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The Nexus between Gender and Perceived Career Opportunities: Evidence from the U.S. Federal Government

Abstract: Although the pay gap between men and women in the U.S. workforce has narrowed since the 1980s, numerous studies have found that a disparity still exists. One of the primary reasons for the gender wage gap is the fact that women have a lower likelihood to end up in the higher paying upper levels of organizations. In light of this fact, this article examines differences in perceived career opportunities between men and women in the federal workforce as well as the evolution of these differences between 2006 and 2013. To do this, a heterogeneous choice model is used to examine representative samples of two waves of the U.S. federal employee viewpoint survey. We come to the finding that a difference in perceived career opportunities exists and, surprisingly, that this difference did not decrease nor increase during the examined time period.

Keywords: perceived career opportunities, gender, heterogeneous choice approach

1. Introduction

Over the past few decades, gender equality has become a focal point for public policy. However, despite the longstanding commitments of the Equal Pay Act of 1963 and the Civil Rights Act of 1964 and several more recent initiatives such as the Paycheck Fairness Act, gender equality in the workplace generally still falls short (Yamagata et al., 1997). And although impressive gains were made by women, there are still significant inequalities that must be addressed. In this context, the focus often turns to the pay gap between men and women, which is widely discussed in both academic and practice-oriented fora. However, addressing these gender differences, including the pay gap, requires a better understanding of the sources of those differences (Bolitzer & Godtland, 2012). As such, it will be difficult to eliminate gender inequality in the workplace as long as forces such as occupational segregation based on gender are still present. This kind of segregation often occurs in patterns, either horizontally or vertically. Both of these contribute to the gender pay gap. Horizontal segregation refers to the concentration of women or men in certain occupations or sectors. Men tend to hold occupations where the level of productivity and responsibilities is high, while women tend to be oriented towards occupations that are compatible with their family life (Meulders et al., 2010). The idea that nurses and teachers are often pictured as women whereas doctors and lawyers are often assumed to be men are examples of how highly engrained horizontal segregation is in our society. The term vertical segregation describes men's domination of the highest status jobs. Women often experience (visible or invisible) barriers to entering the higher ranks of the organization, a phenomenon labeled as the “glass ceiling” (Powell & Butterfield, 1994). Even in female-dominated occupations, men have substantially better internal promotion chances compared to equally qualified women in such occupations (Hultin, 2003). Men are therefore said to be able to “ride a “glass escalator” up internal career ladders to an extent and at a speed that their female coworkers can hardly enjoy” (Hultin, 2003, p. 3).

In this article, we zoom in on this last phenomenon, namely vertical segregation, however focusing on women's career opportunities. As such, the lower representation of women in top level positions is believed to be the result of a bias in promotional decisions. This may either be caused by direct, outright discrimination against women in organizations (intentional or not), or by indirect gender differences in job-relevant criteria for top management promotions. Either way, gender inequality may arise when considering career advancement, in which women are most likely to be at a disadvantage (Powell & Butterfield, 1994). Even within the

U.S. federal government, which is considered as a leader in equal-opportunity employment, male and female workers are still found to hold different occupations (Bolitzer & Godtland, 2012).

Nevertheless, several studies have found that the gender gap is no longer as pervasive as was once the case (Tomaskovic-Devey 1993). Admittedly, government agencies have seen a steady rise of women in upper management positions (Bowling et al., 2006; Dreher, 2003; Powell & Butterfield, 1994). Women comprised 30% of the Senior Executive Service in 2010 compared to only 12.3% in 1992 (Sabharwal, 2013). Even though women occupy an ever-increasing percentage of middle- and upper-management positions in all workforce settings, research over the past several decades has observed the continued existence of structural and organizational barriers that render the advancement of female managers more difficult compared to their male counterparts (Reid, Miller & Kerr, 2004; Guy & Newman, 2004; Miller, Kerr & Reid, 1999; Hsieh & Winslow, 2006; Riccucci, 2009; Sneed, 2007; Yamagata et al., 1997).

Is there, however, regardless of this positive evolution, still a difference in perceptions on career opportunities between men and women in the U.S. federal government? And, in case a difference exists, will it have known a steady decrease in a period which has been characterized by a strong focus on budgetary cutbacks? The strong emphasis on austerity measures makes this time period especially interesting to examine how this recent emphasis affects other important issues, such as gender differences.

