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SCHUMPETER DISCUSSION PAPERS

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Gender Differences in Job Satisfaction of University
Graduates**

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You can't always get what you want:

Gender Differences in Job Satisfaction of University Graduates

Werner Bönte¹ and Stefan Krabel²

Abstract: Previous literature stressed on the gender differences in job satisfaction and the factors influencing the job satisfaction of men and women. Two rationales are usually provided for the finding that women tend to be relatively more satisfied with their jobs than men although disadvantaged in labour markets: first, women may have relatively *lower* expectations of career and income, and second, they may attach relatively less importance to extrinsic rewards than men. In order to analyse whether substantial gender differences exist already at the beginning of the career, we employ information of over 20000 graduates collected through a large-scale survey of German university graduates who recently entered the labour market. We find that the job satisfaction of female graduates is on average slightly lower than the job satisfaction of male graduates, but our results do not point to substantial gender differences. In our sample of highly qualified individuals, men and women are very similar in what they want from their jobs and also in their perceptions of what they get. While our results point to substantial similarity of men and women in the early career stage, gender differences may emerge at later stages of the career life cycle.

Keywords: job satisfaction; gender differences; working conditions

JEL classification codes: J16; J28; J81

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1 Introduction

The results of most empirical studies examining job satisfaction of men and women suggest that women's job satisfaction is significantly higher (e.g. Long (2005) and Clark (1997) for representative household panels or Bender and Heywood (2006) for academic scientists) or at least not significantly lower (e.g. Bokemeier and Lacy, 1987; Hull, 1999; Kaiser, 2007) than men's. At first glance, this seems to be somewhat surprising, since there is ample evidence that women are disadvantaged in labour markets. They are less likely to climb the career ladder, their salaries are often lower than those of men, even if they do comparable jobs, and they have more difficulties in finding jobs matching their qualification (Hodson, 1989; Weinberger, 1998; Azmat *et al.*, 2006).

The literature on job satisfaction offers two major explanations for these apparently paradox findings: First, it is argued that the relatively high level of job satisfaction of women may be explained by their relatively low expectations (Sloane and Williams, 2000; Sousa-Poza and Sousa-Poza, 2000). Long (2005) and Clark (1997), for instance, find that women have lower expectations of promotion prospects or pay from work as compared to men. Second, it is argued that women's valuation of job satisfaction is shaped by other job attributes as men's. While income and career opportunities may be less important for women, women may attach more importance to job attributes such as interesting work content and good work schedules (Bokemeier and Lacy, 1987; Clark, 1997; Babcock *et al.*, 2003; Bender *et al.*, 2005). Hence, women might be more satisfied with their job even when facing lower wages and having less career opportunities.

We contribute to existing literature by investigating job satisfaction in a sample of university graduates which complements previous studies on job satisfaction in the overall population in three ways: first, focusing on men and women at a very early stage of their career qualifies previous research. Male and female graduates who recently started their first job have hardly made any adjustments of expectations based upon their work experience – referring to the

level of importance attached to different job attributes. While the relatively high job satisfaction of women reported in previous studies may result from adjustment of expectations, it can be expected that such adjustment effects cannot explain job satisfaction of individuals in early career stages. Women may have similar expectations of jobs as men in the early stage of their careers but may scale down their expectations in the course of their career because of disadvantages in promotions, for instance (Long, 2005). Second, women who are dissatisfied with their jobs may be underrepresented in prior empirical studies because these women may have already left the labour force before being surveyed (Clark, 1997). Third, and most importantly, our data allows for an investigation including both the level of importance attached to job attributes and the perception of actual job rewards – distinct for the different job attributes analysed. Thus, we are able to directly test the hypotheses that men and women value extrinsic and intrinsic job attributes differently and that female attach systematically lower levels of importance to job attributes due to lower expectations. We acknowledge, of course, that our sample of highly qualified people is not representative for the population as a whole. However, focusing on the group of university graduates allows us to analyse a relatively homogeneous sample with respect to age and education which adds to our knowledge on gender differences in job satisfaction. Further, in the light of the debate on the lack of skilled labour, it is important to increase our knowledge about the factors influencing the job satisfaction of young and highly qualified men and women.

When analysing the factors influencing job satisfaction of male and female graduates, we distinguish between *valence* and *job rewards*. While valence of a job dimension refers to the importance an individual places on the respective job attributes, perceived job rewards refer to an individual's evaluation of his or her actual job with regard to these job attributes. For instance, a female graduate may report a high level of valence with respect to intrinsic dimension, i.e. she attaches much importance to interesting and challenging work, while her current job does hardly provide any intrinsic rewards. This allows us to examine to what

extent determinants of job satisfaction differ between male and female graduates. In doing so, we are able to analyse whether and to what extent female graduates attach valence to different work attributes than male graduates. Second, we are able to investigate whether female graduates' valence attached to work attributes is *systematically* lower than valence of male graduates.

Our empirical analysis is based on a sample of over 20 000 university graduates in Germany who finished their graduation in 2007 and 2008. Results suggest that female university graduates are slightly less satisfied with their jobs than their male counterparts. However, our results do not point to substantial gender differences in job satisfaction and its determinants when focusing on young male and female university graduates. Moreover, when comparing the estimated effects of valence and actual job rewards on job satisfaction in female and male subsamples, respectively, our results suggest that effects are not significantly different. In other words, neither the impact of valence attached to extrinsic and intrinsic work attributes nor the impact of job rewards on job satisfaction differ systematically when comparing male and female subsamples. However, gender differences may occur at later stages of work life. The reasoning that women scale down their expectation over the course of their career may explain both previous findings, indicating that women are relatively more satisfied with their jobs in samples representative for the total labour population, and our finding that importance attached to work attributes is hardly gender-specific in early career stages.

The remainder of the article is structured as follows. In Section 2 we derive from existing literature the factors shaping the job satisfaction of men and women. Section 3 describes our dataset and measurement of variables. In Section 4 we provide descriptive statistics, explain our empirical approach and present estimation results. Finally, Section 5 discusses the results and concludes.

