator effects on the basic two-to-two hypothesized relations. In turn, HPWP was confirmed to moderate the negative relationship between the two types of overqualification and job satisfaction. First, such employees are prone to lower motivation and opportunity, which in turn is positively affected by all AMO-increasing HPWP. Next, HPWP negatively moderates relative earnings loss incurred due to excess education. From a first negative perspective, the earnings of those employees who benefit from the organizations' HPWP are higher than those who are not overeducated. However, from a second, narrower perspective, this negative HPWP moderator effect can be seen as positive since, among overeducated employees, those who benefit from the organizations' HPWP have higher incomes than those that do not.

The results from chapter three first show that perceived OQ makes the relationship between overeducation and job satisfaction more negative, although individuals who are not objectively overqualified but perceive themselves as overqualified are more satisfied with their jobs than those who are overqualified in both directions (objectively and subjectively). Perceived OQ also exacerbates the negative relationship between overeducation and wages by lowering earnings by more than one decile on average across countries. I observe that this is not the case for those who are not-overeducated (objectively underqualified or matched), as their wages remain within the same decile in a country setting.

The third chapter also showed that skill mismatches only partially and differentially moderate the negative relationships between employee overqualification (objective and perceived) as main effects, and job satisfaction and relative income, as resulting individual employee outcomes. Indeed, I observe that being underskilled (in literacy) buffers the negative effect perceived overqualification has on job satisfaction and relative earnings. Nevertheless, among the overskilled employees, those who do not perceive themselves as overqualified are more satisfied with their jobs than those who do.

Paradoxically, I argue that the confirmed moderator effects when perceived OQ is the main effect are not the same as when objective OQ is the main effect. Neither over-skilling nor under-skilling affects the relationship between overeducation and job satisfaction.

As for relative earnings loss incurred due to overeducation, only over-skilling had a moderator effect in further exacerbating these wage losses due to overeducation, although among the overeducated employees, those who are overskilled have lower relative earnings than those who are not. I find that such a lack of impact of skill mismatches on wages, when paired with OQ,

seriously challenges human capital theories that education and earnings should rise overall due to acquired skills.

The last chapter examined whether the moderation effects which occur due to elaborative learning strategies face the same fundamental hypothetical two-way relationships as in the previous two chapters. Surprisingly, it was demonstrated that ELS does not reward job dissatisfaction through overeducation or perceptions of overqualification, although it is well known that learning at work alleviates anxiety or promotes proactive behaviour.

Just as in Chapter 2, where HPWP were considered moderators, ELS through deep processing had a partially positive effect on relative earnings. However, moderator effects are negative when paired with overeducation. From this perspective, I find that learning through deep processing cannot compensate for the wage losses caused by workers' above-average education relative to the job. Thus, it is more remarkable to speak of a general penalizing effect on wages that ELS has for the overeducated, deep-processing workers, rather than just wage losses incurred due to overeducation. From a narrower perspective, I find that for the overeducated, deep-processing learners/employees, ELS mitigates the relative earnings loss incurred due to their overeducation but does not equate their earnings to the non-overeducated employees, regardless of whether they are ELS/deep-processing.

5.2 Summary of theoretical and empirical contributions

This collection of research chapters has several advantages over the existing body of theoretical and empirical knowledge. First, it has identified the existence and operationalization against the same outcomes of objective and perceived overqualification. Next, the moderator effects tested on their relationships with job satisfaction and the country's relative income did not have the same effects or even any effects at all. All of this is reflected in the interpretation of the results while considering the relevant theories on which they are based and the empirical approaches that preceded these results.

5.2.1 Summary of theoretical contributions

The first theoretical contribution of this work can be seen in the fact that OOQ and POQ have been linked and paired, although one does not imply the other. Nonetheless, when considering both factors, it becomes clear that some macro factors are common to the specific archetypes in the selected countries, although, in general, no "necessity" relationship between objective and perceived OQ can be found. As shown in chapter one, these two concepts incorporate different nomological networks and accumulate different predictors.

In the next three chapters, these two concepts were considered separately and simultaneously and in contrast with the two main effects resulting from employee overqualification: reduced

job satisfaction and relative income loss. These findings demonstrated that the tested moderators on these correlations do not affect the hypothesized correlations equally (or at all) as expected. In some cases, they moderate all hypothesized relationships equally, such as HPWP, which positively affected the OOQ/POQ relationships with job satisfaction, or over-skilling, which, in turn, negatively affected their relationships with relative income. Conversely, it was also found that certain moderators do not affect these relationships at all, such as deep and elaborative processing in relation to job satisfaction or elaborative processing LS in relation to relative income. The last example also demonstrates that there are relationships where certain moderators did not affect objective OQ, but they did have a moderating effect on perceived OQ, such as skills mismatch in relation to job satisfaction or under-skilling in relation to POQ and relative income. Moreover, HPWP and Deep Processing LS moderated the relationship between objective OQ and relative income but did not do the same for perceived OQ.

The second chapter contributed to the existing theoretical framework by showing that the HPWP reduced the adverse effects created due to overqualification, whether objective or subjective, something previously unknown. This was achieved by simply allowing these objectively/subjectively overqualified individuals to benefit from organizational HR practices that would otherwise have been expected had they not been overqualified. Furthermore, when human capital is measured against education, there are other benefits in terms of incomes that were previously considered in on-the-job search when looking for a higher income or jobs or firms that offer higher income for a given level of education.

The third chapter explains an etymological position that OOQ, POQ and skills mismatch (skills exemplified by literacy) as measures of vertical worker-job mismatch are based on different nomological networks and should be separated in further considerations. This study clarifies the two relevant theories by showing that literacy, as a direct skill resulting from schooling, does not affect feelings of deprivation equally (or at all) when considering OOQ and POQ, nor does it moderate the relationship between them and relative income loss. Equally important in this chapter is the prevalence of the definition of overqualification in general. "OOQ", "POQ", or over-skilled are somewhat different concepts, but they do lead to the same results.

Their consideration in this chapter emphasized the departure from the stance that they are different operationalizations of the same "overqualification" construct, particularly as their confirmed direct effects on job satisfaction and relative earnings do not always overlap. The results of the last chapter demonstrate that self-regulating the environment through the employment of ELS does not counteract the relative deprivation theory, especially in relation to the deprivation feelings caused by employee overqualification, which makes the income disadvantages of overeducated workers more visible. From a general perspective, self-regulation, when exemplified by ELS, does not explain relative deprivation. Specifically,

ELS/depth processing counteracts the human capital theory by reinforcing the paradox of income loss incurred due to overeducation.

5.2.2 Summary of empirical contributions

This dissertation not only adds to the theoretical points of view but also, in many ways, contributes to the empirical approaches. In the first chapter, the challenging task of isolating theoretical antecedents from the limited literature on the occurrence of OQ has been empirically supported by reference to higher-level, contextual causal conditions. In doing so, a positive light has been shed on the notion of 'contextual conditions', which have caused rather than bound the occurrence of OQ at different levels and in different forms within a country, allowing for analysis between countries on the same basis.

It is essential to highlight the newly proposed aspect of actual and apparent overqualification, as it has been previously associated with OOQ and job satisfaction. It is also worth mentioning that the empirical investigation in the first chapter was conducted across countries and outside the Western world, in contrast to previous studies, which were less diversified, case-based, and based on a smaller sample. The large sample size of this dissertation makes the results generalizable at least to the 27 developing and developed countries included herein, a sample size of $N=156068$, representing a total population of over 400 million people.

All subsequent chapters make a clear distinction when considering the data as linear or nested. The introduction of varying random coefficients and RML estimating surface to the OLS parameter estimates yielded larger standard errors and explained more variance. Had the hierarchical structure of the data been omitted, we could have arrived at a different result from the one when OLS was used. One example is that HPWP were insignificant moderators of the relationship between OOQ and job satisfaction in the OLS model, which was not the case with the HMLR model.

Again, in these three chapters, the partitioning of OOQ into six clusters certainly provided more variance in the results and the confirmed direct and moderating effects. The empirical partitioning of OOQ into six labels, in chapters two, three and four, which in addition to providing more variance, also showed the highest levels of education according to ISCED (Masters and PhD) separately from other, lower academic qualifications, something highlighted as necessary in previous literature (Liu, Luksyte, Zhou, Shi & Wang, 2015) is also worth mentioning.

I stress another empirical contribution of chapter three in providing the literature with a moderator that attenuates or reinforces the negative relationships between objective/perceived overqualification and job satisfaction and relative income. This chapter also presented a simultaneous use of the three known methods for measuring vertical mismatch (Quintini, 2011;

(Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014) as self-assessment (POQ), job analysis (OOQ), and statistical-realized match (literacy mismatch).

In the last chapter, a measurement model for ELS was proposed for the general population, which has until now been operationalized exclusively for the educated population. The proposed CFA model relies on reasonable measures of fit: between the modelled environment and the model representing it and the robustness of the two measurement variables/latent factors.

Table 5.1: Summary of main findings – Chapter 1

Chapter (title) and research questions	Overarching theories	Study type (methodology/ design/ analysis)	Main findings	Contributions (to which literature)
Chapter 1: “A configurational approach on determinants of country-level employee overqualification” RQ 1: “What configurations of macro conditions determine employee overqualification at the country level?”	Overqualification literature; Management literature; Cognitive – cultural, educational and regulatory perspectives on overqualification occurrence; Assignment theory; Theory of career mobility; Institutionalism.	Macro- configurational, set- theoretic (contextual theorizing) approach; Primary data sourced from PIAAC survey and secondary from ILOSTAT, OECD education, employment protection legislation and migration reports, national reports and world bank databases; Qualitative comparative analysis and fsQCA 3.0 software.	OOQ and POQ are caused by different (configurations of) macro-factors. Also, high and low levels of these OOQ and POQ are all generated by different configurations of causal conditions. A necessary condition for high OOQ is a country’s non-vocational education system. OOQ is not a necessary condition for POQ to occur. A common configuration leading to overall high OOQ and POQ includes a non-vocational education system and masculinity. Countries with a generally low OOQ and POQ have rigid EPL. Their common configuration includes risk categories and vocational education systems in all its patterns. Countries with low OOQ/high POQ have low intersectoral workforce dynamics. Countries with high OOQ/low POQ have: high LFP of “risk” workers, non-vocational educational systems, small increase of LFP of tertiary-educated workers, and a strong femininity index.	Employee OQ seen as an outcome rather than antecedent. It is not only generated at the management level because there are macro-contextual patterns that imply it (management literature). Employee overqualification can be objective just as perceived. OOQ and POQ are different constructs with different predictors. OQ is pervasive, not temporary. It engenders many other cohorts of workers, but the young tertiary- educated ones (assignment and career mobility). Positive view on the “contextual conditions” (management literature) Suggesting configurational theorizing and QCA when addressing theoretical scarcities and inconsistencies in the existing management literature.

Source: own work.

Table 5.2: Summary of main findings – Chapter 2

Chapter (title) and research questions	Overarching theories	Study type (methodology/	Main findings	Contributions (to which literature)
Chapter 2: “A cross-country study on High performance work practices buffering negative outcomes of employee overqualification” RQ 2: “How do the high-performance work practices moderate the relationship between overqualification and its outcomes?”	Overqualification literature; Human capital theory; Relative deprivation theory; Management literature.	Hierarchical multilevel regression modelling (Restricted Maximum Likelihood parameter estimates); Linear multiple regression (OLS parameter estimates); Primary data sourced from the PIAAC survey; Hierarchical multiple linear regression (SPSS 26).	OOQ and POQ negatively affect job satisfaction and relative income. The HPWP moderate the relationship between POQ/OOQ and job satisfaction in such a way that the relationship is less negative when HPWP is high. The HPWP moderates the relationship between OOQ and relative income. Even though it alleviates the negative effect that OOQ has on relative income, it renders it more evident in relation to the non-overqualified workers. Benefiting from an organization’s HPWP makes the overeducated workers’ relative income higher than that of workers who are not overeducated and do not benefit from these HPWP.	Employee overqualification can be objective just as perceived. Distinguishing between OOQ and POQ as different constructs with different nomological networks (OQ literature). HPWP positively influences human capital which in AMO models is measured by employees’ educational level (Human capital, management literature). Among the HPWPs, the permanent employment contract has significant and positive partial effect on job satisfaction regardless of whether POQ or OOQ are the main effects. As for the OOQ: training for firm specific skills and formal information sharing also partially and positively affect job satisfaction. (Labor economy field of research). The OOQ variable design considered the Master and PhD levels separately from other level of tertiary education. (Liu, Luksyte, Zhou, Shi & Wang, 2015)

Source: own work.

Table 5.3: Summary of main findings – Chapter 3

Chapter (title) and research questions	Overarching theories	Study type (methodology/ design/ analysis)	Main findings	Contributions (to which literature)
Chapter 3: Moderating effects of qualification perception and skills mismatch on employee overqualification, job satisfaction and relative income <i>RQ 3.1: “How do the perceptions of overqualification affect the objective overqualification - outcomes relationship?”</i> <i>RQ. 3.2: “How does the skill mismatch affect the overqualification - outcomes relationship?”</i>	Overqualification literature; Human capital theory; Relative deprivation theory; Management literature.	Hierarchical multilevel regression modelling (Restricted Maximum Likelihood parameter estimates); Linear multiple regression (OLS parameter estimates); Primary data sourced from the PIAAC survey; Hierarchical multiple linear regression (SPSS 26).	OOQ and POQ negatively affect job satisfaction and relative income. POQ moderates the negative relationships between OOQ and job satisfaction/relative income by making them more negative. The skills mismatch moderates the relationship between perceived overqualification and job satisfaction/relative income in such a way that overskilling makes these relationships more negative and in such a way that underskilling makes these relationships more negative. Overskilling in literacy moderates the relationship between objective overqualification and relative income, in such a way that overskilling makes this relationship more negative.	The skills mismatch is a moderator that alternates between alleviating and augmenting the negative relationships between objective and perceived overqualifications and job satisfaction and relative income (OQ literature). OOQ, POQ and skills in literacy rely on different nomological networks and should all be separate in further considerations (OQ literature). The literacy mismatch, as directly resulting from schooling does not affect the feelings of deprivation equally (or not at all), when considering OOQ or POQ. It also does not equally moderate the relationship between them and the relative income loss (human capital, relative deprivation theories). Exemplifying the use of the three known methods for measuring vertical mismatch, i.e., self-assessment (POQ), job analysis (OOQ), and a statistically-realized match (skills mismatch). The adequate choice of measurement technique might affect the research results (Quintini, 2011; Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014).

