

Does early-career underemployment impact future career success? : a path dependency perspective

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**DOES EARLY-CAREER UNDEREMPLOYMENT IMPACT FUTURE CAREER
SUCCESS? A PATH DEPENDENCY PERSPECTIVE**

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Abstract

This study examines the impact of three types of underemployment, i.e. level underemployment, content underemployment and contingent employment, on subsequent objective (i.e. salary) and subjective career success (i.e. job satisfaction) using a 10-year longitudinal dataset with 335 Dutch university graduates. Thanks to our longitudinal design, we were able to examine the impact of preceding underemployment and the specific timing of the underemployment in one's career, in that way explicitly addressing the role of time in career success research. We tested our hypotheses through multilevel analyses. Level and contingent underemployment, but not content underemployment, were found to have a negative impact on future pay; whereas content employment, but not level or contingent underemployment, were found to affect job satisfaction five years later. In addition, for one type of underemployment (i.e., level underemployment), also the timing of the underemployment turned out to matter, indicating that the signal that level underemployment sends to employers may differ depending on when in one's career it happens. Taken together, these findings point to the importance of using a path-dependency perspective when trying to understand people's career success.

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Introduction

In recent years, the number of people graduating from higher education has increased rapidly all over the world (Brown & Hesketh, 2004; Scurry & Blenkinsopp, 2011). In most countries, however, this increase in labor supply quality has not been followed by an equal rise in labor demand, leading to a larger mismatch on the labor market for graduate students (Scurry & Blenkinsopp, 2011). The current turbulent state of the economy and the enduring economic crisis further disturb flexibility on the labor market (Thompson, Shea, Sikora, Perrewé & Ferris, 2013). Graduates are therefore increasingly confronted with the risk of underemployment, i.e. employment which is, in some way, of inferior quality than could be expected given one's educational level, skills or experience (Feldman, 1996). Underemployment has been associated with all sorts of negative connotations, such as being inadequately employed, underutilized, overeducated, overqualified, and over-skilled (see McKee-Ryan & Harvey, 2011).

Among graduates, the most common forms of underemployment are level, content and contingent employment (Feldman & Turnley, 1995; Scurry & Blenkinsopp, 2011). Level underemployment – or “overeducation” – implies employment in a job which in a formal sense is below one's educational level (see for instance Allen and van der Velden, 2001). Content underemployment – or horizontal mismatch – refers to employment outside one's field of education (Meng, 2006). Though working outside one's field of education does not equal a lower level of skills required in the occupation, it does imply that a graduate's discipline-specific skills acquired in education are underutilized (Meng, 2006). Finally, contingent underemployment refers to employment which is temporary in nature, like fixed-term contracts or temporary

agency work, and which therefore involves a higher level of insecurity than permanent employment (Bergström, 2003).

Graduates often accept an underemployed job to avoid unemployment and to get some work experience. Yet, this is not without consequences. Indeed, having an underemployed job has frequently been related to lower objective (e.g. lower pay) and subjective (e.g. lower job satisfaction) career success as well as to poorer psychological and physical health (see Hartog, 2000; Maynard & Feldman, 2011; McKee-Ryan & Harvey, 2011; Thompson, Shea, Sikora, Perrewé & Ferris, 2013). Apart from these *immediate* consequences, underemployment could however also have lasting effects on people's career (Baert, Cockx & Verhaest, 2012; Verhaest & Omey, 2009). The few studies on these lasting career effects have for instance shown that underemployment may limit a person's further human capital development (De Grip et al., 2008; Baert et al., 2012) and involves the risk of locking employees into underemployed positions later in their career (Baert et al., 2012; McCormick, 1990; Pissarides, 1994).

In this study, we aim to add to the latter line of research by examining whether underemployment has a lasting impact on graduates' *subsequent* objective and subjective career success, by analyzing how their career paths evolve over time. We know from earlier research that underemployed people tend to earn less and are on average less satisfied *while* they are underemployed (Allen & van der Velden, 2001; Fleming & Kler, 2008; Hartog, 2000; Verhaest & Omey, 2009). In this study, we posit that due to stigmatizing and self-labelling effects, these graduates also run the risk of lower pay and lower job satisfaction *later in their career* – even if they have left underemployment in the meantime. In addition, we expect that the *timing* of the underemployment matters, with underemployment immediately after graduation being less harmful than being underemployed a few years later which might e.g., been seen by employers

as a stronger stigma. To test these hypotheses, we use 3-wave information from Dutch employees that graduated 10 years ago.

This study makes several contributions to the literature. First and most importantly, we apply a longitudinal approach and examine whether underemployment in early career stages has an impact on objective and subjective career success in a later stage. If indeed underemployment in one's early career has lasting negative consequences for someone's future career success (irrespective of whether one left underemployment or not), it becomes of utmost importance to better recognize and remedy early-career underemployment. Second, we explicitly model the role of time by examining its moderating effect on the 'underemployment-subsequent career success' relationship. In that way, we acknowledge that the impact of a career step (here: having an underemployed job) may depend on when it happened in one's career (Spivey, 2005). Thirdly, we make a distinction between three types of underemployment, i.e., (1) level underemployment, (2) content underemployment, and (3) contingent employment on both objective and subjective career outcomes. As different types of underemployment tend to be correlated (Feldman & Turnley, 1995), analyzing these three forms simultaneously enables us not only to better attribute the impact to the specific type of underemployment, but also to rule out that the measured impact of one type of underemployment is actually due to one the other types, a risk which is present in studies focusing on one type of underemployment only (McKee-Ryan & Harvey, 2011; e.g., Sicherman, 1991; Robst, 1995; Rubb, 2003; Battu et al., 1999; Dolton and Vignoles, 2000; Bauer, 2002; Büchel and Mertens, 2004).