2. Gender Differences in Job Satisfaction: The Impact of Valence and Job Rewards

2.1. Determinants of job satisfaction

Previous research suggests that workers' job satisfaction is related to working conditions, and it has identified intrinsic and extrinsic job dimensions as major determinants for job satisfaction (Kalleberg, 1977; Ronen *et al.*, 1979; Moyes *et al.*, 2006). The *intrinsic dimension* is directly related to the job contents. Individuals valuing this dimension have a desire to perform interesting tasks, to be challenged by the job, and to develop and realize own ideas. The extrinsic dimension and work–life balance do not refer to the characteristics associated with the task itself. *Extrinsic dimension* is related to income and career opportunity. Individuals valuing this dimension have a desire for advancement and recognition and a desire to obtain monetary rewards from the job. Furthermore, *work–life balance* reflects an important job dimension which relates to valuation of labour conditions, such as good work schedule, freedom from conflicting demands or convenient travel from and to work. Individuals may differ with respect to the importance they attach to these work dimensions.

We refer to the importance individuals attach to a work dimension as *valence of work dimension*.¹ Valence refers to the value – or the importance – an individual personally places on outcomes (Vroom, 1964; Landy and Conte, 2006). Thus, valence endorses expectations (Kluckhohn, 1951; Uçanok, 2009) because valence represents an indication about desirable job attributes an individual would like to experience. Thus, lower (or higher) valence attached to a work dimension is interpreted as an indicator for lower (higher) expectation level of this dimension. For instance, an individual A may have a very strong desire for interesting or challenging work and, therefore, attaches great importance on the intrinsic

¹Other studies refer also to the perceived importance of job attributes, but denote this as work value (Clark, 1996; Kalleberg, 1977), aspiration level or preferences which indicate aspiration levels (Aletraris, 2010; Schokkaert *et al.*, 2011).

dimension of a job. Given the same job as individual *A*, another individual *B* tends to be more satisfied with her or his job than an individual *A* if individual *B* attaches less importance to intrinsic work dimensions. The higher an individual's valence the more likely it is that the job does not meet the individual's high expectations. Hence, it can be expected that job satisfaction is negatively related to valence of work attributes.

Aside from valence, individual job satisfaction is ultimately determined by individuals' perception of job rewards. The more positively an individual evaluates her or his job – with regard to certain job dimensions – the more likely it is that he or she will be satisfied with her or his job. In other words, it can be expected that the relationship between perceived job rewards and job satisfaction is positive (Sousa-Pouza and Sousa-Pouza, 2000).²

Although it is self-evident that valence and perceived job rewards of the same work dimension are strongly interrelated, there is one important difference between them. While *valence* refers to the importance of a certain job dimension in general, *job rewards* refer to the perceived benefits which individuals receive from their current work activities with regard to this job dimension (Kalleberg, 1977; Mottaz, 1986). It is, therefore, important to disentangle the effects of valence of work attributes on job satisfaction from the effects of perceived job rewards. This can best be achieved by taking into account both, valence as well as perceived job rewards, when analysing their relation to job satisfaction. This is important, since omission of one of these two variables would lead to biased results.

2.2. Gender Differences in Job Satisfaction

Women are often found to be relatively happy with their job. Most previous studies indicate that women's job satisfaction is either significantly higher than men's or no significant gender differences are detected, while studies hardly detect higher job satisfaction among male workers (e.g. Clark, 1997; Long, 2005; Kaiser, 2007). As mentioned above, this finding

² Although it can be expected that objective working conditions explain perceived job rewards, it must be noticed that subjective evaluations of work may not fully reflect objective conditions (Weaver, 1978).

appears to be paradox given that women face disadvantages on the labour market with respect to employment (e.g. Azmat *et al.*, 2006) and wages (e.g. Weinberger, 1998).

Two main explanations for the gender gap in job satisfaction are provided by previous literature which relates both to the aforementioned distinction between valence – or expectations or aspirations – of work dimensions and job rewards. First, women may have *systematically lower* levels of importance – or valence – than men with regard to a number of work attributes, which implies that women should be more satisfied than men when doing identical jobs. In other words, women may be as satisfied as men even if working conditions are worse (Murray and Atkinson, 1981; Mottaz, 1986). Clark (1997) finds that neither different jobs nor different valence of work attributes account for the gender differences in job satisfaction. The latter study argues that relative expectations lead to the differences with women having lower expectations with respect to job attributes. A similar argument is found in a study by Kaiser (2007) which compares job satisfaction in different European countries. The latter study interprets the finding that job satisfaction differences disappear in Denmark, Finland and the Netherlands, similar to the evidence, suggesting that the gender-job satisfaction difference diminishes in the process of modernization of the labour market. It is argued that Denmark, Finland and the Netherlands are fairly advanced in giving equal opportunities to men and women – i.e. by means of Kindergarten development – such that women have similar work expectations as men and, consequently, the satisfaction differential disappears.

Second, women's levels of importance attached to work attributes may not be systematically lower but centre on other job dimensions than men's expectations. Empirical evidence suggests that women tend to attach greater importance to both the intrinsic dimension of a job and work-life balance whereas men tend to attach greater importance to extrinsic dimension related to financial benefits and career opportunities (Bokemeier and Lacy, 1987; Clark, 1997; Babcock *et al.*, 2003; Bonke *et al.*, 2009).

Babcock *et al.* (2003) provide evidence that women put lower emphasis on financial pay compared to men and thus negotiate differently for wages than men. Evidence presented by Clark (1997), based on data of the British household panel indicates that women regard promotion aspects and financial pay as less important attributes of a job compared to men while women attach relatively higher importance to relations at work, the actual work itself and hours of work. Sloane and Williams (2000) support this hypothesis indicating a self-selection process – in the sense that men and women maximize job satisfaction given heterogeneous tastes. Similarly, Konrad *et al.* (2000) find that women considered intrinsic attributes as challenge and task significance to be more important than men. Yet, gender differences were small, with most of the differences – though significant – having a magnitude of 0.10 SD units or less.

To sum up, women may exhibit lower levels of valence attached to extrinsic work attributes and may therefore not be necessarily less satisfied than men or may even be more satisfied with their job than men though facing worse jobs with respect to salary and career opportunities (Clark and Oswald, 1996; Clark, 1997; Long, 2005; Kaiser, 2007; Poggi, 2010).