Source: own work.

Table 5.4: Summary of main findings – Chapter 4

Chapter (title) and research questions	Overarching theories	Study type (methodology/	Main findings	Contributions (to which literature)
Chapter 4: The moderating role of elaborative learning strategies on employee overqualification, job satisfaction and relative income <i>RQ 4: “How do elaborative learning strategies moderate the relationship between overqualification and its outcomes?”</i>	Overqualification literature; Human capital theory; Relative deprivation theory; Management literature.	Hierarchical multilevel regression modelling (Restricted Maximum Likelihood parameter estimates); Linear multiple regression (OLS parameter estimates); Primary data sourced from the PIAAC survey; Hierarchical multiple linear regression (SPSS 26).	Workers are dissatisfied and have lower income, whether they are objectively overqualified (overeducated) or perceive themselves as overqualified. The ELS for OOQ, deep processing learners - employees alleviates the relative income loss incurred due to their overeducation, but does not equate them to the non-overeducated employees, regardless of whether these workers employ ELS/deep processing or not. ELS does not reward dissatisfaction at work either because of overeducation or because of the perception of overqualification, although it is well known that learning at work alleviates anxiety or promotes proactive behavior.	Existence of OOQ and POQ (OQ literature). Self-regulating the surrounding environments through employment of ELS does not recompense for the deprivation feelings caused due to overqualification of employees (Self-regulation, deprivation theories). Learning goal orientation or ELS cannot act as a substitute for perceived overqualification due to sensitivity to overqualification, as it does not affect job dissatisfaction (Liu, Luksyte, Zhou, Shi & Wang, 2015).

Source: own work.

5.3 Implications for practice

The practical benefits of this dissertation are intended for overqualified individuals, professionals concerned with overqualification, and policymakers. These contributions, like the theoretical contributions, are organized in tables. In general, the boundary conditions presented on the differences between the explanatory patterns of objective and perceived overqualification suggest that the concepts of "being overqualified" and "feeling overqualified" are different in reality. Objective overqualification does not trigger subjective overqualification, although, at the country level, overeducation is more often associated with perceived overqualification than it is the other way around. Nonetheless, both have the same effects of job dissatisfaction and relative income loss.

Based on the benefits for overqualified individuals, the return to job security confirms an immediate jump towards perceived overqualification and lower earnings that the HPWP cannot mitigate. For these employees, elaborative processing through the pursuit of novelty and the acquisition of new knowledge, although significant for the educated population, does not have the same effect on the labour force population (in fact, not at all), at least not on job dissatisfaction and income loss incurred due to overeducation.

Something professionals can use from this dissertation is HPWP, a tool in the set of formal measures used to address job dissatisfaction and wage loss incurred due to overqualification, apart from psychological contracts. It should be emphasized that the use of these formalized tools under the HPWP hat is beneficial to organizations as it certainly alleviates job dissatisfaction and, to some extent, income loss. Alleviating both also prevents other negative organizational outcomes, such as attrition, job loss, productivity loss, and many other adverse organizational effects.

Professionals and organizations are offered another tool, an unbiased measure of literacy assessment that was previously difficult to determine. It emphasizes the importance of separating skills from education and subjective feelings of overqualification, something an employer should have in mind when evaluating vertical employee/job-candidate-job fit. It should also be emphasized that OOQ and skills mismatch do not overlap and that a mismatch in either has no impact on job satisfaction or relative earnings.

This dissertation also identifies the cognitive processes by which Deep Processing (as a feature of ELS) should be integrated into workplace learning strategies and methods. The single confirmed effect in Chapter four suggests to professionals affected by the wage/relative income loss incurred due to OOQ that learning through Deep Processing would make a difference by compensating for the wage loss, at least within the cohort of overeducated workers.

Finally, this dissertation is helpful to policymakers in several ways. First, the identified configurations of macro factors capture the contextual embeddedness of POQ, which in turn is seen as a major factor in lower job satisfaction leading to voluntary turnover (Shaw, Delery, Jenkins & Gupta, 1998) basis for other negative employee outcomes. Therefore, national policies intended to address objective and perceived overqualification at the country level should focus on its nomological diversity. It has been pointed out that high levels of OOQ inevitably occur in countries with non-vocational education systems. Conversely, when comparing OECD countries, rigid EPL legislation is observed at lower levels for both OOQ and POQ. Resorting to measures against mass redundancies could be beneficial to policymakers in tackling high OQ in general.

Policymakers should also note that literacy under-skilling has a confirmed positive effect on POQ that directly affects job satisfaction and relative earnings but does not compensate for the wage loss incurred due to exceeding education. Moreover, like the distinction between OOQ and POQ, a distinction should also be made between overeducation and skill mismatch, as one does not imply the other, which should be considered when considering vertical worker-job mismatches.

This dissertation is of great help to actors in the skill acquisition process, as it supports their participation in the process itself. Indeed, Chapter One concluded that there is inevitably a low level of over-qualification in countries with VET systems, which strengthens the position of policy authorities in the skills formation process. The overall findings in Chapters Three and Four suggest possible friction points between school-based and workplace-based VET systems and provide an insight into self-directed learning as a crucial component of the skills development process. From the thesis, I conclude that skills should at least be considered and measured on the same basis as education, within the institutional context, as suggested by (Sung, Turbin & Ashton, 2000), and on a broader basis that includes countries from around the world.

The GALM framework also adds to this. The findings of this thesis relate to it by demonstrating how exceeding education, POQ, and excess or lack of literacy skills are connected on a much larger population than the SDG-4 youth and adults and including all the educational levels rather than just primary and secondary education.

Table 5.5: Summary of practical implications – Chapter 1

Chapter (title)	Practical implications
Chapter 1: A CONFIGURATIONAL APPROACH ON DETERMINANTS OF COUNTRY-LEVEL EMPLOYEE OVERQUALIFICATION	a. Managers/Organizations: The general context of high OQ is often related to non-vocational education systems; On the other hand, a low OQ is evident in countries clustered by rigid EPL. Hence, resorting towards measures against mass dismissal might be beneficial in tackling high OQ. b. Policymakers: Exemplifying differences between the concepts of 'being' and 'feeling' overqualified which are different when it comes to actual work. Both should be approached separately. National policies tackling objective and perceived overqualification at the country level should focus on its nomological diversity: high level of OOQ necessarily occurs in countries with general education systems, although it is not arbitrarily assumed that going back to vocational education could reduce it. The typology of genuine and apparent archetypes provides a tool for identifying the macro conditions that contribute to the context of high levels of OQ across countries. Overall, high OOQ and POQ levels are present in all but three countries, whereas among the countries with high POQ, only half of them have a high OOQ as well. Seemingly, on a country-level, overeducation is more often accompanied by perceived OQ, as opposed to the other way around.

Source: own work.

Table 5.6: Summary of practical implications – Chapter 2

Chapter (title)	Practical implications
Chapter 2: A CROSS-COUNTRY STUDY ON HIGH PERFORMANCE WORK PRACTICES BUFFERING NEGATIVE OUTCOMES OF EMPLOYEE OVERQUALIFICATION	a. Overqualified individuals: For overqualified individuals, going back to job security was confirmed to be an immediate jump toward perceived overqualification and lower income that cannot be mitigated by the HPWP. b. Managers/Organizations: Proposing to professionals concerned with overqualification the HPWP as a tool in the set of formal measures intended to address dissatisfaction and wage loss incurred due to overqualification, apart from psychological contracts. c. Policy makers and Managers/Organizations: As far as organizations are concerned, OOQ and POQ should be considered separately in the work setting and in research, as they obviously do not have the same effect on outcomes.

Source: own work.

Table 5.7: Summary of practical implications – Chapters 3 and 4

Chapter (title)	Practical implications
Chapter 3: MODERATING EFFECTS OF QUALIFICATION PERCEPTION AND SKILLS MISMATCH ON EMPLOYEE OVERQUALIFICATION, JOB SATISFACTION AND RELATIVE INCOME	a. Overqualified individuals: The lack of literacy moderating effects in relation to the OOQ revealed that on an individual level, the mismatch does not recompense or aggravate the deprivation feelings caused due to exceeding education. b. Managers/Organizations: It is important to separate skills from education and subjective feelings of overqualification, something an employer should have in mind when assessing vertical employee/job-candidate-job fit c. Policymakers The HR policies and practices that focus on only one aspect of employee overqualification do not comprehend its embeddedness and do not know how to tackle it. Underskilling in literacy has a confirmed positive effect on POQ and job satisfaction and relative income, but it does not recompense for the wage loss incurred due to exceeding education OOQ and the skills-mismatch do not overlap, or, being mismatched in both cases does not imply any effect on job satisfaction or relative income.
Chapter 4: THE MODERATING ROLE OF ELABORATIVE LEARNING STRATEGIES ON EMPLOYEE OVERQUALIFICATION, JOB SATISFACTION AND RELATIVE INCOME	a. Managers/Organizations: Learning through deep-processing would make a difference by compensating for the wage loss incurred among overeducated workers. Amplifying effects of ELS on the relationship between education and skills, especially since both factors are determinants in many wage equations. b. Managers/organizations/Policymakers: identified cognitive processes by which deep processing (as a feature of ELS) should be integrated into workplace learning policies and methods.

Source: own work.

5.4 Limitations and future research

The first limitation of this dissertation can be found in the first chapter, where unlike what (Liu, Luksyte, Zhou, Shi & Wang, 2015) suggested, the design of the OQ outcome grouped all academic education levels together instead of separating them into Master's, doctoral, and Bachelor's degrees. The second limit is the use of a crisp-set QCA, which is based on the dichotomization of variables. Such a designation for a variable as being "fully in" or "fully out" of a set leads to the risk of losing more complex information. The csQCA was adopted to avoid having problems with the calibration of more nuanced variables in fuzzy sets (fsQCA), but the lack of empirical data on macro-level OQ outcomes prompts the use of more conservative thresholds for dichotomizing causal conditions. I suggest that perhaps the net effects resulting from the regression analysis of the incidence of overqualification could respond to and complement the results, just as the QCA did.

The conduct of QCA in Chapter One was based on caution against ecological fallacy, which is evident in the way the causal conditions and results are streamlined and in the analysis and interpretation sections. The resulting conclusions relate to country-specific and cross-country aspects of the occurrence of overqualification by level and type. The relationships observed for countries do not necessarily hold true for individuals, nor was such a claim ever made in Chapter One. Nevertheless, the macro-configurational approach to OQ occurrence did not explain all OQ/POQ levels. Known as "limited diversity" (typical of QCA), not all the configurations covered all 27 countries in the sample.

The next three chapters were all constrained by the non-introduction of Level 2 moderators in the hierarchical models. Therefore, no cross-level interactions were tested because the slopes and intercepts in hierarchical models were not covariant. Along the same line, the context and property space generated by the control and independent variables in the hierarchical and OLS models should not be neglected. They ensure that the objective and perceived overqualification effects on job satisfaction and relative earnings occur in the first place. For the procedure of hierarchical multiple linear regression, the SPSS software was limited to syntaxes or commands that limited the research findings to one population, especially for the dummy-coded population variables. Hence, I see a promising venue for researchers to consider the HPWP, POQ, skills mismatch, and DP/EP learning strategies as moderators for women working in the private sector.

The non-significant effects of organization size and age on overqualification in general, which was also discussed in previous research, are worth mentioning. Gender, as an outcome of both objective and perceived overqualification, appears to have a confirmed effect on wages only in those contexts where the moderating effects of literacy mismatch have been confirmed.

The final limit is that, in the last chapter, a basic CFA model was implemented, so an improved model adaptation could not be achieved. This is due to the modification indices that were not calculated because of the CFA software (AMOS 22), which cannot imply modified models.

The result of this dissertation suggests many avenues for future research. First, the first chapter suggests calibrating the causal conditions into a fuzzy set QCA or setting their values as the degree of belongingness to such a specific OOQ/POQ threshold, which should provide more fine-grained, diversified results. Perhaps the net effects resulting from the regression analysis of the occurrence of overqualification could respond to and complement the results, just as the QCA did. Moreover, the ecological fallacy and limited diversity left room for additional theoretically plausible configurations leading to the occurrence of overqualification, possibly based on individual or organizational factors or with the addition of other countries outside the OECD sample.

Chapter Two emphasized that the AMO models truly orient research support from the point of view of organizational outcomes but do not capture the full complexity of why the HPWP do not moderate the relationship between POQ and relative income. In doing so, further segmentation of the theoretical AMO model into empirical, measurable, and specific HPWP practices is recommended. Similarly, the confirmatory effect of gender should be investigated when wages are set because of objective and perceived overqualification and only in contexts where the "literacy mismatch" moderation effects apply.

Although this dissertation has assembled the macro-level factors responsible for employee overqualification, it is a promising avenue for future research to consider other factors, organizational or individual, that lead to it and that have not been considered here. The framework on the boundary conditions of employee overqualification will become even more important and complete if the current or other moderators' effects apply to the negative overqualification outcomes, which are numerous and often result from job dissatisfaction and relative income loss, and which this research focused on.