1. UNDEREMPLOYMENT AND CAREER SUCCESS

Career success can be defined as the accomplishment of desirable work-related outcomes over time (Arthur et al., 2005). It is generally agreed that career success has both an objective

and a subjective side (Judge et al., 1995 and Seibert et al., 2001). Objective career success refers to those facets of career success that are tangible and can be observed by others. Examples are a worker's pay, number of promotions and job level (Dries, Pepermans, Hofmans, & Rypens, 2009). Subjective career success particularly refers to the satisfaction that employees derive from their work (see Heslin, 2005). It is generally operationalized by job or career satisfaction (Heslin, 2005). Both objective and subjective career success have been shown to contribute to both people's well-being and organizational success (Pachulicz, Schmitt, & Kuljanin, 2008). Accordingly, career success is among the most important outcome variables in career research.

Several earlier studies have examined the cross-sectional correlation between various types of underemployment on the one hand and salary and job satisfaction on the other hand. (e.g. Allen & van der Velden, 2001; Fleming & Kler, 2008; Hartog, 2000; Verhaest & Omey, 2009). These studies found evidence for a negative relationship, meaning that employees who are currently underemployed earn, on average, less and feel, on average, less satisfied with their job compared to individuals who currently have a good matching job. Yet, to date, little is known however about the impact of underemployment on people's *later* career success. This impact is highly valuable information, not only for individuals considering to accept an underemployed job, but also for policy makers who often stimulate young graduates to get a job as quickly as possible in order to lower youth unemployment rates. Overall, it indeed seems an entirely different and actually more important dilemma whether to accept a job (or stimulate young people to do so) which implies less pay and less job satisfaction *for the time being*, than to accept a job which is both less paid and less satisfying now and seriously hampers one's career success prospects in the future.

The lack of insight into the lasting impact of underemployment is for a large part related with methodological issues. Not only are many studies on the outcomes of underemployment cross-sectional in nature (Tsai, 2010), the studies that are longitudinal often keep focusing on between-individual cross-sectional relationships while using their longitudinal design to apply more sophisticated estimation techniques (e.g. Tsai, 2010) or examine evolutions in this cross-sectional relationship over time or between cohorts (e.g. Daly, Büchel & Duncan, 2000). Though extremely valuable, these studies are hardly informative about dynamic or sequential within-individual processes (Sampson & Laub, 1997).

In addition, underemployment studies generally use theoretical perspectives that aim to explain the associations between underemployment and outcomes from a more cross-sectional perspective, without including the effects of time. For instance, McKee-Ryan and Harvey (2011) distinguish four theoretical perspectives that are used to study underemployment. First, human capital theory (Becker 1993) is used in cross-sectional studies on underemployment to examine how good human capital matches with job requirements result in effective labor utilization and efficiency. Second, models on the fit between a person with his or her job (Edwards, 1991; Kristof, 1996, Meng, 2006, Allen and van der Velden, 2001) define underemployment outcomes in terms of present lack of fit between employees' abilities or competences and job requirements resulting in the negative outcomes associated with underemployment. Third, relative deprivation theory (Feldman, Leana, & Bolino, 2002; Feldman, Leana, & Turnley, 1997; McKee-Ryan, Virick, Prussia, Harvey, & Lilly, 2009) relates the current experience of underemployment of an employee to that they want or should have a better job than ones currently possesses. Finally, coping and control theory of reemployment (Latack, Kinicki, and Prussia, 1995) focus on the current state of underemployed workers who are not reemployed in better jobs again.

Although all four theoretical perspectives provide insightful results, they do not include a specific role for time. Hence, given our focus on lasting effects of underemployment and hence on the use of a longitudinal approach, we need additional theoretical concepts to hypothesize on the lasting effects of underemployment. To build our hypotheses, we therefore introduce the concept of path-dependency.

2. UNDEREMPLOYMENT AND SUBSEQUENT CAREER SUCCESS

A path-dependency perspective

Path-dependency refers to the previous history of individuals to influence current options and success (Brüderl, Diekmann & Preisendörfer, 1991; Sampson & Laub, 1997). Applied to careers, this implies that the (job) choices and steps people make in the first few years of their career may modify their future career possibilities and in that way their subsequent career success. In his tournament model, Rosenbaum (1979) also advocates path dependency by proposing that quick promotions at the beginning of a career have a durable positive effect on further career success. Similarly, but conversely, we expect that underemployment in one's early career may hamper one's subsequent career success, even if one has already left underemployment.