In short the goal of this article is to examine the effect of gender on differences in perceived career opportunities as well as the evolution hereof. As such the study draws attention to the perception of the opportunity to get a better job within the current organization. Career opportunities are, especially within the U.S. Federal Government which relies heavily on the GS to decrease disparities, an important determinant of a gender pay gap. Moreover, the examination of the evolution of this possible gender difference is particularly interesting since the government has recently been confronted with strong budgetary cutbacks due to the economic and financial crisis. Will gender differences keep decreasing or will the deteriorating economic situation instead exacerbate such differences?

The remainder of the paper is organized as follows: in the next section the motivation for using perceptions on career opportunities is further explained, as well as theories on the reason why women face more difficulties in their mobility along a vertical career track. Additional determinants of career opportunities are presented in section 3, while the data and analytical framework are described in section 4 and 5. Section 6 presents an in-depth analysis

of the relationship between gender and perceived career opportunities, while section 7 concludes.

2. Gender & perceived career opportunities

Career opportunities may be studied in two forms, actual and perceptual (Landau & Hammer, 1986). In our study, we use a perceptual measure, referring to employees' assessment of their career opportunities. An advantage of such a perceptual measure is the fact that it reflects employees' perceptions of the opportunities within the organization relative to their own subjective career goals and interests. As each employee can have different career goals and interests, individuals in the same organization may hold very different perceptions of the career opportunities that the organization offers them. Moreover, perceptions of career opportunities can evolve over time based on changes in life circumstances, signals they receive from key organizational representatives regarding their career potential, their exposure to career options in the organization, own work history, and career self-management activities such as career planning and goal setting (Kraimer et al., 2011). In order to examine if women have more difficulties in moving up the career ladder, one should take these subjective goals and interests into account. Especially since some studies (e.g. Bender et al. 2005; Hakim, 2006) indicate that these subjective goals and interests lead to the relatively small number of women among upper managerial ranks. We therefor focus on perceptual data to get a precise understanding of the relationship between career opportunities and gender.

The dominant metaphor within various disciplines including public administration that frames the challenges women endure in attaining upward mobility has been the glass ceiling (Bullard & Wright, 1993; Reid, Kerr and Miller, 2003; Wilson, 2002; Sabharwal, 2013). Several organizational and sociocultural factors have been identified in literature that impede women the benefits of upward mobility. Examples of such factors are: human capital barriers (lack of education, resources and experience); differences in communication styles; exclusion from informal networks; lack of mentors and role-models; limited management support for work/life programs (Dolan, 2004; Lewis, 1997, 1998; Mani, 1997; Riccucci, 2009; Sabharwal, 2013).

The reason as to why females are less likely to end up in higher management levels is provided by social and organizational psychologists (e.g., Glick & Fiske, 2007; Heilman & Parks-Stamm, 2007; Koenig et al., 2011) and is based on gender stereotyping. Gender

stereotypes are categorical beliefs regarding the traits and behavioral characteristics ascribed to individuals on the basis of their gender (Duehr and Bono, 2006). Stereotypes serve as expectations about the attributes and behaviors of individual group members (Cleveland, Stockdale & Murphy, 2000) and are considered one of the direct antecedents of discrimination at work (Dovidio & Hebl, 2005). As such, stereotypes about women's roles and abilities prove to be a potent barrier to women's advancement to the highest levels (Wellington, Kropf, & Gerkovich, 2003, Koenig et al., 2011).

The detrimental effects of stereotypes for women as leaders do however not stem from beliefs about women which are predominantly negative. As discussed by Koenig et al. (2011) women are regarded as the nicer, kinder sex and thus have a cultural stereotype that is in general more positive than that of men (Eagly & Mladinic, 1994; Langford & MacKinnon, 2000). Nonetheless, women often experience workplace discrimination (Heilman & Eagly, 2008) leading to a lower probability to end up in the higher echelons of organizations.