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APPENDICES

Appendix 1.1: Overview of the measures of objective and perceived overqualification

Variable description	PIAAC source/ question code	Value labels - description	operationalization, coding procedure
Objective overqualification	Master questionnaire, B_Q01a (EDCAT7): “Which of the qualifications on this card is the highest you have obtained?”	01 No formal education or below ISCED 1	EDCAT7 – D-Q12a = • 0, matched education • > 0, objectively overqualified (overeducated) • < 0, objectively underqualified (undereducated)
		02 ISCED 1	
		03 ISCED 2	
		04 ISCED 3C shorter than 2 years	
		05 ISCED 3C 2 years or more	
		06 ISCED 3A-B	
	Master questionnaire D_Q12a: “Still talking about your current job: If applying today, what would be the usual qualifications, if any that someone would need to get this type of job?”	07 ISCED 3 (without distinction A-B-C, 2y+)	
		08 ISCED 4C	
		09 ISCED 4A-B	
		10 ISCED 4 (without distinction A-B-C)	
		11 ISCED 5B	
		12 ISCED 5A, bachelor’s degree	
		13 ISCED 5A, master’s degree	
		14 ISCED 6	
Perceived overqualification	Master questionnaire D_Q12b: “Thinking about whether this qualification is necessary for doing your job satisfactorily, which of the following statements would be most true?”	• “This level is necessary” = perceived as matched • “A lower level would be sufficient” = perceived as overqualified • “A higher level would be needed” = perceived as underqualified	

Source: own work.

Appendix 1.2: Detailed overview of the measure of objective overqualification

ISCED (1997 levels) *	EDCAT 7	Value labels	D_Q12a	Chapter 1	Chapters 2,3 and 4 (as in Domadenik et al., 2015)	
No formal education (ISCED 0, less than ISCED 1)	1	Primary or less	1	Lower secondary	Primary or less	No formal education + Incomplete basic education
1	2	Lower secondary	2		Lower secondary	Completed basic education
2	2		3			Secondary short-term vocational education (1-2 years)
3C short or less	2		4			
3C long	3	Upper secondary	5	Upper secondary		Secondary vocational education (2-3 years)
3 A-B	3		6			Technical and professional secondary education (4 years)
3 A-B, C long (without distinction)	3		7			
4C	4	Postsecondary, non-tertiary	8	Postsecondary, non-tertiary		Short-term higher education (former) + professional higher education
4 A-B	4		9			
4 A-B, C (without distinction)	4		10			
5B	5	Tertiary – professional	11	Tertiary / professional / bachelor master PhD	Tertiary/ professional/ bachelor	Academic higher education
5A (bachelor)	6	Tertiary -bachelor	12			
5A (master)	7	Tertiary – master/ research	13		Tertiary master/ research	Specialization after professional higher education, specialization after academic higher education +
6	7		14			Doctorate of science and similar education

Source: own work.

Appendix 1.3: Truth table for high OQ

RISK	RGTY	DYNA	VOCA	TERT	MAS	number	OQ	cases	raw consist.	PRI consist.	SYM consist
1	0	0	0	0	1	2	1		1	1	1
1	0	0	0	0	0	1	1		1	1	1
1	0	1	0	0	0	1	1		1	1	1
1	1	1	0	0	0	1	1		1	1	1
0	1	1	0	1	0	1	1		1	1	1
0	0	0	0	1	1	1	1		1	1	1
1	0	0	0	1	1	1	1		1	1	1
1	0	1	0	1	1	1	1		1	1	1
1	1	0	1	0	1	2	0		0.5	0.5	0.5
0	1	0	0	1	0	3	0		0.333333	0.333333	0.333333
0	1	1	0	0	0	2	0		0	0	0
0	1	0	1	0	0	2	0		0	0	0
0	1	0	1	1	1	2	0		0	0	0
1	1	0	1	0	0	1	0		0	0	0
0	1	0	1	1	0	1	0		0	0	0
1	1	0	1	1	0	1	0		0	0	0
0	1	1	0	0	1	1	0		0	0	0
1	0	0	1	0	1	1	0		0	0	0
0	1	0	1	0	1	1	0		0	0	0
0	0	0	1	1	1	1	0		0	0	0

Source: own work.

Appendix 1.4: Configurations for high OOQ, complex solution

Model: $OOQ = f(RISK, RGTY, DYNA, VOCA, TERT, MAS)$

COMPLEX SOLUTION: frequency cutoff: 1 consistency cutoff: 1

	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
RISK*~RGTY*~DYNA*~VOCA*~TERT	0.272727	0.272727	1	CAN, EST
RISK*DYNA*~VOCA*~TERT*~MAS	0.181818	0.181818	1	ISR, SPA
~RGTY*~DYNA*~VOCA*TERT*MAS	0.181818	0.0909091	1	GBR, JPN
RISK*~RGTY*~VOCA*TERT*MAS	0.181818	0.0909091	1	GBR, IRL
~RISK*RGTY*DYNA*~VOCA*TERT*~MAS	0.0909091	0.0909091	1	LTU
solution coverage: 0.818182				
solution consistency: 1				

Source: own work.

Appendix 1.5: Truth table for low OOQ

RISK	RGTY	DYNA	VOCA	TERT	MAS	number	~OOQ	cases	raw consist.	PRI consist.	SYM consist
0	1	1	0	0	0	2	1		1	1	1
0	1	0	1	0	0	2	1		1	1	1
0	1	0	1	1	1	2	1		1	1	1
1	1	0	1	0	0	1	1		1	1	1
0	1	0	1	1	0	1	1		1	1	1
1	1	0	1	1	0	1	1		1	1	1
0	1	1	0	0	1	1	1		1	1	1
1	0	0	1	0	1	1	1		1	1	1
0	1	0	1	0	1	1	1		1	1	1
0	0	0	1	1	1	1	1		1	1	1
0	1	0	0	1	0	3	0		0.666667	0.666667	0.666667
1	1	0	1	0	1	2	0		0.5	0.5	0.5
1	0	0	0	0	1	2	0		0	0	0
1	0	0	0	0	0	1	0		0	0	0
1	0	1	0	0	0	1	0		0	0	0
1	1	1	0	0	0	1	0		0	0	0
0	1	1	0	1	0	1	0		0	0	0
0	0	0	0	1	1	1	0		0	0	0
1	0	0	0	1	1	1	0		0	0	0
1	0	1	0	1	1	1	0		0	0	0

Source: own work.

Appendix 1.6: Configurations for low OOQ, complex solution

Model: OOQ = f (RISK, RGTY, DYNA, VOCA, TERT, MAS)

COMPLEX SOLUTION: frequency cutoff: 1 consistency cutoff: 1

	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
RGTY*~DYNA*VOCA*~MAS	0.3125	0.125	1	DNK, FIN, NDL, NOR, SVN
~RISK*RGTY*~DYNA*VOCA	0.375	0.0625	1	CZE, FIN, ITA, NDL, POL, SVN
~RISK*RGTY*DYNA*~VOCA*~TERT	0.1875	0.1875	1	CHI, GRE, TUR
~RISK*~DYNA*VOCA*TERT*MAS	0.1875	0.0625	1	CZE, POL, SVK
RISK*~RGTY*~DYNA*VOCA*~TERT*MAS	0.0625	0.0625	1	BEL

solution coverage: 0.8125

solution consistency: 1

Source: own work.

Appendix 1.7: Configurations for high POQ, complex solution

Model: POQ = f (OOQ, RISK, RGTY, TERT, MAS)

COMPLEX SOLUTION: frequency cutoff: 1 consistency cutoff: 1

	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
RISK*~RGTY*~TERT*MAS	0.2	0.0666667	1	BEL, CAN, NZL
~OOQ*~RISK*TERT*MAS	0.2	0.2	1	CZE, POL, SVK
OOQ*RISK*~TERT*MAS	0.2	0.0666667	1	CAN, GER, NZL
OOQ*~RGTY*TERT*MAS	0.2	.0.2	1	GBR, IRL, JPN
OOQ*~RISK*RGTY*TERT*~MAS	0.13333	0.13333	1	FRA, LTU

solution coverage: 0.8

solution consistency: 1

Source: own work.

Appendix 1.8: Truth table for high POQ

OOQ	RISK	RGTY	TERT	MAS	number	POQ	cases	raw consist.	PRI consist.	SYM consist
1	0	1	1	0	2	1		1	1	1
1	1	0	0	1	2	1		1	1	1
1	1	0	1	1	2	1		1	1	1
0	0	1	1	1	2	1		1	1	1
0	1	0	0	1	1	1		1	1	1
1	1	1	0	1	1	1		1	1	1
0	0	0	1	1	1	1		1	1	1
1	0	0	1	1	1	1		1	1	1
0	0	1	1	0	3	0		0.666667	0.666667	0.666667
0	0	1	0	0	4	0		0.25	0.25	0.25
1	1	0	0	0	2	0		0	0	0
0	0	1	0	1	2	0		0	0	0
0	1	1	0	0	1	0		0	0	0
1	1	1	0	0	1	0		0	0	0
0	1	1	1	0	1	0		0	0	0

Source: own work.

Appendix 1.9: Truth table for low POQ

OOQ	RISK	RGTY	TERT	MAS	number	~POQ	cases	raw consist.	PRI consist.	SYM consist
1	1	0	0	0	2	1		1	1	1
0	0	1	0	1	2	1		1	1	1
0	1	1	0	0	1	1		1	1	1
1	1	1	0	0	1	1		1	1	1
0	1	1	1	0	1	1		1	1	1
0	1	1	0	1	1	1		1	1	1
0	0	1	0	0	4	0		0.75	0.75	0.75
0	0	1	1	0	3	0		0.333333	0.333333	0.333333
1	0	1	1	0	2	0		0	0	0
1	1	0	0	1	2	0		0	0	0
1	1	0	1	1	2	0		0	0	0
0	0	1	1	1	2	0		0	0	0
0	1	0	0	1	1	0		0	0	0
1	1	1	0	1	1	0		0	0	0
0	0	0	1	1	1	0		0	0	0
1	0	0	1	1	1	0		0	0	0

Source: own work.

Appendix 1.10: Configurations for low POQ, complex solution

Model: $\sim\text{POQ} = f(\text{OOQ}, \text{RISK}, \text{RGTY}, \text{TERT}, \text{MAS})$

COMPLEX SOLUTION: frequency cutoff: 1 consistency cutoff: 1

	Raw coverage	Unique coverage	Consistency	Cases with greater than 0.5 membership in term
OOQ*RISK*~MAS	0.25	0.166667	1	EST, ISR, SPA
RISK*RGTY*~MAS	0.25	0.166667	1	DNK, NOR, SPA
~OOQ*RGTY*~TERT*MAS	0.25	0.25	1	AUT, GRE, ITA

solution coverage: 0.666667

solution consistency: 1

Source: own work.

Appendix 1.11: Prime implicants chart

	OOQ* ~RISK* RGTY* TERT* ~MAS	~OOQ* RISK *~RGTY* ~TERT* MAS
OOQ*~RGTY		
OOQ*~RISK		
~ RGTY * MAS		√
OOQ * TERT	√	

Source: own work.

Appendix 2.1: Overview of dependent variables (Chapters, 2, 3 and 4)

Variable description	PIAAC source/ question code	Value labels - description	Operationalization, coding procedure
job satisfaction (JS)	PIAAC Questionnaire item D_Q14	All things considered, how satisfied are you with your current job? Would you say you are ...	1= extremely dissatisfied, 2= dissatisfied, 3= neither satisfied, nor dissatisfied, 4= satisfied, 5= extremely satisfied
country relative income	PIAAC Questionnaire items : D_Q16b EARNMTHBONUS (derived)	What is your usual gross pay ^Per: Hour/Day/Etc? Please give as good an approximation as you can. By gross, I mean before deductions for tax, social security contributions, and the like. Please include any regular overtime pay, regular bonuses, tips and commissions. Don't include annual bonuses such as 13th month or holiday pay. / Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)	1 = lowest decile, 2 = 9 th decile, 3 = 8 th decile, 4 = 7 th decile, 5 = 6 th decile, 6 = 5 th decile, 7= 4 th decile, 8= 3 rd decile, 9 = 2 nd decile 10 = highest decile

Source: own work.

Appendix 2.2: HPWP variable design

Item	AMO grouping (Jiang, Lepak, Hu & Baer 2012)	HPWP variable description (Posthuma, Campion, Masimova & Campion (2013)	design	PIAAC source/ question code	Value labels - description	Operationalization, coding procedure
H _{pw} 1	training and development	training and development for job or firm specific skills	core*	B_Q12c	During the last 12 months, have you attended any organized sessions for on-the-job training or training by supervisors or co-workers?	yes = 1, other = 0
H _{pw} 9		use of Training to Improve Performance - Instructing, teaching and training others	broad **	F_Q01b	How often does/did your job/ last job usually involve instructing, training or teaching people, individually or in groups?	up to a quarter / half /more than half/ all of the time = 1, other = 0
H _{pw} 2	compensation and benefits	Incentive Compensation	broad	D_Q17a	In addition to your usual pay, do you receive any other payments related to this job, such as annual bonuses e.g., a 13th month or holidays pay	yes = 1, other = 0
H _{pw} 3	employee relations	Job Security/ Emphasis on Permanent Jobs	broad	D_Q09	What kind of employment contract do you have?	an indefinite contract = 1, other = 0
H _{pw} 4				D_Q11a	To what extent can you choose or change the sequence of your tasks?	
H _{pw} 5	job and work design	Job Rotation/ Cross Functional Utilization – work flexibility	core	D_Q11b	To what extent can you choose or change how you do your work?	very little, to some extent, to a high extent, to a very high extent = 1, other = 0
H _{pw} 6				D_Q11c	To what extent can you choose or change the speed or rate at which you work?	
H _{pw} 10				F_Q03a_lead	How often does/did your Job/ Last job usually involve planning your own activities?	
H _{pw} 11	communication	Organizing own time	broad	F_Q03c	How often does/did your Job/ Last job usually involve organizing your own time?	less than once a month/ less than once a week but at least once a month/ at least once a week but not every day/ every day = 1, other = 0
H _{pw} 8		Formal Information Sharing Program - Sharing information with others	core	F_Q02a	How often does/did your Job/Last job usually involve sharing work-related information with co-workers?	
H _{pw} 7	decentralized participative decisions	co-operating with coworkers	core	F_Q01b	In your job/last job what proportion of your time do/did you usually spend cooperating or collaborating with co- workers?	up to a quarter / half /more than half/ all of the time = 1, other = 0

Source: own work.