3 Data

3.1 Data Source

Our analysis of job satisfaction is based on a large-scale survey of German university graduates of alumni years 2007 and 2008 when entering the labour market after graduation. This survey implementation is part of a joint project of the International Centre for Higher Education Research (INCHER-Kassel) and various higher education institutions in Germany – including both universities and universities of applied sciences (*Fachhochschulen*). While INCHER-Kassel was responsible for survey design and data collection, the universities conducted the survey with graduates from their own institution. Around 50 universities participated in this joint project in the two survey waves considered. In doing so, a common

core questionnaire was used at all universities with the same questions given to the graduates and an optional questionnaire was also given that was not used by all universities. As some universities did not include the question ‘whether graduates have children’, graduates of these universities were not considered. The implementation of the survey was conducted approximately one and a half years after graduation. Graduates who finished their studies in the winter term 2006/2007 or in the summer term 2007 (referred to as graduates of year 2007) were surveyed in November/December 2008. In similar fashion, graduates of winter term 2007/2008 or summer term 2008 (referred to as graduates of year 2008) were surveyed in November/December 2009. The graduates considered were given the chance to answer the survey either online or by postal service.

The survey contained various questions on job characteristics, personal information and study characteristics. Information on the job includes wage, employment status and job satisfaction of graduates. With regard to study characteristics, we utilize information on the field of study. Personal information on whether graduates have children or not as well as gender and age is also provided and used in our analysis. In the two sample waves considered, our sample comprises 22 124 graduates who answered the complete set of relevant questions while being no older than 35 years of age.

The sample of university graduates offers two advantages for our study purpose. First, in samples of the overall population, most women may have already faced disadvantages on the labour market. This could lead to a bias due to higher difficulties for women to climb the career ladder. However, when concentrating on university graduates the sample considered is very homogeneous with respect to past work experience and education level. For this reason we excluded all graduates older than 35 years of age.

3.2 Measurement of Variables

As the dependent variable, we utilize respondent’s overall job satisfaction. With regard to work values and job rewards, we focus on intrinsic motivation, extrinsic motivation as well as work–life balance. Further, we include the match of competences – comparing skills

acquired in studying and skills demanded in the job given. Such variables are measured in the following way.

Job Satisfaction

The main variable of interest is job satisfaction. Graduates who entered the labour market after study were asked *To what extent are you satisfied with your job situation in general?* Given a 5-point scale ranging from a value of 1, indicating “highly satisfied”, to a value of 5, indicating “not satisfied at all” graduates were asked to state the degree to which they are satisfied with their job. We recoded our measure of job satisfaction such that higher values represent higher levels of job satisfaction. Thus, our measure of job satisfaction is an ordinal variable taking an integer value between 1 and 5 with a value of 5 denoting that graduates are highly satisfied with their job.

Valence of work attributes

We refer to individuals’ attached importance of work attributes as their *valence*. Other studies also refer to the perceived importance of job attributes, but denote this as work value (Kalleberg, 1977; Clark, 1997), aspiration level or preferences which indicate aspiration levels (Aletraris, 2010; Schokkaert *et al.*, 2011). Moreover, other studies use demographic information as proxies for expectations (Muñoz de Bastilla Llorente and Macías, 2005; Pagán and Malo, 2009). While we acknowledge that work valence is not a consistent or standardized measure in previous literature, the argumentation that individual’s perceived importance attached to certain job attributes influences their satisfaction is homogeneous across studies, no matter if being interpreted as preferences, aspiration or expectation. As mentioned earlier we follow Vroom (1964) and define perceived importance as a measure denoted as *valence*.

Similar to the measure of job satisfaction, respondents were asked as to how *important* several job attributes are for them. The 5-point Likert items range from 1 indicating “very important” to 5 indicating “not important at all”. Again, we recoded the items such that a

higher value indicates higher perceived relevance. The mean value is taken from the recoded items. Items are given in Table 1.

[Insert Table 1 about here]

Valence – Extrinsic dimension: Our measure of valence with regard to extrinsic work dimension is the mean value of respondents' valuation of the following three items: high income, good career opportunities and having leadership function.

Valence – Intrinsic dimension: Our measure of valence reflecting the intrinsic work dimension is the mean value of respondents' valuation of the following three items: possibility to apply own ideas, challenging tasks at work and interesting work contents.

Valence – Work–life balance: Our measure of valence reflecting the work–life balance is the mean value of respondents' valuation of the following two items: good possibility to combine job and private life and enough time for free-time activity.

We performed an additional factor analysis with all the eight items, in order to verify that these eight items represent items reflecting extrinsic dimension, intrinsic dimension and work–life balance. The results of this analysis confirm that three items load into one factor which can be interpreted as extrinsic work dimension while another three factors load into one factor indicating intrinsic work dimension and two other items capture work–life balance (see the appendix for details).

Job rewards

Measurement of the job rewards with respect to extrinsic work attributes, intrinsic work attributes and work–life balance was conducted in analogy to the operationalization of work valence. The respondents were asked to what extent several job attributes *apply* to their jobs.

Again, each 5-point Likert item ranges from 1 indicating “applies to a great extent” to 5 indicating “does not apply at all”. We recoded the items such that a higher value indicates higher perceived job rewards. We used the same eight items as before to measure job rewards with respect to extrinsic dimension (mean score of the three items: high income, good career opportunities, having leadership function), intrinsic dimension (mean score of the three items: possibility to apply own ideas, challenging tasks at work, interesting work contents) and work–life balance (mean score of the two items: good possibility to combine job and private life and enough time for free-time activity). An overview of the variable measurement of job rewards is given in Table 2.

[Insert Table 2 about here]

Further covariates

The job match of competences may affect the job satisfaction of male and female university graduates. Individuals may not have the skills to cope with requirements of their jobs or they may be overqualified. In both cases, the impact on job satisfaction tends to be negative. Consequently, male and female graduates agreeing that the skills demanded in their current jobs match the skills acquired during studying tend to be more satisfied with their work. Male and female graduates were asked as to what extent the skills acquired during studying match the skills demanded in the current job. Again, a 5-point Likert item was provided ranging from 1 indicating a very good match of competences to 5 denoting that competences demanded in the current job are substantially different from the skills acquired during studying. Again, we recoded the variable such that a higher value indicates a better match of skills.