Labeling theory offers a first explanation why this path dependency may occur. By accepting an underemployment job, people risk to get (rightly or not) labeled as less competent and/or less motivated than those adequately employed, a process which labeling theorists have conceptualized as "stigmatizing" (Paternoster and Iovanni 1989). McCormick (1990) even argued that level underemployment (or overeducation), one of the three forms of underemployment we include in this study, can act as a stronger negative signal to employers than unemployment. In addition, these employees may start labeling themselves as less

competent, either influenced by the external labeling processes or in an attempt to justify their own career choice. This self-labeling may affect underemployed individuals' self-efficacy and influence their social contacts (Pedulla & Newman, 2011; Prause & Dooley, 1997). As both employer's perceptions and individual's self-efficacy and social networks affect people's career success (e.g. Seibert, Kraimer & Liden, 2001; Spence, 1973; Verbruggen & Sels, 2010), early career underemployment may set in motion dynamic processes that lower their subsequent salary and job satisfaction.

A second explanation for the path dependency of underemployment lies in human capital building. In particular, underemployment may limit a person's opportunity to build up human capital and may therefore limit one's subsequent career success. Not only are underemployed jobs often less complex and less challenging (Allen & van der Velden, 2001; Connolly & Gregory, 2008), people in underemployment may also be offered less training opportunities. Research has indeed found training opportunities to be fewer for people who are overqualified for their job (e.g. Büchel & Mertens, 2004) and for employees in contingent employment (e.g. Greenhalgh & Mavrotas, 1996). Yet, Heijke, Meng and Ris (2003) found no difference in training opportunities for employees employed outside their field of education. But since training for this group often mainly concentrates on acquiring the skills that would otherwise have been learned through formal education (Heijke et al., 2003), also employees who are in content underemployment may be disadvantaged in their human capital development. Since human capital development generally leads to higher pay (Becker, 1964) and increases the likelihood of getting a better (e.g. more interesting or satisfying) job (Pergamit and Veum, 1999), this shows the long-term disadvantages of being underemployed.

Beyond having fewer opportunities for human capital development than those who are not underemployed, underemployed individuals may also experience a loss in value of their initial competencies and skills set. De Grip et al. (2008) found, for instance, that having a job which is below one's educational level (i.e., level of underemployment or overeducation) for at least six years ultimately results in cognitive decline in terms of memory, cognitive flexibility and verbal fluency. Also employees in content and/or contingent underemployment may lose part of their human capital due to a lack of practicing their skills and competences and less training opportunities. This human capital decrease would further decrease an underemployed person's salary and chances for a better, more satisfying job.

Finally, structural aspects of the labor market and of organizations may also cause early underemployment to limit a person's subsequent career success (Doeringer & Piore, 1971). For instance, the dual labor market theory argues that the labor market is segmented into "good jobs" and "bad jobs", with simply very few mobility possibilities between both types of jobs. In addition, organizations often work with fixed career paths, with individuals who are not in the right entry job being excluded from further patterns of promotion. Hence, also because of these structural factors, having a suboptimal (e.g. underemployed) initial job may limit people's subsequent chances for career success.

The above arguments explain why early-career underemployment may impact graduates' subsequent career success (i.e. path dependency). We therefore expect a negative impact of underemployment on subsequent pay and job satisfaction.

H1a: Underemployment has a negative impact on subsequent pay.

H1b: Underemployment has a negative impact on subsequent job satisfaction.

Moderating role of timing

In addition, we expect that this negative impact of underemployment on subsequent career success will become stronger over time. That is, we expect that underemployment immediately after graduation will have a less strong impact on subsequent career success than being underemployed later in one's career, i.e. a few years after graduation. This can be explained from the notion that underemployment immediately after graduation is rather frequent (Baert et al., 2012; Béduwé & Giret, 2011) and can be considered to be a stepping stone towards adequate employment (Baert et al., 2012; Sicherman & Galor, 1990). However, later in the career, this stepping stone effect will diminish (Baert et al., 2012; Carroll & Tani, 2013; Kiersztyn, 2013). Underemployment later in one's career may therefore be associated with a stronger negative signal and may thus have a more negative impact on people's subsequent career success. This is in line with career timetable theory (Lawrence, 1988), which suggests that there are social norms regarding how an individual's career develops over time and which achievements are appropriate, given one's career stage. The stronger individuals have fallen behind the 'normal' career timetable, the more likely they are viewed unfavorably by organizations, which may limit their subsequent salary and career opportunities (Lam, Ng & Feldman, 2012; Shore, Cleveland & Goldberg, 2003). For this reason, we hypothesize an amplifying impact of time after graduation on the 'underemployment-subsequent career success'-relationship.

H2a: Time after graduation moderates the relationship between underemployment and subsequent pay, in the sense that underemployment later in one's career has a stronger negative impact.

H2b: Time after graduation moderates the relationship between underemployment and subsequent job satisfaction, in the sense that underemployment later in one's career has a stronger negative impact.

3. METHOD

Procedure

For this study, we used archival data collected by a large Dutch University among its own alumni. Data were collected with graduates of 1998, 1999 and 2000 at three points in time: (1) one year after graduation, (2) five years after graduation and (3) ten years after graduation. Of the 1,382 respondents at T1, 877 (63.5%) participated in the second wave and 479 (54.6%) respondents participated in the third wave.