Appendix 2.3: Overview of control variables (Chapters 2, 3 and 4)

Variable description	PIAAC source/ question code	Value labels – description	Operationalization, coding procedure
Gender	PIAAC Questionnaire item A_N01 (GENDER_R – derived)	Is the respondent male or female?	0= male, 1= female*
Age	PIAAC Questionnaire item A_Q01a (AGE5LFS - derived)	I would like to start with some general questions. Can you please tell me in which year you were born?	1 = aged 16 – 19; 2 = aged 20 – 24 3 = aged 25- 29; 4 = aged 30 – 34 5 = aged 35 – 39; 6 = aged 40 – 44 7 = aged 45 – 49; 8 = aged 50 – 54 9 = aged 55 – 59; 10 = aged 60 – 65
Sector type	PIAAC Questionnaire item D_Q03	In which sector of the economy do you work? Is it ...	1 = The public sector (for example the local government or a state school) 2 = A non-profit organization (for example a charity, professional association or religious organization) 3 = The private sector (for example a company) *
Company size	PIAAC Questionnaire item D_Q06a	How many people work for your employer at the place where you work? Would that be ...	1 = 1 to 10 people. 2= 11 to 50 people 3 = 51 to 250 people. 4 = 251 to 1000 people 5 = more than 1000 people
ISCO occupation classification	ISCO 08 standardization**	ISCO 08 standardization elementary occupations	ISCO 1 –managers and professionals ISCO 2 – technicians and associate professionals ISCO 3 - clerical support workers ISCO 4 - service support workers ISCO 5 - craft and related trades workers ISCO 6 - plant and machine operators and assemblers ISCO 7 – elementary occupations

* Considered as referential in the hierarchical multilevel analysis

** ISCO 1 and 2 are collapsed into a single category, due to small sample size the ISCO on armed forces and skilled agricultural, fishery and forest workers are omitted

Source: own work.

Appendix 2.4: Hierarchical moderation effects POQ*HPWP, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3a			M4a			M5a		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.063 (0.023)	178.57	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.053 (0.040)	99.091	***				3.948 (0.04)	99.10	***
gender: male	0.020 (0.006)	3.30	***				0.003 (0.006)	0.516	0.604	0.0099 (0.006)	1.604	.109				- 0.037 (0.006)	- 0.58	0.562
NGO sector							0.11 (0.017)	6.52	***	0.104 (0.018)	5.896	***				0.101 (0.018)	5.73	***
public sector	-0.104 (0.006)	-18.03	***				0.079 (0.0067)	11.75	***	0.066 (0.006)	9.741	***				0.062 (0.007)	9.06	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.041 (0.009)	-4.724	***				-0.033 (0.009)	-3.72	***
ISCO 4							-0.012 (0.010)	-12.17	***	-0.109 (0.01)	-	***				-0.084 (0.010)	-8.16	***
ISCO 5	0.006 (0.001)	5.36	***				-0.136 (0.086)	-15.90	***	-0.115 (0.009)	-	***				-0.070 (0.009)	-7.78	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.136 (0.01)	-	***				-0.089 (0.011)	-7.96	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.197 (0.012)	-	***				-0.127 (0.013)	-9.97	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.22 (0.012)	-	***				-0.137 (0.013)	-	***
POQ	-0.157 (0.012)	-13.30	***							-0.111 (0.007)	-15.50	***				-0.147 (0.011)	-	***
HPWP	0.052 (0.002)	29.747	***													0.023 (0.019)	15.69	***
POQ * HPWP	0.017 (0.003)	4.797	***													0.016 (0.003)	4.699	***

table
continues

continued

1.2 Model fit	Linear regression model	Hierarchical multilevel linear regression models				
		M 1	M 2	M 3a	M4	M 5a
total df (Δ df)		3	12 (9)	13 (10)		15 (12)
- 2LL (Δ -2LL= Δ)	76353	247733.908	200042.875 (- 47691.033)	180269.035 (- 67464.873)		179851.16 (- 67882.748)
AIC (Δ AIC)		247739.908	200066.875 (- 47673.033)	180295.035 (- 67444.873)		179881.16 (- 67858.748)
BIC (Δ BIC)		247768.509	200178.880 (- 47.589.629)	180415.195 (- 67353.314)		180019.807 (- 67748.702)
2.Reduction in variance estimate						
within countries	3.2		3.37	6.74	Cov (β_{0j} , β_{1j}) = - 0.034, Wald Z = 1.429, p = 0.153	7.32
between			23.33	19		29.13

Source: own work.

*Appendix 2.5: Multiple linear regression moderation effects POQ*HPWP, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	6.119	.074		82.571	***
Acquired education	.436	.008	.213	57.408	***
Gender	-1.751	.017	-.316	-101.414	***
Sector type	.191	.017	.037	11.511	***
ISCO occupation	-.233	.005	-.192	-49.229	***
Perceived overqualification (POQ)	-.211	.034	-.031	-6.209	***
HPWP	.378	.005	.266	70.128	***
POQ*HPWP	-.008	.010	-.004	-.772	.440

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

*Appendix 2.6: Multiple linear regression moderation effects OOQ*HPWP, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	5.421	.071		76.485	***
Acquired education	.557	.008	.274	74.101	***
Gender	-1.694	.016	-.303	-103.578	***
Sector type	.230	.016	.043	14.480	***
ISCO occupation	-.172	.005	-.145	-37.890	***
Objective overqualification (OOQ)	-.768	.029	-.124	-26.783	***
HPWP	.360	.005	.263	68.239	***
OOQ*HPWP	-.071	.008	-.040	-8.489	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

Appendix 2.7: Hierarchical moderation effects OOQ*HPWP, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects 1.1. Parameters	Linear regression model			Hierarchical multilevel linear regression models														
	Estimate (SE)	t	sig	M1			M2			M3b			M4b			M5b		
				Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.078 (0.022)	183.583	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.065 (0.040)	100.336	**				3.962 (0.039)	100.274	***
gender: male	0.029 (0.006)	4.929	***				0.003 (0.006)	0.516	0.604	0.0006 (0.006)	0.105	.916				-0.012 (0.006)	-1.986	0.047
NGO sector							0.11 (0.017)	6.52	***	0.112 (0.017)	6.549	**				0.108 (0.017)	6.333	***
public sector	-0.107 (0.006)	-18.975	***				0.079 (0.0067)	11.75	***	0.071 (0.007)	10.630	**				0.065 (0.007)	9.706	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.039 (0.009)	-4.557	**				-0.030 (0.009)	-3.473	***
ISCO 4							-0.0124 (0.010)	-12.17	***	-0.109 (0.010)	-10.687	**				-0.084 (0.010)	-8.171	***
ISCO 5	0.004 (0.001)	4.039	***				-0.136 (0.086)	-15.90	***	-0.0108 (0.009)	-12.522	**				-0.063 (0.009)	-7.037	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.141 (0.010)	-13.254	**				-0.092 (0.010)	-8.494	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.191 (0.011)	-16.234	**				-0.120 (0.012)	-9.827	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.226 (0.011)	-20.120	**				-0.138 (0.012)	-11.545	***
OOQ	-0.158 (0.010)	-15.961	***							-0.150 (0.006)	-23.491	**				-0.173 (0.097)	-17.801	***
HPWP	0.054 (0.002)	30.815	***													0.029 (0.019)	15.513	***
OOQ*HPWP	0.006 (0.003)	1.934	***													0.013 (0.003)	4.445	***

table
continues

continued

1.2 Model fit	Linear regression model	Hierarchical multilevel linear regression models				
		M1	M2	M3b	M4b	M5b
total df (Δ df)		3	12 (9)	13 (10)		15 (12)
- 2LL (Δ -2LL = $\Delta \chi^2$)		247738.908	200042.875	197350.624		196881.959
	82757		(- 47691.033)	(- 50388.284)		(- 50856.949)
AIC (Δ AIC)		247739.908	200066.875	197376.624		196911.959
			(- 47673.033)	(- 50364.284)		(- 50827.949)
BIC (Δ BIC)		247768.509	200178.880	197497.432		197051.815
			(- 47.589.629)	(- 50271.077)		(- 50716.694)
2. Reduction in variance estimate						
within countries			3.37	4.23	Cov (β_{0j} , β_{1j}) = -	4.81
	3.7				0.024, Wald Z = -	
between countries			23.33	21.32	0.921, p = 0.357	31.35

Source: own work.

Appendix 3.1: Overview of the skills mismatch variable design

Variable description	PIAAC source/ question code	Value labels – description	Operationalization, coding procedure
F_Q07a	Do you feel that you have the skills to cope with more demanding duties than those you are required to perform in your current job?	One's self-reported skills match	no = 1, else = 0
F_Q07b	Do you feel that you need further training in order to cope well with your present duties?	One's stated necessity for further training	no = 1, else = 0
One's proficiency in literacy - score (LITSCORE): LITSCORE = avg (PVLIT1 + PVLIT2 +... + PVLIT10)		Respondents' average value of the 10 literacy scores as aggregated by PIAAC software, per ISCO and occupation	discrete value score ranging from 0 to 500
Respondents matched in skills: LITSCORE * F_Q07a * F_Q07b (F_Q07a ≠ 0 and F_Q07b ≠ 0)		literacy score for the self -reported well-matched workers per ISCO and occupation	discrete value score ranging from 1 to 500
Respondents designated as matched / mismatch in literacy		respondent's literacy score compared to the self-reported well-matched respondents in their respective ICO and occupation	if LITSCORE – mean 5 th decile score per ISCO/country < 0, then “underskilled” if LITSCORE – mean 95 th decile score per ISCO/country > 0, then “overskilled” if (LITSCORE – mean 5 th decile) * (LITSCORE – mean 95 th decile) < 0, then “matched” if (LITSCORE – mean 5 th decile) * (LITSCORE – mean 95 th decile) > 0, then “mismatched”

Source: own work.

Appendix 3.2: Hierarchical moderation effects POQ*OS, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
	Estimate (SE)	t	sig	M1			M2			M3a			M4a			M5a		
				Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.32 (0.022)	198.37	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.053 (0.040)	99.091	***				4.056 (0.040)	99.47	***
gender: male	0.003 (0.006)	0.421	0.674				0.003 (0.006)	0.516	0.604	0.0099 (0.006)	1.604	.109				0.011 (0.006)	1.807	0.071
NGO sector							0.11 (0.017)	6.52	***	0.104 (0.018)	5.896	***				0.103 (0.018)	5.858	***
public sector	-0.131 (0.006)	-22.78	***				0.079 (0.0067)	11.75	***	0.066 (0.006)	9.741	***				0.066 (0.007)	9.693	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.041 (0.009)	-4.724	***				-0.039 (0.009)	-4.474	***
ISCO 4							-0.124 (0.010)	-12.17	***	-0.109 (0.01)	10.637	***				-0.106 (0.010)	10.270	***
ISCO 5							-0.136 (0.086)	-15.90	***	-0.115 (0.009)	13.052	***				-0.114 (0.009)	12.912	***
ISCO 7	0.007 (0.001)	6.30	***				-0.156 (0.010)	-14.71	***	-0.136 (0.01)	12.431	***				-0.136 (0.011)	12.422	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.197 (0.012)	16.044	***				-0.194 (0.012)	15.775	***
ISCO 9																		***
							-0.271 (0.011)	-24.58	***	-0.22 (0.012)	17.646	***				-0.217 (0.012)	17.308	table continues

continued

1.Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3a			M4a			M5a		
1.1.Parameters	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
POQ	-0.133 (0.008)	-17.23	***							-0.111 (0.007)	-15.50	***				-0.106 (0.007)	-14.057	***
Overskilling (OS)	-0.084 (0.011)	-7.6	***													-0.046 (0.010)	-4.283	***
POQ*OS	-0.031 (0.024)	-1.319	0.187													-0.043 (0.022)	-1.894	0.058
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)						15 (12)		
- 2LL (Δ -2LL= $\Delta \chi^2$)				247733.908			200042.875 (- 47691.033)			180269.035 (- 67464.873)						180224.617 (- 67509.281)		
AIC (Δ AIC)		76350		247739.908			200066.875 (- 47673.033)			180295.035 (- 67444.873)						180254.617 (- 67485.291)		
BIC (Δ BIC)				247768.509			200178.880 (- 47.589.629)			180415.195 (- 67353.314)						180393.263 (- 67375.246)		
2. Reduction in variance estimate																		
within countries		1.5					3.37			6.74			Cov (β_{0j} , β_{1j}) = - 0.034, Wald Z = 1.429, p = 0.153			6.77		
between countries							23.33			19						23.64		

Source: own work.