As demographic variables we use gender (female=1 and male=0), the age of graduates (years at time of interview), as well as the information whether graduates have children (children in household=1 and not in household=0) or whether they are self-employed (self-employed=1 and 0 otherwise). Further, we account for wage (five wage dummy variables), field of study (dummy variables indicating the field of study) and a binary variable indicating if a graduate finished the studies in 2007 or in 2008 (graduate finished in 2008=1 and 0 otherwise).

A descriptive overview on these variables is given in Table 3

[Insert Table 3 about here]

A correlation matrix of job satisfaction, gender, valence of work attributes and job rewards is given in Table 4. The correlation coefficients indicate that job satisfaction correlates significantly with extrinsic job rewards (correlation coefficient of 0.4451), intrinsic rewards (correlation coefficient of 0.5604) and work–life balance rewards (correlation coefficient of 0.2387). These correlations are higher than the correlations between job satisfaction and valence of work attributes. Furthermore, correlation coefficients of 0.3662, 0.4057 and 0.2892 indicate a positive relation between valence and rewards regarding extrinsic job attributes, intrinsic job attributes and work–life balance, respectively. These correlations may indicate that graduates with higher valence levels regarding a certain dimension, i.e. extrinsic job attributes, find on average jobs that are more rewarding with respect to extrinsic dimension.

[Insert Table 4 about here]

4. Empirical results

4.1. Descriptive Statistics

Previous research suggests that women are not less satisfied with their jobs than men or are even more satisfied. The distributions of scores reflecting job satisfaction of male and female university graduates are illustrated graphically in Figure 1. As can be seen from this figure, the distributions are very similar for male and female graduates.

[Insert Figure 1 about here]

The average scores of job satisfaction, work valence and job rewards are reported separately for male and female graduates in Table 5. While the difference between job satisfaction of male graduates and female graduates is statistically significant at the 1% level, the mean value of job satisfaction is only slightly higher for male graduates (3.854) than for female graduates (3.702). Hence, in contrast to previous research our data indicate that women are, if at all, less satisfied with their jobs than men.

For both, male as well as female graduates, the score of valence with respect to intrinsic dimension is higher than the valence scores of the other two dimensions. Hence, male as well as female graduates attach much importance to job contents. Two-sample mean comparison tests show that men and women significantly differ on almost all items reflecting valence with regard to extrinsic and intrinsic job dimensions as well as work–life balance. Valence levels of men are slightly higher with respect to the extrinsic dimension but lower with respect to intrinsic dimension and work–life balance. These findings are in line with prior studies emphasizing gender differences in perceived importance of different work dimensions. The perceived job rewards of men are significantly higher than the perceived rewards of women for all the three different job attributes. This indicates that women report a subjective disadvantage as they perceived lower job rewards.

[Insert Table 5 about here]

However, it is likely that gender differences are statistically significant if sample size is large but a statistically significant difference does not necessarily imply that the magnitude of such a difference is substantial. Therefore, we additionally computed Cohen's d , a measure of difference in terms of "effect size". Cohen's d is the difference between male mean and female mean divided by the pooled SD. A Cohen's d of 0.2 is usually considered as small, 0.5 as medium and 0.8 as large. As can be seen from the table, Cohen's d is below 0.2 or even 0.1 in almost all cases, suggesting that the gender differences are small or trivial. Only the importance of the possibility to arrange job and private life is somewhat higher for women than for men (0.30) and the perceived rewards with respect to income are slightly smaller (0.23). Though not reported here, further measures as Hedges' G , corrections of Cohen's d and Hedges' G for uneven group size confirm these results.

We also compute for each item a *dissimilarity index* D (Duncan and Duncan, 1955), which measures the gender differences in male and female distributions of the respective items. The *dissimilarity index* D will be equal to one if there is no overlap, e.g. all males score high on an item whereas all females score low. In contrast, the index will be equal to zero if the proportions of females and males are identical in all categories (scores). As can be seen from the table, the *dissimilarity index* D for jobs satisfaction is 0.075 which means that merely 7.5% of the female graduates could not be paired with a male graduate with exactly the same score, and vice versa. Our results suggest that the distributions of most items are strongly overlapping for men and women. All in all, the descriptive statistics indicate that female and male graduates do hardly differ with respect to job satisfaction as well as both valence levels and rewards of intrinsic and extrinsic job attributes.

4.2. Determinants of job satisfaction among female and male graduates

In order to examine the relationship between job satisfaction, valence of job attributes and perceived job rewards, we now present the results of estimations based on the joint sample of male and female graduates as well as the results of estimations conducted separately for male and female graduates. As our dependent variable is an ordinal variable ranging from 1 (not satisfied at all) to 5 (highly satisfied), we present the results of ordered probit regressions in Table 6. Note that ordered probit coefficients cannot be interpreted in the same way as OLS estimates. An ordered probit coefficient of a continuous variable reflects the change in ordered log-odds scale if the respective explanatory variable increases by one unit, while the other variables in the model are held constant. However, the sign of a coefficient does at least provide information about the sign of the effect of the respective variable on the end response categories.³ A positive sign of a coefficient indicates that the probability of being highly satisfied with the job increases and that the probability of being not satisfied at all decreases if the level of the respective variable increases.

[Insert Table 6 about here]

We first report the regression results based on the joint sample. Column (1) reports on the results of a regression that only includes a gender dummy (Female) and further controls as explanatory variables. As control variables we include age, self-employment, job match of competences, having children as well as dummy variables for wage categories and binary variables reflecting field of study and year of graduation. The estimated coefficient of the

³ An ordered probit coefficient does not provide information about the sign of the effect on any other particular category and about the magnitude of marginal effects. Variables' marginal effects have to be calculated for each category separately.

gender dummy is negative and statistically significant which indicates that female graduates are on average less likely to be highly satisfied with their job than male graduates.