A dropout analysis revealed that respondents who participated in the three waves did not differ significantly from the non-respondents concerning age or any form of underemployment at T1. However, non-respondents were more often male (i.e. 38.4% among the non-respondents versus 32.8% among the respondents) and they had on average a higher starting salary (i.e. mean gross monthly salary: $m_{\text{non-respondents}} = 2,147.80$ versus $m_{\text{respondents}} = 2,043.30$ euro per month). Dropout was hence not fully random, which warrants caution when interpreting the results.

The final sample consists of 67% women and 33% men. Most respondents studied medicine (27.6%), health care (26.5) or business (21.5%). The mean age at T1 was 28 years. The majority of the respondents had a paid job at the three measurement moments (88.6%).

Since we were interested in the influence of preceding underemployment and since examining the influence of 'preceding underemployment' at T1 does not make sense (as respondents were in school before T1), we reorganized our three-wave dataset into a two-wave dataset, focusing on the measurement moments T2 and T3. For these two measurement

moments, we created the relevant lagged variables (i.e. preceding underemployment) based on information on these variables as measured at T-1. So, the lagged variables at T2 are based on data collected in the first wave and the lagged variables at T3 are based on data collected in the second wave.

Measures

Career success. In line with earlier studies on career success (see Heslin, 2005 for an overview), we used gross salary per hour as an indicator of objective career success. Because the typical high skewness of salary variables, we used a natural logarithmic transformation of salary for our analyses (Seibert et al., 2001).

Also in line with earlier studies (see Heslin, 2005 for an overview), we used job satisfaction as an indicator of subjective career success. Following Verhaest & Omeij (2009) and Wooden, Warren & Drago (2009), we measured job satisfaction by asking respondents how satisfied they were with their current job (1: completely dissatisfied; 5: completely satisfied). Though single item scales are sometimes regarded as inferior to multiple-item scales, they are increasingly used to capture overall satisfaction constructs, like job satisfaction (Wanous et al., 1997; Wooden et al., 2009). Even more, some authors advocate the use of single items over multiple-item scales to measure satisfaction constructs because the latter tend to guide respondents towards a meaning that may deviate from their personal view, in that way reducing the external validity of the measure (Rossiter, 2002). With respect to job satisfaction, research has indeed shown that single-item scales produce similar effects as facet scores, in that way supporting the use of single-item measures for this specific satisfaction construct (Wanous et al., 1997).

Underemployment. We measured three types of underemployment which are particular prevalent among graduates: level underemployment, content underemployment and contingent employment (Feldman & Turnley, 1995; Scurry & Blenkinsopp, 2011). Level underemployment or overeducation refers to employment in a job requiring sub-degree level qualification (Dolton & Vignoles, 2000; Verhaest & Omey, 2012). In line with Dolton and Vignoles (2000), level underemployment was measured with the question: “To get your job, what educational level were you required to have?” Response categories were (see Schroder & Ganzeboom, 2010): (1) master's degree (i.e., equivalent to 17 years of education), (2) undergraduate or bachelor's degree (i.e., equivalent to 15 years of education), (3) higher education or tertiary education (i.e., equivalent to 12 years of education) or (4) less education than higher or tertiary education (i.e., equivalent to 10 years of education or less). Content underemployment refers to the extent to which a person is working outside his or her field of education (Burke, 1997; McKee-Ryan & Harvey, 2011). Following Feldman & Turnley (1995), content underemployment was assessed by asking the respondents whether their job was (1) very well, (2) well enough, (3) moderately or (4) poorly related to their specific college education. The third dimension of underemployment captures contingent employment, which is a dummy which is 1 if the respondent indicated (s)he had a temporary job and 0 otherwise. In line with our hypotheses, the explanatory variables included in each regression were the lagged variable of each underemployment dimension (i.e. the score at T-1). For each type of underemployment, higher scores point to stronger underemployment.

Time since graduation. To test our moderation hypotheses, we included a variable capturing the time since graduation. This variable was, for each individual, five years at wave two and ten years for each at wave three.

Control variables. We control for gender (1 = woman; 0 = man), previous salary, months of unemployment and whether one changed employer since the previous survey (1 = yes; 0 = no) because these aspects have been related with people's salary and/or job satisfaction (e.g. European Commission, 2014; Ng et al., 2005; Schmelzer, P., 2011; Valcour & Ladge, 2003). In addition, we control for change in underemployment status over time to rule out bias due to correlations between previous and the current underemployment status. We opted for the residualized change score, i.e., the difference between the observed score at T and the predicted score using the T-1 measure to predict it (MacKinnon, 2008). In doing so, we control for bias due to regression-to-the-mean effects and reduce the risk of multicollinearity with the lagged underemployment variables (MacKinnon, 2008). Positive residualized change scores refer to becoming underemployed, whereas negative residualized change scores refer to leaving underemployment.

Analyses

We used multilevel analysis, a hierarchical linear modeling approach, to analyze the data because this approach accounts for the dependent nature of the observations (Hox, 2002). Indeed, data at the measurement-level (Level 1), e.g. content underemployment, are nested within persons (Level-2) since each person was observed several times. Without controlling for this dependency between observations, we risk to get biased estimates.