Appendix 3.3: Hierarchical moderation effects POQ*US, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3a			M4a			M5a		
1.1.Parameters	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.308 (0.022)	198.025	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.053 (0.040)	99.091	***				4.053 (0.040)	99.089	***
gender: male	0.005 (0.006)	0.824	0.410				0.003 (0.006)	0.516	0.604	0.0099 (0.006)	1.604	.109				0.01 (0.006)	1.577	0.115
NGO sector							0.11 (0.017)	6.52	***	0.104 (0.018)	5.896	***				0.104 (0.018)	5.889	***
public sector	-0.132 (0.006)	-22.978	***				0.079 (0.0067)	11.75	***	0.066 (0.006)	9.741	***				0.066 (0.007)	9.715	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.041 (0.009)	-4.724	***				-0.041 (0.009)	-4.734	***
ISCO 4							-0.0124 (0.010)	-12.17	***	-0.109 (0.01)	10.637	***				-0.109 (0.010)	-10.616	***
ISCO 5	0.007 (0.001)	6.721	***				-0.136 (0.086)	-15.90	***	-0.115 (0.009)	13.052	***				-0.115 (0.009)	-13.031	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.136 (0.01)	12.431	***				-0.139 (0.010)	-12.631	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.197 (0.012)	16.044	***				-0.197 (0.012)	-16.045	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.22 (0.012)	17.646	***				-0.220 (0.012)	-17.582	***

table
continues

continued

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3a			M4a			M5a		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Underskilling (US)	-0.026 (0.018)	1.425	0.154													0.025 (0.018)	-1.397	0.163
POQ*US	-0.071 (0.040)	1.754	0.079													0.078 (0.039)	2.008	0.045
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)						15 (12)		
- 2LL (Δ -2LL= $\Delta \chi^2$)				247733.908			200042.875 (- 47691.033)			180269.035 (- 67464.873)						180251.576 (- 67482.332)		
AIC (Δ AIC)	76350			247739.908			200066.875 (- 47673.033)			180295.035 (- 67444.873)						180281.576 (- 67458.332)		
BIC (Δ BIC)				247768.509			200178.880 (- 47589.629)			180415.195 (- 67353.314)						180420.222 (- 67348.287)		
2. Reduction in variance estimate																		
within countries		1.4					3.37			6.74			Cov (β_{0j} , β_{1j}) = - 0.034, Wald Z = 1.429, p = 0.153			6.75		
between countries							23.33			19						19.03		

Source: own work.

Appendix 3.4: Hierarchical moderation effects OOQ*POQ, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.323 (0.022)	199.179	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.065 (0.040)	100.336	***				4.078 (0.040)	100.071	***
gender: male	0.010 (0.006)	1.732	0.083				0.003 (0.006)	0.516	0.604	0.0006 (0.006)	0.105	.916				0.007 (0.006)	-1.139	0.255
NGO sector							0.11 (0.017)	6.52	***	0.112 (0.017)	6.549	***				0.105 (0.018)	5.926	***
public sector	-0.125 (0.006)	-21.807	***				0.079 (0.0067)	11.75	***	0.071 (0.007)	10.630	***				0.062 (0.007)	9.203	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.039 (0.009)	-4.557	***				-0.037 (0.009)	-4.265	***
ISCO 4							-.0124 (0.010)	-12.17	***	-0.109 (0.010)	-10.687	***				-0.099 (0.010)	-9.594	***
ISCO 5	0.007 (0.001)	6.174	***				-0.136 (0.086)	-15.90	***	-.0108 (0.009)	-12.522	***				-0.096 (0.009)	-10.834	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.141 (0.010)	-13.254	***				-0.130 (0.010)	-11.906	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.191 (0.011)	-16.234	***				-0.178 (0.013)	-14.462	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.226 (0.011)	-20.120	***				-0.191 (0.012)	-15.224	***

table
continues

continued

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
OOQ	-0.166 (0.008)	-20.834	***							-0.150 (0.006)	-23.491	***				-0.139 (0.008)	-17.802	***
POQ	-0.110 (0.009)	-12.818	***													-0.097 (0.008)	-11.583	***
OOQ*POQ	-0.054 (0.016)	-3.319	***													-0.027 (0.016)	-1.696	0.090
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)						15 (12)		
-2LL(Δ -2LL= $\Delta\chi^2$)				247738.908			200042.875 (- 47691.033)			197350.624 (- 50388.284)						179552.058 (- 68186.85)		
AIC (Δ AIC)		76271		247739.908			200066.875 (- 47673.033)			197376.624 (- 50364.284)						179082.558 (- 68657.35)		
BIC (Δ BIC)				247768.509			200178.880 (- 47.589.629)			197497.432 (- 50271.077)						179720.689 (- 68047.82)		
2. Reduction in variance estimate																		
within countries							3.37			4.23			Cov (β_{0j} , β_{1j}) = -			7.47		
between countries		2.2					23.33			21.32			0.024, Wald Z = -			20.07		
													0.921, p = 0.357					

Source: own work.

Appendix 3.5: Hierarchical moderation effects OOQ*OS, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
	Estimate (SE)	t	sig	M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.347 (0.021)	204.760	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.065 (0.040)	100.336	***				4.067 (0.040)	100.607	***
gender: male	0.013 (0.006)	2.237	**				0.003 (0.006)	0.516	0.604	0.0006 (0.006)	0.105	.916				0.001 (0.006)	0.307	0.759
NGO sector							0.11 (0.017)	6.52	***	0.112 (0.017)	6.549	***				0.112 (0.017)	6.524	***
public sector	-0.137 (0.006)	-24.444	***				0.079 (0.0067)	11.75	***	0.071 (0.007)	10.630	***				0.070 (0.007)	10.593	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.039 (0.009)	-4.557	***				-0.038 (0.008)	-4.362	***
ISCO 4							-0.124 (0.010)	-12.17	***	-0.109 (0.010)	-10.687	***				-0.106 (0.010)	-10.392	***
ISCO 5	0.005 (0.001)	4.392	***				-0.136 (0.086)	-15.90	***	-0.108 (0.009)	-12.522	***				-0.107 (0.009)	-12.417	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.141 (0.010)	-13.254	***				-0.141 (0.011)	-13.264	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.191 (0.011)	-16.234	***				-0.189 (0.012)	-16.046	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.226 (0.011)	-20.120	***				-0.224 (0.011)	-4.362	*** table continues

continued

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
OOQ	-0.176 (0.007)	-25.948	***							-0.150 (0.006)	-23.491	***				-0.145 (0.007)	-21.402	***
Overskilling (OS)	-0.076 (0.012)	-6.383	***													-0.037 (0.011)	-3.161	**
OOQ*OS	-0.008 (0.020)	-0.419	0.675													-0.031 (0.019)	-1.624	0.104
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)						15 (12)		
- 2LL(Δ -2LL= $\Delta\chi^2$)				247738.908			200042.875 (- 47691.033)			197350.624 (- 50388.284)						197308.743 (- 50430.165)		
		82753																
AIC (Δ AIC)				247739.908			200066.875 (- 47673.033)			197376.624 (- 50364.284)						197338.743 (- 50461.165)		
BIC (Δ BIC)				247768.509			200178.880 (- 47.589.629)			197497.432 (- 50271.077)						197478.598 (- 50289.911)		
2. Reduction in variance estimate																		
within countries							3.37			4.23			Cov (β_{0j} , β_{1j}) = -			4.26		
between countries		2.0											0.024,					
							23.33			21.32			Wald Z = -			21.92		
													0.921, p =					
													0.357					

Source: own work.

Appendix 3.6: Hierarchical moderation effects OOQ*US, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
	Estimate (SE)	t	sig	M1			M2			M3b			M4b			M5b		
				Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.335 (0.021)	204.489	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.065 (0.040)	100.336	***				4.066 (0.041)	100.177	***
gender: male	0.015 (0.006)	2.630	.009				0.003 (0.006)	0.516	0.604	0.0006 (0.006)	0.105	.916				0.0006 (0.006)	-0.95	0.325
NGO sector							0.11 (0.017)	6.52	***	0.112 (0.017)	6.549	***				0.112 (0.017)	6.546	***
public sector	-0.138 (0.006)	-24.593	***				0.079 (0.0067)	11.75	***	0.071 (0.007)	10.630	***				0.071 (0.006)	10.616	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.039 (0.009)	-4.557	***				-0.04 (0.009)	-4.575	***
ISCO 4							-.0124 (0.010)	-12.17	***	-0.109 (0.010)	-10.687	***				-0.109 (0.010)	-10.681	***
ISCO 5	0.005 (0.001)	4.749	***				-0.136 (0.086)	-15.90	***	-.0108 (0.009)	-12.522	***				-0.108 (0.009)	-12.519	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.141 (0.010)	-13.254	***				-0.143 (0.011)	-13.400	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.191 (0.011)	-16.234	***				-.0191 (0.012)	-16.252	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.226 (0.011)	-20.120	***				-0.226 (0.011)	-20.082	***

table
continues

continued

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
OOQ	-0.181 (0.006)	-27.904	***							-0.150 (0.006)	-23.491	***				-0.150 (0.006)	-23.152	***
Underskilling (US)	0.028 (0.018)	1.498	0.134													0.026 (0.018)	-3.161	**
OOQ*US	0.037 (0.035)	1.047	0.295													0.014 (0.034)	0.423	0.672
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)						15 (12)		
- 2LL(Δ -2LL= $\Delta\chi^2$)				47738.908			200042.875 (- 47691.033)			197350.624 (- 50388.284)						197333.521 (- 50405.387)		
AIC (Δ AIC)	82753			47739.908			200066.875 (- 47673.033)			197376.624 (- 50364.284)						197363.521 (- 50376.387)		
BIC (Δ BIC)				47768.509			200178.880 (- 47.589.629)			197497.432 (- 50271.077)						197503.375 (- 50265.134)		
2. Reduction in variance estimate																		
within countries							3.37			4.23			Cov (β_{0j} , β_{1j}) = - 0.024, Wald Z = - 0.921, p = 0.357			4.25		
between countries							23.33			21.32						26.12		

Source: own work.

*Appendix 3.7: Multiple linear regression moderation effects POQ*OS, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	7.777	.074		105.124	***
Acquired education	.519	.008	.254	65.837	***
Gender	-1.929	.018	-.348	-108.170	***
Sector type	.143	.017	.027	8.278	***
ISCO occupation	-.340	.005	-.280	-71.408	***
Perceived overqualification (POQ)	-.277	.023	-.041	-12.129	***
Overskilling (OS)	.181	.033	.020	5.517	***
POQ * OS	-.337	.069	-.018	-4.858	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

*Appendix 3.8: Multiple linear regression moderation effects POQ*US, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	7.783	.074		105.118	***
Acquired education	.521	.008	.255	66.536	***
Gender	-1.932	.018	-.349	-108.286	***
Sector type	.145	.017	.028	8.367	***
ISCO occupation	-.338	.005	-.279	-71.479	***
Perceived overqualification (POQ)	-.320	.022	-.047	-14.594	***
Underskilling (US)	-.152	.056	-.010	-2.723	.006
POQ * US	.244	.122	.007	2.001	.045

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

*Appendix 3.9: Multiple linear regression moderation effects OOQ*POQ, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	6.896	.075		92.107	***
Acquired education	.668	.008	.327	81.187	***
Gender	-1.870	.018	-.338	-106.381	***
Sector type	.193	.017	.037	11.303	***
ISCO occupation	-.265	.005	-.218	-54.215	***
Objective overqualification (OOQ)	-1.018	.024	-.157	-41.845	***
Perceived overqualification (POQ)	-.187	.025	-.027	-7.513	***
OOQ*POQ	-.249	.047	-.021	-5.271	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

*Appendix 3.10: Multiple linear regression moderation effects OOQ*OS, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	6.784	.071		95.559	***
Acquired education	.667	.008	.329	86.690	***
Gender	-1.842	.017	-.330	-109.439	***
Sector type	.193	.016	.036	11.721	***
ISCO occupation	-.259	.005	-.218	-56.495	***
Objective overqualification (OOQ)	-1.122	.021	-.181	-54.677	***
Overskilling (OS)	.151	.034	.016	4.418	***
OOQ*OS	-.205	.057	-.014	-3.579	***

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

*Appendix 3.11: Multiple linear regression moderation effects POQ*US, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	sig
(Constant)	6.789	.071		95.473	***
Acquired education	.669	.008	.329	87.303	***
Gender	-1.844	.017	-.330	-109.504	***
Sector type	.194	.016	.037	11.790	***
ISCO occupation	-.258	.005	-.217	-56.516	***
Objective overqualification (OOQ)	-1.150	.020	-.186	-58.319	***
Underskilling (US)	-.108	.054	-.007	-1.999	.046
OOQ*US	.187	.103	.006	1.811	.070

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

Appendix 4.1: Overview of the elaborative learning strategies variable design

Variable description	PIAAC source/ question code	Value labels – description	Operationalization, coding procedure
ELS – elaborative processing	I_Q04b	When I hear or read about new ideas, I try to relate them to real life situations to which they might apply	1 = Not at all
	I_Q04d	I like learning new things	2 =Very little
	I_Q04h	When I come across something new, I try to relate it to what I already know	3 = To some extent
		<i>To what extent do the following statements apply to you</i>	
elaborative LS – deep processing	I_Q04j	I like to get to the bottom of difficult things	4 = To a high extent
	I_Q04l	I like to figure out how different ideas fit together	5 = To a very high extent
	I_Q04m	If I don't understand something, I look for additional information to make it clearer	

Source: own work.