Within literature (e.g. Eagly & Karau, 2002; Lyness & Heilman, 2006; Hogue & Lord, 2007), this paradox has been resolved by reasoning that it is not the evaluative content of the stereotype of women but its mismatch with many desirable work roles that underlies biased evaluations in many employment settings. Consequently and in line with the role incongruity model, social role theory and the think-manager-think-male framework, these biased evaluations are caused by a mismatch between stereotypes of women (e.g. Spence & Buckner, 2000) and stereotypes of leaders (e.g., Epitropaki & Martin, 2004; Lord & Maher, 1993; Offermann, Kennedy, & Wirtz, 1994). In short men are seen as more similar to the leader stereotype than women are, producing disadvantage for women. This in turn makes women the targets of two forms of prejudice against them as leaders: a deficit in the ascription of leadership ability to them and, compared to that of men, a less favorable evaluation of their leadership behavior (Eagly and Karau, 2002; Koenig et al., 2011). Women thus seem less usual or natural in most leadership roles; and women often seem inappropriate or presumptuous when they display the behavior often required by these roles (see also Burgess & Borgida, 1999). Because individuals are commonly assimilated to group stereotypes (e.g., von Hippel, Sekaquaptewa, & Vargas, 1995), an evaluative penalty is exacted from women leaders or potential leaders regardless of whether they possess the qualities appropriate for leadership roles. This penalty consists of unfavorable performance expectations, which in turn enable biased judgments and less favorable evaluations (Eagly, Makhijani, & Klonsky, 1992; Lyness & Heilman, 2006). As such we hypothesize that women have lower perceptions of career opportunities compared to men.

3. Other factors impacting perceived career opportunities

Apart from gender, literature also proposes other factors to be of importance when explaining perceived career opportunities. Including these are important from an employee perception since a better understanding of factors contributing to perceived career opportunities can help employees take a more active role in either developing their own capabilities or searching for an organization which provides a better employment fit. Examining the roles of such factors is also important from the organization's point of view because the management of career perceptions has a direct impact on employee performance, which in turn impacts the organization's performance (Hitt, Bierman, Shimizy and Kochhar, 2001).

In line with Newbury and Thakur (2010), we will rely on institutional theory for the selection of extra factors to explain perceived career opportunities. Institutional theory is a very broad theory and deals with human behavior within institutions while stressing that organizations are influenced by normative pressures arising from internal as well as external sources (Zucker, 1987; Jackson & Schuler, 1995). Within this theory there are two broad approaches. The first approach views the organization as an institution where pressures arise from within (Tolbert & Zucker, 1983). The second approach stresses the effect of the environment and thus external factors on changes within the organization (DiMaggio & Powell, 1983). These institutional factors influence the strategic choices made by organizations as well as the behavior of actors within the organization (Newburry & Thakur, 2010). Bjorkman, Fey and Park (2007) found that firm specific institutional factors play a significant role in determining the human resource management (HRM) practices found in organizations. In line with Newburry and Thakur (2010) we will extend these findings by hypothesizing regarding the influence of these factors perceived career opportunities. Internal factors as well as an external one are included in our subsequent analyses. The internal factors consist of training, performance appraisal and encouragement. Survey year has been included as an external factor.

Training. Organizations create human capital not only through external acquisition from the labor market, but also through internal creation by offering training and development opportunities to their employees (Tsang, Rumberger & Levine, 1991). Training by the organization has been found to increase the human capital of an employee, and thus, positively influence career outcomes (Tharenou, Latimer & Conroy, 1994). Prior research has pointed out that employees who receive internal training from their organization have a higher

job satisfaction (Wayne, Shore and Linden, 1997; Rhoades and Eisenberger, 2002). We extend this argument to predict that employees with higher levels of training will also have more positive perceptions of being part of the organization. Being trained sufficiently by the organization may lead employees to perceive that they are well prepared to benefit from opportunities in all parts of the organization (Newburry and Thakur, 2010). Therefore, we hypothesize that training has as positive effect on perceived career opportunities.

Encouragement. Employees who receive organizational support and feel encouraged tend to have greater organizational commitment (Foa & Foa, 1980; Eisenberger, Armeli, Rexwinkel, Lynch & Rhoades, 2001), job satisfaction (Witt, 1991), performance (George & Brief, 1992), and desire to remain with the organization (Nyle & Witt, 1993). Employees evaluate the organization's level of support for development based on the extent to which they feel supported by their immediate leaders (Kraimer, Seibert, Bravo, Wayne & Liden, 2011). In addition, Landau and Hammer (1986) found that employees who received encouragement from their supervisors and others in the organization perceived greater opportunities for advancement. Based on the above, we argue that a higher degree of perceived encouragement will lead to a more positive perception of career opportunities.