Next, we first include separately work expectations and job rewards (columns (2) and (3)) and in column (4) both, work expectations and job rewards, are included. A comparison of fit measures (pseudo R^2) shows that inclusion of work expectations and particularly inclusion of perceived job rewards leads to a noticeable increase in explanatory power. In line with our theoretical considerations, the estimated coefficients of valence measures are negative and statistically significant for the extrinsic dimension and the work–life balance. If graduates expect much from their jobs with respect to income, career and work–life balance, it is *ceteris paribus* less likely that they are highly satisfied with their jobs. Surprisingly, the estimated coefficient of valence reflecting the intrinsic work dimension is positive and statistically significant in column (2). In Section ‘Determinants of job satisfaction’, we already discussed that valence and job rewards are interrelated and that the omissions of one of these variables may result in biased estimates. Our results suggest that omitting perceived job rewards in the regression does indeed lead to biased estimates of the coefficients of the valence variables. Once perceived job rewards are included as explanatory variables, the estimated coefficient of valence reflecting the intrinsic work dimension becomes statistically insignificant and the estimated coefficients of the other two valence variables do also change remarkably (column (4)). As suggested by our theoretical considerations, the estimated coefficients of the perceived job rewards of all the three work dimensions are positive and statistically significant. Note that the estimated coefficient of intrinsic job rewards is larger than the estimated coefficient of the other dimensions. This may indicate that the intrinsic job dimension is especially important for job satisfaction of university graduates. It is interesting that the estimated coefficient of the gender dummy is negative and statistically significant even when controlling for the influence of valence and perceived job rewards as well as a number of control variables – including wage and field of study. This finding

suggests that female graduates have on average a higher probability of being not satisfied at all with their jobs than male graduates.

It is also possible that the relationship between job satisfaction, valence of job attributes and perceived job rewards is gender-specific. In order to examine whether such differences exist we run gender-specific regressions based on the samples of female graduates and male graduates. The results of these estimations are reported in columns (5) and (6). Our results do not provide much evidence for gender differences in the relationship between job satisfaction and valence and job rewards. The estimated coefficients of the valence variables and the job rewards variables obtained from gender-specific regressions do not differ with respect to sign and the statistical significance. The magnitudes of the estimated coefficients are also very similar. With respect to control variables our results suggest that age has a negative impact on the job satisfaction of male and female graduates which is in line with previous research (Hunt and Saul, 1975). Somewhat surprisingly graduates having children tend to be more satisfied with their jobs than other graduates. One might have expected that graduates having children are less satisfied because of work-family conflicts. Interestingly, in the female subsample graduates with children are significantly more satisfied with their jobs, while this finding does not hold in the male subsample. In line with previous empirical research, we find that the self-employed are more likely to be satisfied with their job than paid employees (Benz and Frey, 2008; Fuchs-Schündeln, 2009; Millán *et al.*, 2013).⁴ However, this is only true for male graduates. The estimated coefficient of the variable ‘match of competences’ is positive and statistically significant suggesting that male and female graduates stating that competences demanded in the current job are not substantially different from the skills acquired during studying are more satisfied with their jobs than other graduates. However, the value of this coefficient decreases once job rewards are controlled for.

⁴ However, the results reported by Millán *et al.* (2013) suggest that self-employed individuals are more likely to be satisfied with their present jobs in terms of type of work but less likely to be satisfied in terms of job security.

4.3. Robustness Checks

In our empirical analysis we have focused on the main effects of valence and perceived job rewards on job satisfaction. It can be expected, however, that the effects of valence and job rewards on job satisfaction are related. Job satisfaction can be expected to be high if both, valence attached to certain work attributes and perceived job rewards (according to the same attributes), are high. If, however, rewards are low while valence is high, an individual is expected to be relatively less satisfied with his or her job. Hence, one might include the differences between valence measures and the respective job rewards as explanatory variables into the regressions assuming that job satisfaction is negatively related to differences between expectations and actual rewards. However, the interpretation of such ‘differences measures’ is ambiguous if the level valence is low while the actual job reward is high. Yet, it is not clear whether job satisfaction is high or low when valence is low. One might argue, for instance, that being rewarded with, for instance, work–life balance when importance attached to work–life balance is low does not negatively influence job satisfaction. Instead of including differences, we therefore include interaction terms of valence variables and respective job rewards to account for moderating effects. We expect that the main effect of valence on job satisfaction still remains negative, the main effect of perceived job rewards on job satisfaction remains positive, and the effects of interactions between valence and job rewards are positive. Estimation results obtained from OLS estimations are reported in Table A2 for the joint sample (column (1)), the sample of female graduates (column (2)) and the sample of male graduates (column (3)).⁵ The estimated coefficients of job rewards are positive and statistically significant and now the estimated coefficients of all valence variables are negative and statistically significant. The interaction effects of intrinsic dimension and work–life balance are positive and statistically significant in the total sample and the sample of female graduates which suggests that the effects of job

⁵ We report the results of OLS estimations because the interpretation of the estimated coefficients of interaction terms is straightforward whereas estimation and interpretation of interaction effects in non-linear models, like the ordered probit model, is problematic.

rewards are moderated by valence and vice versa. In contrast, the estimated coefficient of the interaction term of the extrinsic dimension is statistically insignificant in the female graduate as well as the male graduate sample.

Although the descriptive statistics do not point to substantial gender differences in the job satisfaction of university graduates we examine the factors that contribute to the slightly lower job satisfaction of female graduates. To do so, we apply an Oaxaca-Blinder decomposition.⁶ Results of this decomposition analysis are presented in Table A3 for three models. While the first model only includes valence levels and controls, the second model accounts for job rewards while not including indicators of valence. The third model includes both valence and rewards. Results suggest that roughly one third of the small gender differences in job satisfaction – with lower job satisfaction among female graduates – is explained by lower perceived extrinsic job rewards.

5 Discussion and Conclusion

Previous research on the job satisfaction of men and women suggests that gender differences exist with respect to the level of job satisfaction as well as with respect to the factors influencing the job satisfaction of men and women. It is not clear, however, whether substantial gender differences exist already at the beginning of the career. In this study, we therefore use data obtained from a large-scale survey of 20 000 university graduates who recently entered the labour market in order to examine potential gender differences among highly qualified individuals in an early career stage.