Appendix 4.2: Hierarchical moderation effects $POQ*DP + POQ*EP$, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
	model			M1			M2			M3a			M4a			M5a		
1.1.Parameters	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.272 (0.022)	197.267	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.053 (0.040)	99.091	***				4.035 (0.039)	101.066	***
gender: male	0.006 (0.006)	1.070	0.284				0.003 (0.006)	0.516	0.604	0.0099 (0.006)	1.604	.109				0.063 (0.006)	1.021	0.307
NGO sector							0.11 (0.017)	6.52	***	0.104 (0.018)	5.896	***				0.102 (0.017)	5.817	***
public sector	-0.118 (0.006)	-20.662	***				0.079 (0.0067)	11.75	***	0.066 (0.006)	9.741	***				0.066 (0.006)	9.713	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.041 (0.009)	-4.724	***				-0.032 (0.009)	-3.652	***
ISCO 4							-.0124 (0.010)	-12.17	***	-0.109 (0.01)	10.637	***				-0.095 (0.010)	-9.188	***
ISCO 5	0.005 (0.001)	4.772	***				-0.136 (0.086)	-15.90	***	-0.115 (0.009)	13.052	***				-0.098 (0.009)	-10.946	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.136 (0.01)	12.431	***				-0.112 (0.011)	-10.120	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.197 (0.012)	16.044	***				-0.167 (0.012)	-13.375	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.22 (0.012)	17.646	***				-0.190 (0.013)	-14.957	***
POQ	-0.126 (0.007)	-17.291	***							-0.111 (0.007)	-15.50	***				-0.108 (0.007)	-15.103	***
Deep processing (DP)	-0.066 (0.005)	11.938	***													0.025 (0.006)	4.121	*** table continues

continued

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3a			M4a			M5a		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Elaborative processing (EP)	0.061 (0.006)	10.084	***													0.040 (0.005)	7.224	***
POQ * DP	-0.009 (0.012)	-0.807	0.419													-0.019 (0.011)	-1.751	0.08
POQ * EP	-0.007 (0.013)	-0.537	0.591													-0.008 (0.123)	-0.612	0.54
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)						17 (14)		
- 2LL (Δ -2LL= Δ				247733.908			200042.875 (- 47691.033)			180269.035 (- 67464.873)						180004.862 (- 67729.046)		
AIC (Δ AIC)	76326			247739.908			200066.875 (- 47673.033)			180295.035 (- 67444.873)						180038.862 (- 67701.046)		
BIC (Δ BIC)				247768.509			200178.880 (- 47589.629)			180415.195 (- 67353.314)						180195.990 (- 67572.519)		
2. Reduction in variance estimate																		
within countries		2.5					3.37			6.74			Cov (β_{0i} , β_{1i}) = - 0.034, Wald Z =			7.01		
between countries							23.33			19			1.429, p = 0.153			25.22		

Source: own work.

Appendix 4.3: Hierarchical moderation effects $OOQ*DP + POQ*EP$, job satisfaction as an outcome, controlled for ISCO

1.Estimates of Fixed Effects	Linear regression model			Hierarchical multilevel linear regression models														
1.1.Parameters	Estimate (SE)	t	sig	M1			M2			M3b			M4b			M5b		
				Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Intercept	4.298 (0.021)	203.587	***	3.964 (0.043)	91.78	***	4.036 (0.401)	100.46	***	4.065 (0.040)	100.336	***				4.047 (0.039)	102.389	***
gender: male	0.017 (0.006)	2.828	0.005				0.003 (0.006)	0.516	0.604	0.0006 (0.006)	0.105	.916				-0.003 (0.009)	-0.469	0.639
NGO sector							0.11 (0.017)									0.112 (0.017)	6.535	***
public sector	-0.123 (0.006)	-22.038	***				0.079 (0.0067)	11.75	***	0.071 (0.007)	10.630	***				0.071 (0.007)	10.617	***
ISCO 2																		
ISCO 3							-0.046 (0.088)	-5.24	***	-0.04 (0.009)	-4.557	***				-0.03 (0.009)	-3.413	0.001
ISCO 4							-0.124 (0.010)	-12.17	***	-0.109 (0.010)	-10.687	***				-0.094 (0.010)	-9.098	***
ISCO 5	0.003 (0.001)	3.070	0.002				-0.136 (0.086)	-15.90	***	-0.108 (0.00)	-12.522	***				-0.088 (0.009)	-10.135	***
ISCO 7							-0.156 (0.010)	-14.71	***	-0.141 (0.011)	-13.254	***				-0.115 (0.011)	-10.658	***
ISCO 8							-0.225 (0.012)	-19.15	***	-0.191 (0.012)	-16.234	***				-0.159 (0.012)	-13.249	***
ISCO 9							-0.271 (0.011)	-24.58	***	-0.226 (0.011)	-20.120	***				-0.192 (0.011)	-16.658	***
OOQ	-0.172 (0.006)	-27.069	***							-0.150 (0.006)	-23.491	***				-0.151 (0.006)	-23.532	***
Deep processing (DP)	0.066 (0.006)	10.809	***													0.041 (0.005)	7.484	***

table
continues

continued

1.Estimates of Fixed Effects 1.1.Parameters	Linear regression model			Hierarchical multilevel linear regression models														
				M1			M2			M3b			M4b			M5b		
	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig	Estimate (SE)	t	sig
Elaborative processing (EP)	0.067 (0.006)	12.063	***													0.028 (0.006)	4.532	***
Appendix 4.3 continues	-0.009 (0.010)	-0.903	0.366													-0.018 (0.01)	-1.694	0.072
OOQ * DP																		
OOQ * EP	-0.028 (0.011)	-2.462	0.014													-0.019 (0.010)	-1.802	0.073
1.2 Model fit																		
total df (Δ df)				3			12 (9)			13 (10)								
- 2LL (Δ -2LL= $\Delta \chi^2$)				247733.908			200042.875 (- 47691.033)			197350.624 (- 50383.284)						197014.586 (- 50719.322)		
AIC (Δ AIC)		82710		247739.908			200066.875 (- 47673.033)			197376.624 (- 50363.284)						197048.586 (- 50691.322)		
BIC (Δ BIC)				247768.509			200178.880 (- 47589.629)			197497.832 (- 50270.677)						197207.079 (- 50561.43)		
2. Reduction in variance estimate																		
within countries		3.0					3.37			4.23			Cov (β_{0j} , β_{1j}) = - 0.024, Wald Z = -			4.50		
between countries							23.33			21.32			0.921, p = 0.357			27.78		

Source: own work.

*Appendix 4.4: Multiple linear regression moderation effects OOQ*DP + OOQ*EP, relative income as an outcome, controlled for ISCO*

Model^a	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig
(Constant)	6.761	.071		95.439	***
Acquired education	.664	.008	.327	85.988	***
Gender	-1.835	.017	-.328	-109.056	***
Sector type	.197	.016	.037	11.940	***
ISCO occupation	-.255	.005	-.214	-55.313	***
Objective overqualification (POQ)	-1.137	.019	-.184	-58.394	***
Elaborative processing (EP)	-.067	.018	-.018	-3.793	***
Deep processing (DP)	.186	.016	.055	11.714	***
OOQ * EP	-.035	.032	-.005	-1.097	.273
OOQ * DP	-.081	.029	-.013	-2.790	.005

a. Dependent Variable: Monthly earnings including bonuses for wage and salary earners and self-employed, in deciles (derived)

Source: own work.

Appendix 5.1: Summary in Slovenian language/Daljši povzetek v slovenskem jeziku

Prekvalificiranost na delovnem mestu povzroča škodo in negativne posledice za človeške vire in organizacijo. Na ravni zaposlenega je prekvalificiranost povezana z nižjo stopnjo zadovoljstva na delovnem mestu (Maltarich, 2011; Zhang, Law & Lin, 2016; Alfes, Shantz & Baalen, 2016), z neenakim oziroma nižjim plačilom glede na raven izobrazbe (Handel, 2003; Di Pietro & Urwin, 2006; Brynin, 2002), s povečanim iskanjem druge zaposlitve (Quintini 2011) in dodatno duševno obremenitvijo (CEDEFOP, 2010). Na ravni organizacije prekvalificiranost je povezana s povečano fluktuacijo zaposlenih (Allen & Van der Velden, 2001; Erdogan & Bauer, 2009; McKee-Ryan & Harvey, 2011), zmanjšuje njihovo produktivnost (Allen in drugi, 2007) in konkurenčne prednosti organizacije (Quintini, 2011), ker zmanjšuje kumulativno učenje zaposlenih (Lazonick, Moss, Salzman & Tulum, 2014).

Teoretski in empirični pogledi v naslednjih poglavjih dodatno opredeljujejo in razlikujejo med koncepti prekvalificiranosti kot "biti" ter "čutiti se" prekvalificiran. To je bistvenega pomena za razumevanje neusklajenosti med izobrazbo oziroma formalnimi kvalifikacijami ter dejanskimi znanji in spretnostmi (Alfes, Shantz & Baalen, 2016), saj se kvalifikacija pogosto uporablja kot približek za spretnosti in znanja. Zato v svojem delu od prvega poglavja dalje poudarjam jasno razmejitve med objektivno in zaznano prekvalificiranostjo, kar popestri dosedanje razprave o odnosu med prekvalificiranostjo in njenimi posledicami. Objektivno prekvalificiran ali preizobražen je zaposleni na delovnem mestu, ki zahteva nižjo stopnjo izobrazbe, kot jo ima (Zhang, Law & Lin, 2016). Po drugi strani se subjektivna oziroma zaznana prekvalifikaciranost nanaša na zaznavo zaposlenih (Alfes, Shantz & Baalen, 2016), da njihove kvalifikacije presegajo zahteve za delo.

Preučevanje robnih pogojev povezanosti med prekvalificiranostjo in delovnimi izidi na ravni posameznikov sicer povečuje kompleksnost teoretske razlage (Busse, Kach & Wagner, 2017), hkrati pa vključitev moderatorjev povečuje natančnost teoretskih napovedi odnosov med prekvalificiranostjo in posledicami v različnih kontekstih. V drugem, tretjem in četrtem poglavju se osredotočam na testiranje moderatorjev na ravni posameznika in organizacije, ki bi lahko omilili dve ključni negativni posledici prekvalificiranosti posameznikov. Najprej je to nezadovoljstvo zaposlenih z delovnim mestom, ki vodi do negativnih posledic, izvira pa iz občutkov prikrajšanosti, kar opisuje teorija relativne prikrajšanosti (Crosby, 1984). Obenem prekvalificiranost izzove tudi teorijo človeškega kapitala (Schultz, 1961; Becker, 1962; Mincer, 1974) in učinke izobrazbe na povečanje produktivnosti. Druga posledica je, da prekvalificirani zaposleni prejemajo (primerjalno) manjše plače, kar ni skladno s teorijo človeškega kapitala, ki pojasnjuje, da izobrazba razvija spretnosti, ki vodijo v višjo produktivnost ter posledično do višjih plač. Rezultati kažejo, da imata objektivna in zaznana prekvalificiranost enake glavne učinke na zadovoljstvo na delovnem mestu in na relativni dohodek, kar pa, kot pokažejo rezultati moje raziskave, ni nujno za moderacijske učinke.

Konfiguracijski pristop k prepoznavanju dejavnikov prekvalificiranosti na ravni države

Prevladujoča literatura o prekvalificiranosti se osredotoča na omilitev njenih negativnih učinkov, zato je prepoznavanje dejavnikov prekvalificiranosti manj pogosto obravnavano. Zato se v prvem poglavju osredotočam na prepoznavanje vzročnih pogojev, ki prispevajo k pojavu prekvalificiranosti zaposlenih. Prekvalificiranosti zaposlenih ne obravnavam kot dejavnik drugih pojavov, temveč kot rezultat; kot obliko vertikalnega neravnovesja med ponudbo in povpraševanjem človeškega kapitala na trgu dela (Handel, 2003), ki izvira iz makrodejavnikov trga dela, izobrazbe in kulture v državi.

Vzorec je zajemal makroekonomske podatke za 27 sodelujočih držav, pri čemer so za delo sposobni prebivalci iz tega vzorca (15–64 let) sodelovali v dveh krogih Mednarodne raziskave o kompetencah odraslih PIAAC (v letih 2013 in 2015). Za prikaz makroekonomskih dejavnikov kot "robnih pogojev", pod katerimi dejansko pride do objektivne ali zaznane prekvalificiranosti zaposlenih, sem v analizi uporabil kontekstualni pristop ali skupinski teorijski pristop (Johns, 2006; Dul, 2016; Furnari in drugi, 2020).

Uporabil sem kvalitativno primerjalno analizo (QCA) (Ragin, 2006; Rihoux & Ragin, 2008), ki je razkrila, da je sistem nepoklicnega ali splošnega izobraževanja v državi potreben pogoj za visoko objektivno prekvalificiranost, po drugi strani pa objektivna prekvalificiranost sama po sebi ni potreben pogoj za zaznano prekvalificiranost. Naslednja ugotovitev je bila, da so posamezni konfiguracijski vzroci, ki vodijo do visoke ali nizke objektivne ali do visoke ali nizke zaznane prekvalificiranosti, različni in asimetrični. Vse to vodi do zaključka, da objektivna in zaznana prekvalificiranost nista le dve različni operacionalizaciji prekvalificiranosti, temveč neodvisna koncepta z lastnima teoretskima domenama, napovedniki in ločeno literaturo (Erdogan, Bauer, Peiró & Truxillo, 2011; Maltarich, Reilly & Nyberg, 2011).

Visoke in nizke ravni teh dveh vrst prekvalificiranosti so tudi posledica različnih konfiguracij posameznih vzročnih pogojev. Pri obravnavi konfiguracijskih vzorcev, ki vodijo do visoke objektivne prekvalificiranosti, je mogoče opaziti, da je ta značilna za države s splošnimi izobraževalnimi sistemi. Ta vzročni pogoj se pojavi v vseh konfiguracijah in vseh rešitvah (kompleksnih, posredniških, enotnih), potrjen pa je bil tudi med začetno analizo potreb. Pri nizki objektivni prekvalificiranosti je bila kot dejavnik ugotovljena visoka medsektorska fluktuacija delovne sile kot komplementarni pogoj, kar je vodilo do manjšega števila preprostejših konfiguracijskih vzorcev.

Konfiguracije visoke zaznane prekvalificiranosti nimajo skupnega potrebnega pogoja, vendar pa je visok delež tveganih kategorij med delovno aktivnim prebivalstvom (migranti, mladi in starejši) osnovni pogoj za nizko zaznano prekvalificiranost in komplementaren pogoj za visoko zaznano prekvalificiranost. To pomeni, da se visok delež tveganih kategorij v delovno aktivni

populaciji pojavi vsakič v konfiguracijah ki pojasnujejo vsaj eno državo z nizko zaznano prekvalificiranostjo.