For the analyses, 488 measurement points (Level 1) from 335 graduates (Level 2) were available. The dependent variables were (the natural logarithmic transformation of) salary per hour and job satisfaction. To test the hypotheses, the variables were entered in five consecutive steps. After the estimation of the intercept-only model (null model), that is the model that

contains no explanatory variables, the variable time was added to the model (Model 1) to account for a possible linear trend in the dependent variable. Besides the intercept, also the slope of time was allowed to vary across individuals to account for the possibility that individuals had different rates of change in the dependent variable (Hox, 2002). In Model 2, the control variables were included and in Model 3, the lagged underemployment variables were entered. Finally, in Model 4, interaction terms between the lagged underemployment variables and time were added. The analyses were conducted separately for salary and job satisfaction. The improvement of each model over the previous one was tested using the difference between the respective likelihood ratios.

4. RESULTS

We first have a look at the descriptives shown in Table 1. Besides the means, standard deviations and correlations, Table 1 also shows how much of the variance in each level 1-variable is due to within person variation (“% within”), a figure which was calculated based on output of a null model-test for each of our variables (i.e., a model without any control variables) (Bryk & Raudenbush, 1992). We see that 66% of the variance in level underemployment, 42% of the variance in content underemployment and 83% of the variance in contingent employment can be attributed to within-person variation. For salary, the share of variance due to within-person variation is even up to 99% and for job satisfaction, this share is 65%. These high percentages should not be surprising since we look at career variables within a large time frame of 5 years. Since a person’s careers tend to develop over time (e.g., people tend to earn more over time), significant changes within individuals were to be expected.

Table 1 about here

Table 1 further shows a significantly positive correlation between level and content underemployment. So, individuals have a job below their educational level are also likely to be employed in a field outside their study field. Contingent employment was negatively correlated with the two other underemployment dimensions. So, graduates in level and content underemployment are more likely to have a fixed-term contract. Salary was found to correlate negatively with all three underemployment dimensions and job satisfaction was found to have a negative correlation with level and content underemployment, but not with contingent employment.

Table 2 shows the results for the 5 salary regressions (i.e., the intercept-only model, the model that additionally included time (Model 1a), the control variables (Model 2a), the lagged underemployment variables (Model 3a) and the interactions terms with time (Models 4a)).

Table 2 about here

Hypothesis 1a stated that graduates who were underemployed at T-1 would have a lower salary in the next time period compared to those who weren't in an underemployed job. As can be seen in Table 2, we found a significant negative impact of level underemployment and contingent employment on subsequent salary. However, the impact of content underemployment was not significant. We can therefore only partially confirm hypothesis 1a.

Next, we expected that the timing of underemployment would matter. In particular, we expected that underemployment later in one's career would have a stronger negative impact on

subsequent salary than immediately after graduation. As can be seen in Table 2, we found a significant negative interaction between level underemployment and time. We plotted the interaction in Figure 1. We see that the impact of underemployment 5 years after graduation on people's subsequent salary is stronger than the impact of underemployment immediately after graduation. Being employed under one's educational level thus seems to have a stronger impact when it happens later in one's career. For content underemployment and contingent employment, we did not find a significant interaction effect with time. We can hence only partly confirm hypothesis 2a.

When we have a look at the control variables, we see that women earn on average less than their male counterparts, that salary tends to rise over time, that salary is higher when one had a higher previous salary and that graduates who changed employer in the past five years earn on average more. In addition, change in underemployment over time was found to have a negative impact on subsequent salary, an effect found for all three types of underemployment. Note that the number of months of unemployment in the past five years did not have a significant impact on salary, though we have to note that this impact was marginally significant ($p < .10$).

Figure 1 about here

Table 3 shows the results for graduates' job satisfaction. The same 5 models were tested as for graduates' salary, i.e., the intercept-only model, and the models that additionally included time (Model 1b), control variables (Model 2b), the lagged underemployment variables (Model 3b), and the interactions terms with time (Models 4b).

Table 3 about here

Hypothesis 1b stated that underemployment at T-1 would depress subsequent job satisfaction. As can be seen in Model 3b (Table 3), we indeed found a significant negative impact of content underemployment. So, graduates who, at T-1, were employed in a job which did not match their specific education, were less satisfied with their job 5 years later.

Hypothesis 2b stated that the impact of underemployment on subsequent job satisfaction would be stronger for underemployment later in one's career. Model 4b shows, however, that none of the interaction terms with time is significant. We therefore have to reject hypothesis 2b.

When we have a look at the control variables, we see hardly any influence of the variables included. Only having changed employer and change in content underemployment status were found to have an impact on job satisfaction.

5. DISCUSSION

In this study, we examined the impact of three types of underemployment, i.e. level underemployment, content underemployment and contingent employment, on subsequent objective (i.e. salary) and subjective career success (i.e. job satisfaction) using a 10-year longitudinal dataset with 321 Dutch graduates. Thanks to our longitudinal design, we were able to examine the impact of preceding underemployment and of the timing of the underemployment in one's career, in that way explicitly addressing the role of time in career success research (Spurk, Abele & Volmer, 2011).