Performance appraisal. Performance appraisals reflect the organizations' knowledge about employees' abilities. This knowledge is of crucial importance for career mentoring. In line with Kraimer et al. (2011), when the performance appraisal is a fair reflection of the real performance, it can more efficiently help employees' career development and growth. In addition, performance appraisals may be used specifically as a tool for guiding promotion-related decisions (Cleveland et al., 1989). Hence, if performance appraisals are a fair reflection of the employees' real performance, organizations will be able to offer better career mentoring. This in turn will allow the organization to better match the abilities and needs of the employee to interesting career opportunities. Moreover, fair and transparent performance appraisals will also enable employees themselves to better assess their chances of promotion. Altogether, we expect that performance appraisal is positively related to perceived career opportunities.

Survey year. Although less widely studied, external factors will also influence employee outcomes and perceptions (Cotton & Tuttle, 1986). Consequently, two waves of the Federal Employee Viewpoint Survey are included in our study; the wave of 2006 and that of 2013. During this period federal employees witnessed a change in presidency and, due to the financial and economic crisis, strong funding cutbacks. These cutbacks led to an unprecedented 3-year pay freeze, automatic reductions from sequester that included furloughs

for hundreds of thousands of employees, and reductions in training and other areas.¹ As discussed in the 2013 report on the results of the Federal Employee Viewpoint Survey, these austerity measures have a negative effect on the satisfaction with career opportunities within the organization. Therefore, we argue that the perception of career opportunities has become more negative during our examined time period (2006-2013).

In order to examine the evolution of a possible difference in perception of career opportunities, an interaction term between survey year and gender will be included. A significant negative term would imply that the difference in perception has decreased during the examined time period, while a significant positive term would mean the opposite; namely an increase of the difference in perception between men and women. Although the effect of strong austerity measures on gender differences is lacking within literature, we hypothesize in line with more general literature (e.g. Sabharwal, 2013; Kohli, Gans and Hairston, 2011) that the difference has decreased during the period 2006-2013.

4. Data source, variables and descriptive statistics

Our analyses are based on the Federal Employee Viewpoint Survey; in particular two waves were used: 2006 and 2013. These two years were used since they allow evaluating the evolution of the perceived career opportunities. The Federal Employee Viewpoint Survey (formerly known as Federal Human Capital Survey) was first administered in 2002 while the most recent version (at the time of writing) is the one from 2013. The survey was conducted biennially until 2010, after which it has been conducted on a one-year basis. Although the survey has also been conducted in 2002 and 2004, the wave of 2006 is more consistent with later waves of the survey. We therefore opted to compare 2006 and, the most recent version of the survey (2013). The Federal Employee Viewpoint Survey is a tool that measures employees' perceptions of whether, and to what extent, conditions which characterize successful organizations are present in their agencies. The survey is administered by the U.S. Office of Personnel Management and targets full-time, permanent employees of departments and large agencies and the small/independent agencies that accept an invitation to participate in the survey. The wave of 2006 drew 221,479 responses and the one of 2013, 376,577. For each of those waves weights per observation are available. The weight indicates the number of employees in the survey population the respondent represents. Information about demographic characteristics, such as gender, race, supervisory status, age, and organization

¹ It is important to note that the survey from 2013 was administered prior to the Government shutdown.

size, are used to develop the weights.² A random sample of 10,000 observations per year was constructed out of the initial sample while taking account of the weights. This was done in order to avoid large sample bias. An extremely large sample (such as the FEVS data), will make the standard error extremely small, so that even minuscule distances between the estimate and the null hypothesis become statistically significant (Lin, Lucas & Shmeli, 2011). Consequently, and as discussed by Lin et al. (2011), conclusions based on significance and sign alone, claiming that the null hypothesis is rejected, are meaningless unless interpreted in light of the actual magnitude of the effect size. This large sample can consequently cause problems when interpreting statistical significance. Moreover, given the high variation of observations in both years, observations from 2013 would be overrepresented while observations from 2006 would be underrepresented. Therefore, an equal and random sample has been created for both years, in order to deal with the above issues.

4.1.Measuring perceived career opportunities

In order to measure perceived career opportunities, employees were asked the following question in the Federal Employee Viewpoint Survey: “How satisfied are you with your opportunity to get a better job in your organization?” They were asked to answer on a 5-point Likert scale ranging from (1) Very Dissatisfied to (5) Very Satisfied. Our dependent, perceived career opportunities is thus based on a single-item measure, which can be perceived as a weakness of our data. Yet this is often not less reliable than multiple response items (e.g. Bergkvist and Rossiter 2007; Gardner et al. 1998; Wanous and Hundy 2001). Gardner et al. (1998) even point out that single item measures avoid the risk of aggregating multiple measures whose inter-item correlation is due common method variance.