Our results suggest that male and female university graduates have a substantial similarity in job satisfaction and the factors influencing job satisfaction. The job satisfaction of female graduates is on average slightly lower than the job satisfaction of male graduates. Although

⁶ This technique was originally used in labour economics to decompose earnings gaps and to estimate the level of discrimination (Blinder, 1973; Oaxaca, 1973) but has also been applied in empirical studies on job satisfaction (Bender and Sloane, 1998; Pagán and Malo, 2009).

statistically significant, this difference is not of substantive importance according to quantitative measures of substantive difference (Cohen's d). Furthermore, our results indicate that male and female graduates do not differ much in terms of what they want from their jobs. The importance (valence levels) attached to intrinsic and extrinsic work dimensions does not differ substantially and only for work–life balance we find moderate differences indicating that female graduates tend to attach greater importance to work–life balance than male graduates. Thus, the argument that women seek for jobs intrinsically rewarding while men, respectively, seek for extrinsic rewards is not confirmed by the results of our study.

Concerning job rewards, our results suggest that perceived job rewards with respect to intrinsic job dimension and work–life balance are slightly higher for men than for women, but the magnitudes of these gender differences are trivial. We only find small gender differences with respect to extrinsic job rewards, indicating that female graduates assess their income and career opportunities on average less positive than their male counterparts. By and large, male and female graduates' perceptions of what they get from their job are not substantially different.

At first glance, our finding that female graduates are on average less satisfied with their jobs than male graduates seems to be contradictory to the vast majority of literature reporting that women are on average more satisfied with their jobs than men. There are, however, at least two possible explanations for these different results. First, women's expectations (valence levels) may adjust over the career life cycle. Since we analyse job satisfaction in a sample of male and female graduates who are at the beginning of their professional career, it might be possible that expectation levels of male and female graduates are similar but female graduates' expectation levels may decrease over the course of their career in response to facing disadvantages on the labour market. This would explain why women are on average less satisfied than men at the beginning of the career, but could potentially become more satisfied with similar jobs as their career progresses. Second, our results might also be due to

facing a relatively young sample of workers. As classical role models diminish and gender gaps in wages converge (Bailey *et al.*, 2012), it might be that work expectation of women converges to the work expectation of men as well. This reasoning would explain why women are less satisfied on average when still being disadvantaged with respect to job rewards on extrinsic dimensions.

Future research may shed more light on job satisfaction of highly qualified women. Do highly qualified women scale down their work expectations over the course of their professional career? Or, do women's work expectations increase over age cohort due to a change in social norms? Answering these questions would help to improve our understanding of factors influencing the job satisfaction of highly qualified women. Revisiting this question may help both our scholarly understanding as well as policy advice on gender differences in labour markets.

From a policy perspective, potential disadvantages of women in labour markets may have severe effects on highly qualified women's motivation to work, readdressing the long-held debate on female job discrimination. A large range of anti-discrimination laws across different countries are assigned to increase labour market chances of women, largely addressing career opportunities and the gender wage gap. Our findings reveal that female university graduates tend to perceive job rewards with regard to extrinsic dimension as slightly lower than male university graduates, which to some extent explains female graduates' lower job satisfaction. Thus, our results may underline the necessity to improve income and career opportunities for women in order to increase job satisfaction of female university graduates. Moreover, our results underline the complex mechanism through which work expectations and job rewards affect job satisfaction. Both lower expectation levels and higher rewards increase job satisfaction of individuals.

Finally, we acknowledge that our analysis is limited in (at least) two ways. First, focusing on job satisfaction of young university graduates has both benefits and drawbacks. On the one hand, our study benefits from having a homogeneous sample of young men and women

starting their careers. On the other hand, our results do not allow us to draw conclusions on job satisfaction of male and female graduates at later career stages, and our sample is surely not representative of the working population as a whole. Second, although we make use of a unique and rich dataset, our results should be interpreted with some caution. Since our empirical analysis is based on cross-sectional data, our results do not provide ultimate answers about causal relationships. We are not able, for instance, to investigate the development of individuals' job satisfaction, valence of work dimensions and perception of job rewards over time. Hence, we can only speculate that female graduates adjust the valence of work dimensions and that scaling down work expectation in the course of career may positively affect the job satisfaction of female graduates. However, it is also possible that our findings are mainly driven by looking at an age cohort born in the 1980s or late 1970s when classic role models may have already been diminished. With our data at hand, we cannot clearly rule out either of these interpretations. Future research could make use of panel data to examine these relationships. Therefore, we encourage further studies in this direction, readdressing the magnitude, direction and origins of gender differences in job satisfaction.

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Table 1: Valence of work attributes

Item measurement of valence				
<i>How important are the following job attributes for you personally...?</i>				
1. Possibility to apply own ideas				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
2. High income				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
3. Challenging tasks at work				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
4. Good career opportunities				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
5. Having leadership functions				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
6. Good possibility to combine job and private life				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
7. Enough time for free-time activity				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>
8. Interesting work contents				
<i>1: Very important</i>	2	3	4	<i>5: Not important at all</i>

Table 2: Job Rewards

Item measurement of job rewards				
<i>To what extent do the following job attributes apply to your job...?</i>				
1. Possibility to apply own ideas				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
2. High income				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
3. Challenging tasks at work				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
4. Good career opportunities				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
5. Having leadership functions				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
6. Good possibility to combine job and private life				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
7. Enough time for free-time activity				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>
8. Interesting work contents				
<i>1: Applies to a great extent</i>	2	3	4	<i>5: Does not apply at all</i>