We found that graduates' career success was negatively affected by the occurrence of underemployment five years earlier in their career –controlling for the change in underemployment, the months of underemployment and the change in employer afterwards. Two out of three types of underemployment (i.e., level and contingent but not content underemployment) were found to have a negative impact on future pay. Since underemployment

tends to limit people's opportunity to develop their human capital and an employees pay is expected to be largely based on 'the human capital they built up (Becker, 1964), a negative impact of preceding underemployment on pay was predicted. We note that this restraining impact was not found for content underemployment. This suggests that being employed outside one's field of education does not limit a graduate's human capital formation as long as the level of the job is adequate.

Also for subjective career success, preceding underemployment was found to be important. In particular, we found a negative impact of content employment on job satisfaction 5 years later in the career. Since we controlled for change in underemployment as well as for change of employer afterwards, our results imply that people's satisfaction with their current job depends on their preceding experience with content underemployment, independently from the fact whether they are still underemployment or whether they have changed jobs afterwards. Possibly, experiencing content underemployment limits the kind of jobs people subsequently have access to and in that way their satisfaction with their later job. Not only do recruiters generally prefer applicants with more domain-specific work experience (Kristof-Brown, Zimmerman & Johnson, 2005; Kulik, Roberson & Perry, 2007), employers may also interpret a person's preceding content underemployment as a negative signal about his or her capabilities or motivation (McCormick, 1990). This may force graduates who experienced content underemployment early in their career, to accept jobs which are less in line with their preferences, even though they may not be formally "underemployed". Such a situation is however likely to result in a lower job satisfaction.

Finally, we found that for one form of underemployment, i.e., level underemployment, the timing of the underemployment matters. That is, we found that the impact of level

underemployment on graduates' wage later in their careers was stronger when it happened later in their career. This finding may be related to the fact that at the start of their career, graduates are more likely to accept a job for which they are overeducated, mainly to get out of unemployment, because they hope this job would be a stepping stone towards more adequate employment (Baert et al., 2012). Therefore, the signal sent from level underemployment at the start of one's career may be only moderately negative. However, when people do not succeed to escape their initial level underemployment or, for some reason, end up in level underemployment later in their career, employers are likely to interpret this as a strong signal of lower competence or lower motivation. This may limit the opportunities of these graduates to earn more later in their careers as well as their opportunities to get access to interesting jobs which might have a negative impact on their subsequent job satisfaction. Overall, this finding points to the importance of taking the timing (i.e., *when* people had a specific job) into account to understand graduates' career outcomes.

Implications for the literature

Our study has several contributions to the literature. First, by applying a career path-perspective, it was possible to shed light on the role of time in explaining career success (Spurk, Abele & Volmer, 2011). Our finding that preceding underemployment impacts people's later career success, controlling for what happened afterwards, suggests that graduates' early career choices (here: accepting an underemployed job) may limit their subsequent career opportunities and outcomes. This idea is in line with path dependency theory (Bernhardt et al., 2001).

Second, for one type of underemployment (i.e., level underemployment), also the timing of the underemployment turned out to matter, indicating that the signal of underemployment sent to employers may differ depending on when in one's career it takes place. Taken together, these

findings point to the importance of taking career path variables into account – as well as the specific order in which different jobs follow each other – when trying to understand people’s career success.

Third, this study contributes to the underemployment literature. We examined the impact of three underemployment dimensions simultaneously and not – as many underemployment studies do – focusing on one (or two) dimensions (McKee-Ryan & Harvey, 2011; e.g. Bárcena-Martín, Budría & Moro-Egido, 2012; Watts & Hargis, 2010). Thereby, we reduced the risk of finding spurious effects due to correlations between the different underemployment dimensions where otherwise has not been controlled for, and we were better able to attribute the effects found to the relevant underemployment dimension. For instance, we were able to nuance the assumption present in the literature that content underemployment limits human capital formation and as such automatically has a negative effect on wage (e.g. Bárcena-Martín et al., 2012; Borghans & Golsteyn, 2007). Since we found no impact of preceding content underemployment on pay level when we controlled for level underemployment, our study suggests that content underemployment does not necessarily limit a person’s human capital formation as long as the job level is adequate. Remark that at the same time, we found an impact of the change in content underemployment afterwards, which indicates that when people changed to a job outside their field of education later in their career, their built-up human capital loses part of its value, which results in a lower pay. So, content underemployment may limit human capital formation, but only when people have faced it rather recently and/or when their job level is also at a too low level. Only by both taking into account the different underemployment dimensions simultaneously and controlling for the sequence of the events, we were able to formulate this more precise view on the impact of content underemployment.

Finally, by examining the impact of three underemployment dimensions on objective and subjective career success, this study also provides more insight into the differences between these different dimensions. In particular, our findings suggest that level underemployment and contingent employment are more strongly related with pay level – and thus likely with human capital formation – whereas content underemployment was stronger related to job satisfaction. In addition, also the role of timing and sequence was found to differ between the specific underemployment dimension. Given these differences, our study underscores the importance of being explicit about the type(s) of underemployment that are studied and warrants against the use of underemployment measure which combine different types of underemployment into a single measure (e.g. Burke, 1997).