As a first exploratory analysis, a Wilcoxon-Mann-Whitney test has been performed to test whether a difference exist in the responses of men and women. The test indeed indicates that a significant difference ($\chi^2(1)= 16.837***$) exists between the two groups. Women score significantly lower on perceived job opportunities within the organization compared to men. A similar test was executed to see whether a difference also exists in the responses across survey years. Again the test indicates that a significant difference exist ($\chi^2(1)= 28.011***$). Employees in 2006 were more satisfied with career opportunities within their organization compared to employees in 2013.

² For more information on the survey, see: <http://www.fedview.opm.gov/>

4.2.Explanatory Variables

Table 1 shows summary statistics for the main variables. Apart from gender, training, encouragement, performance appraisal and survey year, extra socio demographic variables such as age, supervisory status, length of service and pay grade have been included. This was done in order to reduce the possibility that the found influences of gender and/or survey year on perceived career opportunities are in fact due to the influence of other variables which are not in the model. The purpose of Table 1 is to test whether the estimation subsample used in the regressions continues to be representative of the entire sample or is instead biased in one or more variables, because of an unbalanced distribution of missing values. Only a random sample of 20.000 observations has been selected out of the initial +/- 597.000 observations, whereby observations are only included if they have information on all explanatory variables. Consequently, we compare the averages³ of the variables introduced in previous sections for the entire original sample and the used sample.

Please include Table 1 here

Overall, the values reported in Table 1 in the Full Sample and Used sample columns are very similar. This suggests that missing values were randomly distributed, and that the observations used to estimate the regressions therefore constitute a representative subsample of all the employees that were originally included in the survey. Table 1, however, indicates that the mean of the variable pay grade is slightly lower in the used sample (1.77 vs. 1.66). Nevertheless, the descriptive statistics for all the remaining explanatory variables appear not to differ in the two samples, thereby suggesting that the impact of this lower value is negligible. Secondly, this lower value appears to be distributed evenly within the used sample, as there was no ‘organizational’ bias. The linear correlation analysis among regressors is reported in table 2. There appears to be a strong correlation between training, encouragement and performance. Tests indicated that no collinearity exists between the variables. The mean VIF equals 1.28 whereby the highest VIFs exists for the variable encouragement (1.68).

Please include Table 2 here

³ The standard deviation is deliberately not mentioned in the table. The mean for the variables in the entire sample has to be estimated since these are calculated using the weights as such the standard deviation is not available, only standard errors. These however cannot be compared to the ‘normal’ standard deviations. Consequently, they have been omitted.

5. Methods

As previous sections have shown, we expect that the perception of career opportunities Y depends on individual (such as gender) X , internal and external U factors as well as non-observable factors ε ⁴.

$$Y = \beta_0 + \sum_k \beta_1 X_k + \sum_k \beta_2 U_k + \varepsilon. \quad (1)$$

To estimate the relationship between Y , measured on a 5-point Likert scale, and the variables outlined above a specific econometric model is required. A traditional way of dealing with this kind of variable exists in the application of an ordered (logit or probit) model. However when a binary or ordinal model incorrectly assumes that error variances are the same for all cases, the standard errors are wrong and unlike OLS regression the parameter estimates are biased (Yatchew & Grilliches, 1985).

A good example of this problem is presented by Allisson (1999). When estimating the chances for academic promotion, he initially found that the effect of the number of articles differed significantly for women and men. Given the oddity of this result, he claimed that this was the result of differences in the degree of residual variation between men and women. When examining this further he indeed found that women have more heterogeneous career patterns than men, and that unmeasured variables have a different effect on men than on women, leading to the observation that the number of articles is more important for men than for women.