Čeprav je objektivna prekvalificiranost kot dejavnik vključena v konfiguracije, ki napovedujejo zaznano prekvalificiranost, visoka objektivna prekvalificiranost na ravni države ni potrební pogoj za visoko zaznano prekvalificiranost. Povedano drugače, zaznana prekvalificiranost lahko zavzame visoko ali nizko vrednost, ne da bi jo pogojevala visoka ali nizka vrednost objektivne prekvalificiranosti na ravni države. To kaže tudi na asimetrično naravo konfiguracijskega pristopa, kjer vzročni pogoji, ki prispevajo k določenem izidu, v primeru, da zavzamejo nasprotné vrednosti, ne generirajo nujno njegove odsotnosti. Brez uporabe konfiguracijskega pristopa tega ne bi bilo mogoče ugotoviti.

V nadaljevanju sem na podlagi takšnih dvotaksonomskih in splošnih dejavnikov (objektivna in zaznana prekvalificiranost, visoka in nizka) države združil v arhetipe s specifičnimi kontekstualnimi značilnostmi. Za skoraj vse države, ki jih zaznamuje visoka objektivna in hkrati visoka zaznana raven prekvalificiranost je značilen nepoklicni (splošni) izobraževalni sistem. Zdi se, da na ravni države objektivna prekvalificiranost pogosteje spremlja zaznano prekvalificiranostjo kot obratno. Tem državam sta skupna tudi nepoklicni izobraževalni sistem in visok kulturni indeks moškosti. V nasprotju s tem imajo prototipske države s hkrati splošno nizko objektivno in zaznano prekvalificiranostjo togo delovnopravno zakonodajo, ki vključuje ukrepe proti individualnemu in kolektivnemu odpuščanju. Z uporabo pravil Boolove algebre sem ugotovil še, da skupne konfiguracije v teh državah vključujejo tudi visok delež tveganih kategorij v delovno aktivni populaciji in poklicne izobraževalne sisteme.

Nadalje, države z nizko objektivno in visoko zaznano prekvalificiranostjo imajo nizko dinamiko migracije delovnih mest iz industrijskega v storitveni sektor. Z dodatno obravnavo na podlagi Boolove algebre sem razkril pogosto konfiguracijo, ki zavira poklicno izobraževanje in skoraj vedno vsebuje visoko naraščanje deleža zaposlenih s terciarno izobrazbo, ki vstopajo na trg dela. Vse države, ki jih zaznamuje ta arhetip, zaznamuje nizka dinamika mobilnosti iz industrijskega v storitveni sektor. Po drugi strani pa države, ki imajo visoko objektivno prekvalificiranost in nizko zaznano prekvalificiranost zaznamuje nizek delež tveganih kategorij v aktivni populaciji, splošni izobraževalni sistemi, nizka rast udeležbe terciarno izobraženih ter močan kulturni indeks moškosti. Običajna konfiguracija za ta arhetip vsebuje visok delež tveganih kategorij in nepoklicni izobraževalni sistem.

Ugotovil sem torej, da države z visoko objektivno in zaznano prekvalificiranostjo zaznamuje nepoklicni izobraževalni sistem ter prevlado moških vrednost v nacionalni kulturi. Države z nizko objektivno in zaznano prekvalificiranostjo na ravni države pa zaznamuje večji delež tveganih kategorij v delovni sili in poklicni izobraževalni sistemi.

V naslednjih treh poglavjih na velikem mikropodatkovnem vzorcu ($N = 156.068$) empirično preverjam moderacijske vplive prekvalificiranosti na zadovoljstvo na delovnem mestu in na relativni dohodek. V vzorec so bili vključeni delovno sposobni prebivalci (15–64 let) iz istih 27 držav kot v prvem poglavju, ki so sodelovale v PIAAC (2013 in 2015). Negativni vpliv zaznane prekvalificiranosti na zadovoljstvo na delovnem mestu je poznan in empirično potrjen, zato sem se v nadaljevanju ukvarjal predvsem s testiranjem do sedaj še nepreverjenih moderatorjev. Prav tako je treba poudariti, da sem od drugega poglavja naprej pokazal, da je poleg zaznane tudi objektivna prekvalificiranost povezana tako z nižjim zadovoljstvom na delovnem mestu kot tudi z nižjim relativnim dohodkom.

Delovne prakse za visoko delovno uspešnost kot blažilci negativnih izidov prekvalificiranosti zaposlenih

Empirične raziskave o prekvalificiranosti so prepoznale moderatorje, ki so blažijo negativne učinke prekvalificiranosti, predvsem na zadovoljstvo na delovnem mestu. Večina teh moderatorjev sodi na področje psiholoških vidikov na delovnem mestu kot so npr. psihološke pogodbe med delodajalci in zaposleni (Rousseau, 2000; Hui, Lee & Rousseau, 2004), opolnomočenje (Erdogan & Bauer, 2009), vedenje v dobrobit organizacije (Zhang, Law & Lin, 2016), ciljna usmeritev (Hu in drugi, 2015), vodstvena skromnost za prikaz močnejše karierne identitete (Ma in drugi, 2020) in (zaznana) prekvalificiranost sodelavcev (Alfes, Shantz & Baalen, 2016). Glavni cilj drugega poglavja je bil zato nadgraditi in testirati moderatorje negativnih odnosov med objektivno in zaznano prekvalificiranostjo in negativnimi posledicami, ki sodijo neposredno pod okrilje organizacije.

Takšen primer so delovne prakse za visoko delovno uspešnost (PVDU), za katere predvidim, da blažijo negativne vplive prekvalificiranosti na delovne izide posameznikov. Na temelju izbranih PVDU (Posthuma, Campion, Masimova & Campion, 2013) in s pomočjo AMO modela (zmožnosti-motivacija-priložnosti) (Jiang, Lepak, Hu & Baer, 2012), v tem poglavju jasno pokažem, da prakse PVDU blažijo negativne odnose med (objektivno oz. zaznano) prekvalificiranostjo ter zadovoljstvom pri delu oziroma relativnim dohodkom.

Za objektivno in zaznano prekvalificiranost so PVDU povečale zadovoljstvo z delovnim mestom prekvalificiranih zaposlenih v primerjavi z drugimi prekvalificiranimi zaposlenimi, ki niso bili deležni teh PVDU. PVDU torej moderirajo povezavo med prekvalificiranostjo (tako objektivno kot subjektivno) o in zadovoljstvom na delovnem mestu, in sicer tako, da je razmerje manj negativno ob visokih PVDU. Med 11 posamičnimi PVDU ima zaposlitvena pogodba za nedoločen čas pomemben in pozitiven delni učinek na zadovoljstvo na delovnem mestu tako za objektivno kot za zaznano prekvalificiranost. Z vidika objektivne prekvalificiranosti pa med posamičnimi PVDU usposabljanje za specifične spretnosti in uradna izmenjava informacij tudi pozitivno vplivata na zadovoljstvo na delovnem mestu.

PVDU pa ne vplivajo na odnos med zaznano prekvalificiranostjo in relativnim dohodkom zaposlenih, vplivajo pa na razmerje med objektivno prekvalificiranostjo in relativnim prihodkom, a na drugačen način kot sem predvideval. Vključevanje PVDU ima namreč pozitiven moderacijski učinek na povezavo med objektivno prekvalificiranostjo in relativnim prihodkom. To pomeni, da PVDU za objektivno prekvalificirane okrepijo negativni neposredni učinek med prekvalificiranostjo in relativnim dohodkom.

Moderacijski učinki zaznane prekvalificiranosti in neskladja spretnostih na negativne izide prekvalificiranosti zaposlenih

Glavni namen tretjega poglavja je bil analizirati, ali neskladje v spretnostih (podusposobljenost tako kot preusposobljenost) vpliva na zadovoljstvo na delovnem mestu in na relativne dohodke zaradi objektivne in zaznane prekvalificiranosti zaposlenih. Neskladje v spretnostih ni niti zadosten niti nujen pogoj za neskladje kvalifikacij (Van der Velden, 2001), saj samo pri 14 % populacije obstaja neskladje tako pri usposobljenosti kot pri izobrazbi (Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014).

Neskladje spretnostih sem pokazal na primeru PIAAC definicije pismenosti (OECD, 2016a, str. 38). V skladu s tem pristopom so zaposleni preveč usposobljeni (spretni), če je njihov rezultat (iz PIAAC testa pismenosti) višji od najvišje samoocene dobro usklajenih delavcev, in so podusposobljeni, če je njihov rezultat nižji od najnižje samoocene dobro usklajenih delavcev (Quintini, 2011). Za analizo v tretjem poglavju so bili uporabljeni isti vzorci in metodološki pristopi kot v drugem poglavju.

Ugotovil sem, da zaznana prekvalificiranost že sama po sebi moderira vpliv objektivne prekvalificiranosti na zadovoljstvo na delovnem mestu ter na nižje relativne dohodke posameznikov. Poleg tega sem ugotovil tudi, da sta nižje zadovoljstvo na delovnem mestu in nižji relativni dohodek zaradi zaznane prekvalificiranosti tako kot sem predvideval ublažena v primeru podusposobljenosti, obenem pa izrazitejša v primeru preusposobljenosti. Preusposobljenost (v našem primeru v pismenosti) torej poskrbi za še izrazitejše negativno razmerje med objektivno prekvalificiranostjo in relativnim prihodkom, medtem ko nobena vrsta neskladja v usposobljenosti ni vplivala na odnos objektivne prekvalificiranosti z zadovoljstvom zaposlenih na delovnem mestu.

Moderacijski učinek poglobljenih ali dodelanih učnih strategij na negativne izide prekvalificiranosti zaposlenih

V zaključnem četrtem poglavju sem želel preveriti, ali način pridobitve znanja vpliva na prej omenjene odnose med objektivno in zaznano prekvalificiranostjo ter zadovoljstvom na delovnem mestu in relativnim prihodkom. Glavni cilj je bil torej preveriti, ali poglobljeno učenje, ki zagotavlja akademski uspeh, blaži negativne posledice zaradi objektivne in zaznane

prekvalificiranosti. Rezultati so bili pridobljeni z uporabo hierarhičnega linearnega modeliranja, linearne regresije in ob prikazu različnih empiričnih pristopov k objektivni in zaznani prekvalificiranosti. Poleg tega sem na podlagi preiskovalne/potrjevalne factorske analize razvil dvofaktorski model poglobljenih in dodelanih učnih strategij.

Iskazalo se je da, poglobljene učne strategije naredijo vidnejši nižji prihodek zaradi objektivne prekvalificiranosti za globoko učeče zaposlene, premerjavi s zaposleni, ki niso objektivno prekvalificirani. Po drugi strani pa poglobljene učne strategije niso moderirale odnosa med objektivno ali zaznano prekvalificiranostjo in zadovoljstvom na delovnem mestu, niti med zaznano prekvalificiranostjo in relativnimi prihodki. To poglavje prav tako prikazuje, da kognitivni procesi, skozi katere učne strategije določajo akademski uspeh, v resnici nimajo enakega učinka na karierni uspeh preizobraženih zaposlenih, če že, pa njegove negativne učinke naredijo opaznejše.

Glavne ugotovitve, prispevki in implikacije

To raziskovalno delo ponuja nekaj pomembnih prednosti v primerjavi z obstoječim teoretskim in empiričnim znanjem. Prvi sklop prednosti se veže na prepoznavanje obstoja, operacionalizacije in prikaza enakih glavnih učinkov objektivne ter zaznane prekvalificiranosti. Drugi sklop prednosti raziskave pa je ta, da pokaže razlike v izbranih moderacijskih učinkih med objektivno in zaznano prekvalificiranostjo v njuni povezanosti z zadovoljstvom na delovnem mestu in relativnim dohodkom posameznika. Pomembno je poudariti, da so bile empirične raziskave v vseh poglavjih izvedene tako v sklopu držav OECD, torej tudi izven zahodnega sveta, kar je dopolnitev predhodnih študij, ki so bile manj raznolike in so temeljile predvsem na izbranih zahodnih državah (npr. ZDA) in na manjših vzorcih. Velikost vzorca pričujoče raziskave je ($N = 156.068$), kar pomeni, da lahko izsledke disertacije posplošimo na vsaj 27 razvitih držav in držav v razvoju, kar predstavlja populacijo, ki šteje več kot 400 milijonov ljudi.

Moj prvi bistveni prispevek k literaturi o prekvalificiranosti je razlikovanje med subjektivno (zaznano) in objektivno prekvalificiranostjo (preizobraženost) zaposlenih ter ugotovitev, da so konfiguracije makrodejavnikov, ki vodijo v oba tipa prekvalificiranosti različni. Poleg tega sem razmejil visoke in nizke stopnje teh dveh vrst prekvalificiranosti ter pokazal, da so posamezni konfiguracijski vzorci različni in asimetrični.

S sklicevanjem na kontekstualne vzročne pogoje prispevam k obstoječemu obsegu teoretičnega znanja s postavitvijo "kontekstualnih pogojev", ki prispevajo k prekvalificiranosti na ravni države. Konfiguracijsko teoretiziranje in kvalitativna primerjalna analiza sta zato pomembna tako za obravnavanje teoretičnih pomanjkljivosti kot nedoslednosti v obstoječi literaturi. Ena od glavnih ugotovitev prvega poglavja je, da sta bili objektivna in zaznana prekvalificiranost povezani, čeprav druga druge ne povzročata. Poleg tega, v splošnem robni pogoji objektivne in

zaznane prekvalificiranosti na ravni države nakazujejo, da se koncepta med seboj razlikujeta. Objektivna prekvalificiranost (preizobraženost) ne sproža nujno zaznane prekvalificiranosti, čeprav je na ravni države objektivna prekvalificiranost pogostejše povezana z zaznano prekvalificiranostjo kot obratno. Kljub temu obe enako (negativno) učinkujeta na zadovoljstvo na delovnem mestu in na manjši relativni prihodek.

Pokazal sem, da je poleg zaznane tudi objektivna prekvalificiranost povezana tako z nezadovoljstvom na delovnem mestu kot tudi z nižjim relativnim dohodkom, kar je v prevladujoči literaturi o prekvalificiranosti redko poudarjeno, saj se večinoma osredotoča na zaznano prekvalificiranost.