Implications for practice

Our study shows that accepting an underemployed job is not without risks for young graduates. Indeed, underemployment in the first years after graduation may impact graduates' salary and job satisfaction up till 10 years after graduation. Even if individuals succeed to make the transition to a more suitable job afterwards, part of the differences in wage and job satisfaction seem to sustain. It is therefore important to make graduates aware of these consequences; only then can they make careful and well-thought-through first career choices. Of course, this study does not provide a complete picture of the consequences of early career underemployment. We only looked at two consequences of underemployment, i.e. lower pay and less job satisfaction, and did not include potential positive outcomes, such as a shorter job search duration. Indeed, it is likely that there is a trade-off between the speed of finding employment and the quality of this employment (Baert et al., 2012). For graduates to make truly informed early career choices, more information is needed about this trade-off and about the longer term

career paths and outcomes of opting for underemployment versus extending one's job search to find more suitable employment.

The findings of this study are also of interest to policymakers. For a long time, policymakers were particularly interested in reducing unemployment rates. As graduates' speed of finding employment may increase through accepting underemployed jobs, policy makers have taken a positive stand towards this type of employment (e.g. Ministry of Finance, 1998). Increasingly, however, policy makers' view towards underemployment is getting more nuanced. Underemployment is increasingly seen as a signal that the labor market is working inefficiently, with suboptimal returns to educational investments, not only at the individual but also at the societal level. In addition, the negative effects of underemployment on graduates' pay and job satisfaction could be accompanied by increased health problems and financial difficulties (e.g. Dooley et al., 2000), which may result in societal costs, like increased health care costs. This is especially likely when, as we found in our study, the effects of underemployment endure over time. By finding support for this lasting (longitudinal impact) of underemployment, our study hence strongly supports the trend towards a more nuanced view on the impact of underemployment.

Limitations and suggestions for future research

This study has several limitations. Using an archival dataset brings inherent limitations with it. First of all, we had to use single-item indicators to assess job satisfaction and underemployment. Though this is in line with many other underemployment studies (e.g. Feldman et al., 1996; Verhaest & Omeij, 2009; Wooden et al., 2009), single-item measures are sometimes questioned for validity and reliability reasons. It may therefore be relevant for future research to examine whether our findings hold when multiple-item scales are used. Second, we

only included three underemployment dimensions in our study. Though this is already an advantage over most underemployment studies (McKee-Ryan & Harvey, 2011), it could be interesting to also include more detailed information about underemployment and even more underemployment dimensions (e.g., McRee-Ryan and Harvey (2011) identified no less than eight possible underemployment dimensions). Only by examining the impact of different underemployment dimensions together, the underemployment phenomenon can be truly understood in all its facets. Thirdly, the three underemployment dimensions we used in this study were self-reported. Since conclusions based on subjective underemployment measures may differ from those based on objectively assessed underemployment (e.g. Verhaest & Omey, 2010), it could be interesting for future research to examine whether objective underemployment results in similar longitudinal effects.

In addition, the inclusion of other constructs in underemployment research may reveal new insights concerning the negative relation between underemployment and subsequent job satisfaction. For instance, especially people for whom work centrality is low may accept an underemployed job; and low work centrality has been shown to relate to lower job satisfaction (Bal & Kooij, 2011). Also personality may play a role. Research has, for instance, found that individuals high on boredom proneness (i.e., the propensity to be bored across time and situations) tend to report both higher levels of underemployment (Watts & Hargis, 2010) and lower levels of job satisfaction (Kass, Vodanovich & Callender, 2001). To gain a better understanding of the lasting impact of early career underemployment, it seems crucial for future research to further unravel this relationship between underemployment occurrence and job satisfaction later in one's career.

Finally, more detailed information about the research population could deepen our understanding of the lasting effects of underemployment. While the career literature acknowledges the significance of micro-individual or agentic considerations next to structural influences on career choices (Özbilgin, Küskü & Erdogmus, 2005), we had no information about the voluntariness of the underemployment over the different time periods. However, the outcomes of underemployment – especially the impact on employees’ attitudes, such as lower job satisfaction – are likely to depend on the degree to which the graduate had freely chosen to be underemployed or even preferred it over regular employment (McKee-Ryan & Harvey, 2011; Scurry & Blenkinsopp, 2011). This might be especially relevant in the Netherlands, as flexible or contingent employment has become common (de Vries & Wolbers, 2005), amongst others to combat youth unemployment. Future research would benefit from a more fine-grained analysis of the effect of voluntary versus involuntary underemployment levels. Further, we departed from the idea that the lasting effects of underemployment lie in labeling processes and fewer opportunities for human capital development. However, we cannot exclude that underemployment is also caused by early identification of promising employees and that at the beginning of a career more competent people will have relatively better opportunities to achieve objective and subjective career success. A promising area for future research may therefore be to compare the lasting effects of job choices - the outcomes of underemployment depending on its voluntariness and other relevant individual characteristics - that will eventually affect graduates’ career success.