In line with Williams (2010) and Allisson (1999) we therefore allow to variance to vary over gender and survey year. This allows the residual variability in attitudes towards career opportunities to differ by survey year and by gender, both of which are substantively plausible. The homoscedastic standard deviation $\hat{\sigma}$ is replaced by $\hat{\sigma}_i$ as

$$\sigma_i = e^{\sigma + \omega_i \alpha} \quad (2)$$

Where α are the additional parameters to be estimated and ω_i are the variables which are considered to model the heteroskedasticity (without a constant term). This is achieved by running a heterogeneous choice model which simultaneously estimates two equations: one for the determinants of the outcome and for the determinants of the residual variance (Williams,

⁴ For simplicity, we suppress agency subscripts i .

2010).⁵ More information on the model is included in appendix, furthermore a wide range of easy accessible literature concerning this model is available, see for instance Cameron & Trivedi (2005) and Williams (2010).⁶

When comparing the heterogeneous choice model with the standard ordered logit model, the addition of the two heteroscedasticity parameters appears to improve the model fit significantly (Likelihood ratio test equals $\chi^2(2) = 43.98^{***}$).⁷ The values of the Bayesian information criterion as well those of the Akaike information criterion also favor the heterogeneous choice model. Additionally a Wald test has been performed to test the joint significance of the two heteroskedasticity parameters, these confirm our previous findings ($\chi^2(2) = 43.84^{***}$) and support the heterogeneous approach. For what follows only heterogeneous choice models are presented.

6. Results

Please include table 3 here

In table 3, two heterogeneous choice models are presented; one including an interaction term between survey year and gender and one without such term. This allows us to examine the evolution of a possible gender bias. When comparing the two regressions ((1) and (2)) we notice that the variables gender and survey year are significant and negative in both models. This means that women are less likely to have a similar satisfaction with the career opportunities in their organization compared to men. Moreover, during the time period 2006-2013 the overall satisfaction with career opportunities has declined. This is a strong indication that budget cutbacks, such as the 3-year pay freeze, reductions in training and other areas have had a detrimental effect on the satisfaction with career opportunities within the own organization. Yet the interaction term between survey year and gender, which we included to gauge the evolution of a possible gender bias, is not only insignificant but does also not improve our model (Likelihood ratio test between model 1 and model 2 equals $\chi^2(1) = 1.29$). This means that although the overall satisfaction of job opportunities declined during the time

⁵ The heterogeneous choice model is an improvement over the initial and often criticized approach of Allisson (1999), see for instance Keele and Park (2006), and overcomes its most significant weaknesses (Williams 2009). These models allow for ordinal dependent variables and a much more flexible specification of the variance equation. As Keele and Park (2006) note, if this kind of model is correctly specified “The heteroskedastic ordered probit model can be given a clean bill of health, as both the level of overconfidence and coverage rates are close to ideal.”

⁶ Admittedly there also exists an alternative approach which is proposed by Long (2009) by plotting differences in predicted probabilities. However, we opt for the method proposed by Williams (2010) since Long’s approach doesn’t try to explain why the differences exist i.e. is it because the effects of variables differ across groups or is it because of differences in residual variability?

⁷ The results of the ‘regular’ ordered probit model are available upon request from the author.

period 2006-2013, the gender gap didn't increase nor decrease. Since the interaction term did not improve the model we continue with the heterogeneous choice model without interaction term.

When examining the demographic characteristics we notice that age, supervisory status and pay grade are significant. Only years working for the Federal Government appears to have no effect on perceived job opportunities. Employees who are between 50 and 59 years old have a lower satisfaction on career opportunities than those under 40. Moreover, employees who are in a supervisory position have a significantly higher satisfaction when it comes to job opportunities. Likewise, employees in higher pay grades have a higher likelihood to be satisfied with the job opportunities within their current organization. In other words, employees within the lower echelons of an organization are less satisfied with their job opportunities compared to employees that already moved up the career ladder.

When examining the variables training, encouragement and performance appraisal we notice that all three variables are significant and positive. Organizations that have a higher degree of internal training will have more secure and satisfied employees which will have a more positive perception of job opportunities within the organization. This finding is in line with Newburry & Thakur (2010), internal training will lead employees to perceive that they are well prepared to benefit from opportunities in all parts of the organization. Employees who feel encouraged by their organization will also be more likely to be more satisfied with career opportunities. Intuitively this makes sense and this is also in line with the literature (e.g. Eisenberger et al. 2001). Employees evaluate the organization's level of support for development on basis of the extent to which they feel supported by their immediate leaders (Kraimer et al., 2011) and this will make employees more satisfied with career opportunities.