Table 3: Descriptive statistics: explanatory variables

Variables	Min value	Max value	Mean	SD
Valence of job attributes				
Income (V1)	1	5	3.725	0.906
Career opportunities (V2)	1	5	3.781	0.934
Opportunity to have leading management role (V3)	1	5	3.691	0.987
<i>Valence: Extrinsic dimension (mean value: V1-V3)</i>	1	5	3.732	0.757
Possibility to apply/implement own ideas (V4)	1	5	4.212	0.770
Job is personally challenging (V5)	1	5	4.247	0.737
Interesting work contents (V6)	1	5	4.528	0.600
<i>Valence: Intrinsic dimension (mean value: V4-V6)</i>	1	5	4.329	0.537
Possibility to arrange job and private life (V7)	1	5	3.675	1.145
Enough time for free-time activity (V8)	1	5	3.653	1.006
<i>Valence: Work-life balance (mean value V7 & V8)</i>	1	5	3.664	0.930
Job rewards				
Income (R1)	1	5	2.740	1.198
Career opportunities (R2)	1	5	2.994	1.157
Opportunity to have leading management role (R3)	1	5	3.087	1.199
<i>Reward: Extrinsic dimension (mean value: R1-R3)</i>	1	5	2.941	0.931
Possibility to apply/implement own ideas (R4)	1	5	3.660	1.041
Job is personally challenging (R5)	1	5	4.041	0.929
Interesting work contents (R6)	1	5	4.081	0.877
<i>Reward: Intrinsic dimension (mean value: R4-R6)</i>	1	5	3.927	0.776
Possibility to arrange job and private life (R7)	1	5	2.981	1.241
Enough time for free-time activity (R8)	1	5	2.916	1.191
<i>Reward: Work-life balance (mean value: R7-R8)</i>	1	5	2.949	1.098
Control variables				
Female	0	1	0.510	0.500
Age	21	35	28.535	2.349
Having children	0	1	0.085	0.279
Self-employment	0	1	0.004	0.064
Match of competences	1	5	3.663	0.972
Year 2008	0	1	0.443	0.497

Note: Number of observations: 22 124

Table 4: Correlation matrix

Items	I1	I2	I3	I4	I5	I6	I7	I8
I1: Job satisfaction	1							
I2: Female	-0.0852*	1						
I3: extrinsic dimension: valence	0.0576*	-0.0935*	1					
I4: intrinsic dimension: valence	0.1782*	0.0501*	0.3511*	1				
I5: work-life balance: valence	-0.0792*	0.1518*	0.1009*	0.0867*	1			
I6: extrinsic dimension: reward	0.4451*	-0.0986*	0.3662*	0.1678*	-0.0400*	1		
I7: intrinsic – reward	0.5604*	-0.0136*	0.0864*	0.4057*	-0.0406*	0.4034*	1	
I8: work-life balance – reward	0.2387*	-0.0225*	0.0110*	0.0487*	0.2892*	0.0801*	0.0538*	1

Note: * denotes significance of pair-wise correlation at the 1% level.

Table 5: Gender differences in valence of job attributes and job rewards

	Female	Male			
	Mean	Mean	Cohen's d	t-Test	Dissimilarity Index D
Job satisfaction	3.702	3.854	0.17	***	0.075
Valence of job attributes					
Income (V1)	3.687	3.763	-0.08	***	0.050
Career opportunities (V2)	3.703	3.862	-0.17	***	0.082
Opportunity to have leading management role (V3)	3.597	3.787	-0.19	***	0.093
<i>Valence: Extrinsic dimension (Mean value: V1-V3)</i>	3.662	3.804	-0.19	***	
Possibility to apply/implement own ideas (V4)	4.196	4.229	-0.04	***	0.019
Job is personally challenging (V5)	4.303	4.188	0.16	***	0.080
Interesting work contents (V6)	4.568	4.488	0.14	***	0.070
<i>Valence: Intrinsic dimension (Mean value: V4-V6)</i>	4.355	4.302	0.10	***	
Possibility to arrange job and private life (V7)	3.865	3.478	0.34	***	0.146
Enough time for free-time activity (V8)	3.741	3.563	0.18	***	0.067
<i>Valence: Work-life balance (Mean value: V7& V8)</i>	3.803	3.520	0.30	***	
Job rewards					
Income (R1)	2.609	2.876	-0.23	***	0.082
Career opportunities (R2)	2.927	3.065	-0.12	***	0.052
Opportunity to have leading management role (R3)	3.016	3.162	-0.12	***	0.111
<i>Reward: Extrinsic dimension (Mean value: R4-R6)</i>	2.851	3.034	-0.19	***	
Possibility to apply/implement own ideas (R4)	3.618	3.703	-0.08	***	0.036
Job is personally challenging (R5)	4.056	4.025	0.03	**	0.082
Interesting work contents (R6)	4.076	4.086	-0.01	n.s.	0.018
<i>Reward: Intrinsic dimension (Mean value: R4-R6)</i>	3.917	3.938	-0.03	**	
Possibility to arrange job and private life (R7)	2.966	2.997	-0.02	*	0.037
Enough time for free-time activity (R8)	2.882	2.951	-0.06	***	0.028
<i>Rew.: Work-life balance (Mean value: R7& R8)</i>	2.924	2.974	-0.05	***	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels. n.s. not significant.

Table 6: Job satisfaction – the relevance of valence and perceived job rewards

	(1) Joint sample	(2) Joint sample	(3) Joint sample	(4) Joint sample	(5) Female	(6) Male
Valence: extrinsic dimension		-0.0568*** (0.0109)		-0.162*** (0.0121)	-0.153*** (0.0170)	-0.173*** (0.0173)
Valence: intrinsic dimension		0.363*** (0.0151)		0.00155 (0.0169)	0.0109 (0.0236)	-0.0120 (0.0242)
Valence: work life balance		-0.0916*** (0.00820)		-0.167*** (0.00901)	-0.171*** (0.0127)	-0.164*** (0.0128)
Job reward: extrinsic Dimension			0.375*** (0.0102)	0.423*** (0.0108)	0.412*** (0.0151)	0.440*** (0.0157)
Job reward: intrinsic Dimension			0.776*** (0.0122)	0.776*** (0.0131)	0.741*** (0.0180)	0.819*** (0.0194)
Job reward: work-life Balance			0.261*** (0.00720)	0.304*** (0.00760)	0.305*** (0.0105)	0.304*** (0.0111)
Female	-0.0366** (0.0164)	-0.0445*** (0.0167)	-0.0881*** (0.0171)	-0.0586*** (0.0174)		
Age	-0.0311*** (0.00334)	-0.0332*** (0.00336)	-0.0313*** (0.00349)	-0.0338*** (0.00350)	-0.0284*** (0.00489)	-0.0401*** (0.00508)
Having children	0.0598** (0.0269)	0.0979*** (0.0272)	0.0171 (0.0281)	0.0712** (0.0284)	0.143*** (0.0442)	0.0181 (0.0372)
Self-employed	0.0775 (0.114)	0.0598 (0.115)	0.288** (0.119)	0.321*** (0.120)	0.229 (0.152)	0.460** (0.195)
Match of competences	0.305*** (0.00784)	0.279*** (0.00795)	0.141*** (0.00849)	0.149*** (0.00854)	0.127*** (0.0116)	0.174*** (0.0126)
Wage dummies	YES	YES	YES	YES	YES	YES
Field of study dummies	YES	YES	YES	YES	YES	YES
Year dummy 2008	YES	YES	YES	YES	YES	YES
Observations	22,124	22,124	22,124	22,124	11,280	10,844
Pseudo R ²	0.0450	0.0573	0.2150	0.2267	0.2167	0.2349