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Table 1: Descriptives and Correlations among Study Variables

	m	sd	% within	1	2	3	4	5	6	7
Level-2 variables										
1 Gender ^a	0.68	0.46	--	--						
Level-1 variables										
2 Months underemployed	0.33	1.33	76%	-.01	--					
3 Having changed employer	0.48	0.44	99%	.05	.04	--				
4 Level underemployment	1.24	0.36	66%	.80	-.05	-.03	--			
5 Content underemployment	1.64	0.67	42%	.10	.01	.06	.35**	--		
6 Contingent employment	0.29	0.34	83%	.10	.18**	.12*	-.07	-.12*	--	
7 Salary per hour - log	2.89	0.30	99%	-.28**	-.16*	.02	-.23**	-.13*	-.38**	--
8 Job satisfaction	4.06	0.79	65%	-.00	.04	-.01	-.13*	-.24**	-.03	.17**

Note. m = mean across individuals, computed using each participant's mean scores. sd = between-individual variance, computed using each participant's mean scores. % within = share of the variance in this variable which is due to within-individual variance (only for level-1 variables, which can change over time). Correlations were computed between individuals, using each participant's mean scores. $N = 488$ (level 1: observations) and $N = 335$ (level 2: individuals).

^a 1 = Female; 0 = Male.

* $p < 0.05$ (two-tailed); ** $p < 0.01$ (two-tailed).

Table 2: Fixed Effects Estimates for Models Predicting Hourly Salary at time T

	Intercept only	Model 1a	Model 2a	Model 3a	Model 4a
Intercept	3.15 (0.02)**	2.67 (0.03)**	2.05 (.10)**	2.30 (.12)**	2.33 (.12)**
Time		0.07 (0.00)**	0.03 (.02)**	0.04 (.01)**	0.04 (.01)**
Gender			-0.11 (.02)**	-0.10 (.02)**	-0.10 (.02)**
Salary per hour _{T-1}			0.34 (.04)**	0.29 (.05)**	0.29 (.05)**
Unemployment			-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Changed employer			0.05 (0.02)*	0.05 (0.02)*	0.05 (0.02)*
Change _{T-(T-1)} UE1			-0.08 (.03)**	-0.08 (0.03)**	-0.08 (0.03)**
Change _{T-(T-1)} UE2			-0.03 (.02)*	-0.03 (0.02)*	-0.03 (0.02)*
Change _{T-(T-1)} UE3			-0.13 (.03)**	-0.15 (0.03)**	-0.14 (0.03)**
UE1 _{T-1}				-0.08 (0.03)**	-0.09 (0.03)**
UE2 _{T-1}				-0.01 (0.02)	-0.01 (0.02)
UE3 _{T-1}				-0.05 (0.03)*	-0.05 (0.03)*
UE1 _{T-1} *time					-0.04 (0.01)**
UE2 _{T-1} *time					0.01 (0.01)
UE3 _{T-1} *time					-0.00 (0.01)
-2 x log likelih. (df)	263.69(3)	92.26(6)	17.37(13)	20.02(16)	32.63(19)
Δ -2 log (df)		171.42(3)**	74.89(7)**	2.65(3)	12.61(3)*

Note: UE1 = Level Underemployment; UE2 = Content Underemployment; UE3 = Contingent Employment

** p < .01; * p < .05

Table 3: Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Models Predicting Job Satisfaction at time T

	Intercept only	Model 1b	Model 2b	Model 3b	Model 4b
Intercept	4.06 (0.04)**	3.94 (0.10)**	3.57 (.32)**	4.11 (.40)**	4.13 (.40)**
Time		0.02 (0.01)	0.01 (.02)	0.01 (.02)	0.01 (.02)
Gender			0.08 (0.09)	0.10 (0.09)	0.12 (0.10)
Salary per hour _{T-1}			0.13 (0.15)	0.02 (0.16)	-0.00 (0.16)
Unemployment			0.03 (0.03)	0.04 (0.03)	0.04 (0.03)
Changed employer			0.15 (0.07)*	0.17 (0.07)*	0.16 (0.07)*
Change _{T-(T-1)} UE1			-0.12 (0.10)	-0.12 (0.10)	-0.12 (0.10)
Change _{T-(T-1)} UE2			-0.24 (0.05)**	-0.27 (0.05)**	-0.28 (0.06)**
Change _{T-(T-1)} UE3			-0.13 (0.11)	-0.17 (0.11)	-0.13 (0.11)
UE1 _{T-1}				-0.05 (0.09)	-0.05 (0.09)
UE2 _{T-1}				-0.13 (0.05)*	-0.13 (0.05)*
UE3 _{T-1}				-0.10 (0.09)	-0.10 (0.09)
UE1 _{T-1} *time					-0.04 (0.04)
UE2 _{T-1} *time					-0.02 (0.04)
UE3 _{T-1} *time					0.06 (0.04)
-2 x log likelih. (df)	1244.42(3)	1244.96(6)	1208.71(13)	1209.33(16)	1217.64(19)
Δ -2 log (df)		.53(3)	52.46(11)**	0.62(3)	8.31(3)*

Note: UE1 = Level Underemployment; UE2 = Content Underemployment; UE3 = Contingent Employment

** p < .01; * p < .05

Figure 1: Impact of preceding level underemployment, on subsequent salary five years and ten years after graduation.