Na teoretskem področju se uporabnost disertacije odraža v prispevku k relevantni literaturi o prekvalificiranosti, na temelju uporabe teorij o človeškem kapitalu in relativni prikrajšanosti. Moj prispevek je, da sem pokazal, da je treba, ko razlagamo splošne posledice prekvalificiranosti, koncept neskladja pri usposobljenosti (pismenosti) upoštevati skupaj z objektivno in zaznano prekvalificiranostjo. S teoretskega vidika sem tudi pokazal, da skozi PVDU obstajajo organizacijski vzvodi, ki lahko omilijo negativne posledice prekvalificiranosti. Ne gre torej zgolj za posamezne psihološke dejavnike, ki zmanjšujejo občutke prikrajšanosti zaradi objektivne in zaznane prekvalificiranosti.

Empirični prispevek je primer uporabe treh znanih metod za merjenje navpičnega neskladja: samoocene (zaznana prekvalificiranost) ter analize delovnega mesta (objektivna prekvalificiranost) in statističnega ujemanja (neskladje spretnostih). Primerna izbira meritvene tehnike lahko namreč vpliva na rezultate raziskave (Quintini, 2011; Flisi, Goglio, Meroni, Rodrigues & Vera-Toscano, 2014). Ta disertacija torej ponuja empirični vpogled v to, kako razložiti spretnosti od izobrazbe in individualnih zaznav pri določanju (merjenju) navpičnega ujemanja delavec-delovno mesto. Poleg tega je v drugem, tretjem in četrtem poglavju vzpostavljeno pomembno empirično razlikovanje pri obravnavi ugnezdenih podatkov.

Ta disertacija ima praktične implikacije za prekvalificirane posameznike, strokovnjake, ki se ukvarjajo s prekvalificiranostjo, in za zakonodajalce. Za posameznike, negativni učinek objektivne prekvalificiranosti na relativni dohodek postane očitnejši, saj imajo drugi zaposleni višje relativne prihodke kot objektivno prekvalificirani zaposleni. Na podlagi koristi za prekvalificirane posameznike vrnitev k varni zaposlitvi (za nedoločen čas) potrjuje takojšen skok v smeri zaznane prekvalificiranosti in nižjih zaslužkov, ki jih PVDU ne morejo omiliti. Prav tako z vidika zaposlenih dodelano procesiranje z iskanjem novosti in s pridobivanjem novega znanja, ki je sicer pomembno za akademsko izobraženo populacijo, nima enakega (oziroma nobenega) učinka na delavsko populacijo, vsaj ne na nezadovoljstvo na delovnem mestu ter na manjši relativni dohodek zaradi preizobraženosti.

Samoregulacija delovnega okolja z uporabo poglobljenih učnih strategij pri prekvalificiranih zaposlenih ne more v polnosti ublažiti občutka prikrajšanosti, kar zahteva dodatne premisleke. Prvič, poglobljene učne strategije pri objektivno prekvalificiranih, zaposlenih sicer blažijo učinek prekvalificiranosti na nižji relativni dohodek, vendar pa teh učinkov ne izenačijo. Drugič, poglobljene učne strategije ne blažijo nezadovoljstva na delovnem mestu, ki je posledica objektivne ali zaznane prekvalificiranosti, čeprav sem glede na dosedanje vedenje o tej tematiki pričakoval, da učenje na delu omili tesnobo ali promovira proaktivno vedenje.

Ta disertacija strokovnjakom predlaga PVDU kot eno od orodij v sklopu formalnih ukrepov za obravnavanje nezadovoljstva na delovnem mestu in manjšega relativnega prihodka zaradi prekvalificiranosti, seveda poleg dela na uravnavanju psiholoških pogodb. Treba je poudariti, da je uporaba formaliziranih orodij pod okriljem PVDU koristna za organizacije, saj zagotovo omili nezadovoljstvo na delovnem mestu, do neke mere pa tudi ublaži nižji relativni dohodek prekvalificiranih zaposlenih. Omenjena omilitev poleg tega preprečuje tudi druge negativne posledice v organizaciji, ki vodijo na primer do zmanjševanja števila zaposlenih, do izgube službe, upada produktivnosti in številnih drugih izpeljanih negativnih učinkov na organizacijo. Z vidika organizacij je treba objektivno in zaznano prekvalificiranost v praksi kot tudi pri raziskovalnem delu obravnavati ločeno, saj nimata enakih učinkov.

Disertacija strokovnjakom nudi tudi dodatno preverbo orodja in nepristranskih meril za ocenjevanje spretnosti oziroma pismenosti zaposlenih. Poudarim tudi pomen ločevanja spretnosti od izobrazbe in subjektivnih občutkov o prekvalificiranosti, ki naj bi jih zaposlovalec upošteval pri ocenjevanju navpičnega ujemanja med delovnim mestom in kandidatom za zaposlitev. Poleg tega je (tako kot med objektivno in zaznano prekvalificiranostjo) treba razlikovati tudi med objektivno prekvalificiranostjo in neskladjem v spretnostih, kar je še posebej treba upoštevati tudi pri obravnavi navpičnih neskladij delavec - delovno mesto. Ponujene so številne implikacije, ki bi lahko služile kot izhodišče za prihodnje raziskave, kot je teoretski pogled na vsebino zaznane prekvalificiranosti, ki poleg izobrazbe in spretnostih pogosto temelji na delovnih izkušnjah zaposlenega.

V mojem delu se ukvarjam tudi s pomenom kognitivnih procesov, v okviru katerih bi bilo poglobljeno procesiranje (kot dejavnik poglobljene učne strategije) potrebno vključiti v učne strategije in metode na delovnem mestu. Edini potrjeni učinek v četrtem poglavju pokaže, da bi za strokovnjake, prizadete zaradi nižjega relativnega dohodka zaradi objektivne prekvalificiranosti, učenje prek poglobljenega procesiranja lahko pozitivno vplivalo na blažitev manjšega relativnega prihodka, vsaj znotraj kohorte preizobraženih zaspolsenih.

Enako pomembno je, da se problem prekvalificiranosti zaposlenih rešuje tudi na državni ravni, saj moje konfiguracijsko teoriziranje pojasnjuje, da do prekvalificiranosti ne prihaja samo na ravni organizacij, ampak obstajajo tudi vzorci dejavnikov na makro ravni, ki to implicirajo (Abraham, 2015; Hu in drugi, 2015; Zhang, Law & Lin, 2016). Med državami OECD je pri

tistih s strogo zakonodajo, ki varuje varnost zaposlitve mogoče opaziti nižjo splošno prekvalificiranost. S tega vidika bi bili za zakonodajalce strožji ukrepi proti (množičnemu) odpušcanju lahko koristni tudi pri spopadanju z visoko prekvalificiranostjo na splošno.

Končno je splošna raven prekvalificiranosti visoka v vseh, razen v treh državah, medtem ko je med državami z visoko zaznano prekvalificiranostjo samo polovica takih, ki imajo hkrati tudi visoko objektivno prekvalificiranost. Politike za reševanje objektivne in zaznane prekvalificiranosti na ravni držav bi se torej morale zavedati različnih kontekstov, v katerih delujejo države, in kompleksnosti, ki je s tem povezana. Kot primer naj navedem dejstvo, da čeprav velja, da do visoke ravni objektivne prekvalificiranosti prihaja v državah z splošnimi izobraževalnimi sistemi, ni nujno, da bi v takšni državi vrnitev k poklicnemu izobraževanju lahko rešila problem prekvalificiranosti. Pomemben podatek za zakonodajalce je tudi ta, da je podusposobljenost v pismenosti potrjen moderator (blažilec) učinka zaznane prekvalificiranosti na zadovoljstvo na delovnem mestu in na relativne dohodke, ne nadomešča pa nižjega relativnega dohodka zaradi previsoke izobrazbe.

Omejitve dela in predlogi za nadaljnje raziskovanje

Prva pomanjkljivost moje študije robnih pogojev pojava obeh oblik prekvalificiranosti na ravni države je uporaba tako imenovane crisp-set primerjalne kvalitativne analize (csQCA). Z uporabo csQCA se izognem težavam s kalibracijo bolj raznolikih spremenljivk v neizrazitih nizih (fsQCA). Manj empiričnih podatkov o posledicah prekvalificiranosti na makroravni je vodilo k uporabi bolj konservativnih mej za dihotomiziranje vzročnih pogojev. Rad bi opozoril tudi na previdnost glede možnosti za ekološko zmoto pri sklepanju na podlagi rezultatov mojega dela. Zaključki, ki se nanašajo na pojav prekvalificiranosti na mednarodni ravni ter na razmerja za države, ne držijo nujno za posameznike.

Omejitev predstavlja tudi tako imenovana "omejena pestrost", ki je značilna za kvalitativno primerjalno analizo. To pomeni, da moji teoretični in konfiguracijski modeli ne morejo pojasniti celotne pestrosti vseh možnih primerov v naboru podatkov (Legewie, 2013). Poleg tega prepoznane konfiguracije ne pokrivajo vseh 27 vzorčnih držav. Primerov Avstrije, Francije, Koreje in Švedske tako denimo ne pojasnjuje noben vzorec, v kateri koli od konfiguracij. Omejena pestrost torej pušča prostor za dodatne teoretsko verjetne konfiguracije, ki vodijo do nastanka prekvalificiranosti, ki temeljo bodisi na individualnih bodisi na organizacijskih dejavnikih, ali pa za dodajanje drugih držav iz trenutnega vzorca OECD.

Naslednja omejitev raziskave je, da v hierarhične modele niso bili uvedeni nobeni moderatorji na nivoju držav. To pomeni, da niso bile testirane nobene mednivojske interakcije, kar dopušča možnost za nadaljnje raziskave moderatorjev na ravni držav v prihodnje.

Omeniti je treba tudi nezanemarljive učinke, ki jih imata velikost podjetja in starost posameznikov na prekvalificiranost, kar je že bila tema predhodnih raziskav. Obetaven vidik za prihodnje raziskovanje bi bilo tudi kombiniranje teh vidikov s proučevanimi moderatorji. Raziskovalci bi tako v prihodnje lahko proučevali na primer PVDU kot moderator za ženske, ki delajo tako v zasebnih kot drugih sektorjih.

Nadalje, nepodprti predpostavljeni moderacijski učinki, ki jih ima neskladje spretnosti na razmerja med objektivno prekvalificiranostjo in zadovoljstvom na delovnem mestu ali relativnim dohodkom, nakazujejo, da je treba spretnosti in izobrazbo obravnavati ločeno. Potrebno je poudariti, da je bilo pred tem tako za izobrazbo kot za spretnosti (ter za neskladje pri obeh) znano, da oboje neposredno učinkuje na ta dva rezultata. V mojem delu so spretnosti predstavljale spretnosti v pismenosti, zato je težko presojati, ali bi se tudi druge spretnosti, kot so npr. reševanje problemov v tehnološko zahtevnih okoljih, računske spretnosti (glej PIAAC) ali druge spretnosti podobno obnašale v proučevanih razmerjih. Proučevanje teh bi bila prav tako zanimiva tema za raziskovanje v prihodnosti.

Kot omejitev velja omeniti tudi, da v nasprotju s predlogi Liu in Wang (2012), moje proučevanje prekvalificiranosti na nivoju države (v prvem poglavju) združuje vse ravni univerzitetne (terciarne) izobrazbe, namesto da bi jih delila na raven magisterija, doktorata in visokošolske diplome. Priročnik ISCED 1997 sicer jasno prikazuje ravni izobrazbe, vendar je takšno razlikovanje med akademskimi ravnmi izobrazbe zahtevno z vidika enake obravnave nižje/sekundarne ravni izobrazbe. Kljub temu da se je s tem mogoče spopasti na ravni obravnave posameznih držav (glej Domadenik in drugi, 2015), je to med državami, kot je bilo v mojem primeru, praktično nemogoče.

Predlagam da, se nadaljnje raziskovanje osredotoči na vprašanje: "Kakšna raven prekomerne usposobljenosti zaposlenih bi morala biti pomembna na ravni države?". Zato je treba, ko bodo takšni podatki na voljo, opraviti prihodnje raziskave za kalibracijo vzročnega stanja v "fuzzy" niz QCA ali določiti njegove vrednosti kot stopnjo pripadnosti takemu specifičnemu pragu objektivne in zaznane prekvalificiranosti, ki bi moral zagotoviti bolj raznolike rezultate. Naslednje, ekološka zmota in omejena raznovrstnost puščata prostor za dodatne teoretično verjetne konfiguracije, ki vodijo do pojava prekvalificiranosti, kar bi bilo mogoče izvesti na podlagi individualnih ali organizacijskih dejavnikov ali ko se dodajo druge države izven trenutnega vzorca.

Dobro izhodišče bi bil tudi teoretični pogled na vsebino zaznane prekvalifikacije, ki poleg izobrazbe in spretnosti pogosto temelji na delovnih izkušnjah zaposlenega. Nepodprti hipotetični moderacijski učinki neusklajenosti večšin na razmerja med objektivno prekvalifikacijo in zadovoljstvo pri delu ali pa relativnim prihodkom, kažejo, da je treba spretnosti in izobraževanje obravnavati ločeno. To poudarjam, ker je bilo že prej znano, da tako izobrazba kot spretnosti (in neusklajenost obeh) neposredno vplivajo na te rezultate. Tu pa so

bile spretnosti ponazorjene s pismenostjo in precej težko je razmisliti, ali spretnosti reševanja problemov ali računanja (iz PIAAC) ali celo nekatere druge veščine vplivajo na katero od trenutnih hipotetiziranih razmerij. Prav tako bi bilo dragoceno, če bi lahko prepoznali druga neskladja v spretnostih, ki imajo moderacijske učinke na proučevane odnose, kot je bilo v primeru neusklajenosti pismenosti.