Notes :Results of ordered probit regressions, SEs in parentheses; *, ** and *** denote significance at the 10%, 5% and 1% levels.

Figure 1: Histogram of level of job satisfaction

Appendix:

A1: Identification of factors and items capturing three dimensions of work valence

In the graduate survey used 18 items were implemented to indicate various job-attributes. These items were utilized with the aim of capturing latent factors of job attributes. As we concentrate on extrinsic factors, intrinsic factors and work–life balance, we use eight of the items in the analysis in the main text. This reduction is done according to a principal component analysis which reveals that three factors – which can be labeled as extrinsic, intrinsic job dimension and work life balance – are captured by eight items. Results of an additional parallel analysis suggest that these eight items shape three factors with eigenvalues above 1 such that three factors can be interpreted. In Table A1 we denote the sampling adequacy of the eight items used and the overall sampling adequacy, indicated by a Kaiser-Meyer-Olkin measure as well as factor loadings of these eight items into the respective factor while using all 18 items given.

Table A1: Results of the factor analysis (varimax rotation)

Variable	Sampling Adequacy	Factor Analysis		
		Extrinsic	Intrinsic	W-L Balance
Possibility to apply own ideas	0.8438		0.5030	
High income	0.7755	0.5592		
Challenging tasks at work	0.8455		0.5283	
Good career opportunities	0.7450	0.7841		
Having leadership functions	0.7973	0.6529		
Good possibility to combine job and private life	0.7615			0.5898
Enough time for free-time activity	0.7156			0.6321
Interesting work contents	0.8157		0.5673	
<i>Kaiser-Meyer-Olkin-measure of sampling adequacy</i>	0.7852			

Table A2: Determinants of job satisfaction – interaction effects of work expectations and job rewards

Variables	(1) Joint Sample	(2) Female Graduates	(3) Male Graduates
Valence: extrinsic dimension	-0.112*** (0.0185)	-0.112*** (0.0259)	-0.108*** (0.0267)
Valence: intrinsic dimension	-0.166*** (0.0385)	-0.242*** (0.0544)	-0.105* (0.0546)
Valence: work life balance	-0.174*** (0.0121)	-0.179*** (0.0176)	-0.169*** (0.0169)
Job reward: extrinsic dimension	0.215*** (0.0248)	0.208*** (0.0347)	0.234*** (0.0360)
Job reward: intrinsic dimension	0.340*** (0.0452)	0.219*** (0.0647)	0.444*** (0.0635)
Job reward: work–life balance	0.0687*** (0.0163)	0.0611** (0.0249)	0.0758*** (0.0216)
Interaction: Valence * Reward extrinsic dimension	0.00742 (0.00623)	0.00819 (0.00889)	0.00436 (0.00887)
Interaction: Valence * Reward intrinsic dimension	0.0347*** (0.0101)	0.0582*** (0.0144)	0.0149 (0.0143)
Interaction: Valence * Reward Work–life balance	0.0290*** (0.00413)	0.0306*** (0.00613)	0.0273*** (0.00568)
Female	-0.0293*** (0.0102)		
Age	-0.0204*** (0.00205)	-0.0170*** (0.00293)	-0.0241*** (0.00291)
Having children	0.0406** (0.0167)	0.0803*** (0.0265)	0.0113 (0.0214)
Self-employed	0.185*** (0.0701)	0.146 (0.0916)	0.239** (0.110)
Match of competences	0.0920*** (0.00499)	0.0813*** (0.00695)	0.104*** (0.00721)
Constant	2.627*** (0.244)	3.240*** (0.334)	1.833*** (0.361)
Wage dummies	YES	YES	YES
Field of study dummies	YES	YES	YES
Year dummy 2008	YES	YES	YES
Observations	22,124	11,280	10,844
R-squared	0.448	0.435	0.458
Log Lik	-22324	-11531	-10757

Notes: Results of OLS estimations. SEs in parentheses; *, ** and *** denote significance at the 10%, 5% and 1% levels.

Table A3: Oaxaca-Blinder-Decomposition of the gender gap in job satisfaction

	Model (1)	Model (2)	Model (3)
Difference	0.152*** (0.008)	0.152*** (0.012)	0.152*** (0.011)
Endowments	0.134*** (0.011)	0.106*** (0.011)	0.128*** (0.011)
Coefficients	0.0322** (0.014)	0.056*** (0.011)	0.035*** (0.011)
Interactions	-0.139 (0.014)	-0.010 (0.011)	-0.011 (0.011)
<i>Endowment effects of expectations and rewards</i>			
Valence - extrinsic dimension	-0.005*** (0.002)		-0.125** (0.002)
Valence - intrinsic dimension	-0.013*** (0.002)		0.002** (0.001)
Valence -work-life balance	0.020*** (0.003)		0.028*** (0.002)
Job reward - extrinsic		0.040*** (0.003)	0.044*** (0.003)
Job reward - intrinsic		0.010** (0.005)	0.010** (0.005)
Job reward - work-life balance		0.008*** (0.002)	0.001*** (0.003)

Notes: Oaxaca-Blinder-Decomposition is based on the results of OLS estimations. Although not reported estimations include all control variables. *, ** and *** denote significance at the 10%, 5% and 1% levels.