Finally, employees who regard their performance appraisal as a fair reflection of their real performance are also more likely to be satisfied with career opportunities. Again this is in line with literature (e.g. Kraimer et al., 2011), when the performance appraisal is a fair reflection of the real performance, it can more efficiently help employees' career development and growth.

An important advantage of the heterogeneous choice model is the fact that the variance equation allows to examine the determinants of variability. The negative coefficient for gender in the variance equation tells us that, after controlling for other variables, there was less variability in men's satisfaction with the career opportunities within the organization than women. Moreover, the positive coefficient for survey year leads to the observation that the variability in the satisfaction with job opportunities increased across time. Both results seem

plausible and substantively interesting. Factors that impede women the benefits of upward mobility, such as gender stereotyping, makes women more divided in the satisfaction with their career opportunities. While federal employees in general became less divided on the perception of their career opportunities across time. The declining economic situation is the most likely cause for this observation.

Conclusion & discussion

President Kennedy signed the Equal Pay Act in 1963. The very next year, Congress passed Title VII of the Civil Rights Act of 1964, which banned sex discrimination at work. Yet fifty years later, women still make less than men. Research shows that even though equal pay for women is a legal right, it is not yet a reality (Alkadry et al., 2006; 2011). Since one of the primary reasons for the gender wage gap is the fact that women have a lower likelihood to end up in the higher paying upper levels of organizations, the goal of this article exists in examining career opportunities for both men and women. More precisely differences in perceived career opportunities as well as the evolution of these difference are examined. Perceptual instead of actual data is used since it reflects employees' perceptions of the opportunities within the organization relative to their own subjective career goals and interests, making it an ideal way to measure a possible gender bias. Analyzing differences in perceived career opportunities for men and women as well as survey year however posed an interesting empirical puzzle, as there were differences in residual variability in attitudes towards career opportunities. Using a heterogeneous choice model, we were able to solve this issue.

Although some of the variables that drive the difference in perceived career opportunities are related to organizational and external factors as well as socio-demographical ones, gender itself proved to affect perceived career opportunities. Women are less satisfied compared to men. These are important findings, but unfortunately, they fall short of recommending ways to eliminate the effect of gender on perceived career opportunities. Worse still, Koenig et al. (2011) conclude that given the strongly masculine cultural stereotype of leadership, differences between men and women are likely to continue for some time to come. Indeed research (e.g. Lueptow, Garovich-Szabo, & Lueptow, 2001) suggests that even in the wake of changing social influences, stereotypes are not quick to change. Disparities between men and women on career opportunities can consequently not easily be remedied. Nonetheless, we argue in line with Duehr and Bono (2006) that a better enforcement of existing laws and

regulations as well as stronger laws can help in gradually changing these gender stereotypes and as such help in addressing differences between men and women.

Moreover, a general decrease in the satisfaction with career opportunities could be observed. This finding is, given the recent economic downturn, not surprising. Yet the fact that the gender gap in career opportunities did not lessen during this period is disturbing.

On an organizational-level, the encouragement and training of employees as well as fair performance appraisals appear to be of key importance for the overall satisfaction with career opportunities. Since a declining satisfaction with career opportunities can be observed, a renewed focus on these factors is necessary. Moreover, the management of career opportunities has a direct impact on employee performance, which in turn impacts the organization's performance (Hitt, Bierman, Shimizy and Kochlar, 2001). In order to improve the efficiency of federal agencies, increased attention on training, the encouragement of employees as well as fair performance appraisals are of key importance.

It is however important to note that the sample used in the present study was drawn exclusively from the public sector. The U.S. Federal Government can be expected to be more sensitive to issues of representation and fairness than those of the private sector (Killingsworth, 2002). This means that the disparity in career opportunities found in our public sector sample may even be more severe in the private sector. A study in 2009 has found that, even within the U.S. federal government (a leader in equal-opportunity employment) the gender wage gap equaled 7 cents on the dollar. These 7 cents doesn't sound like much but day after day, year after year, every penny counts. What may start off as a relatively minor pay gap for women just entering the workforce can grow over the course of a woman's work history, especially when it is accompanied by other forms of compensation discrimination, such as in payment of bonuses or contributions to retirement accounts. By the time of retirement, the real costs of the wage gap to a woman and her family is not just lost wages but also lowered pensions and Social Security benefits. This negative impact is even greater for single mothers and households where a woman is the primary wage-earner. Given this strong disadvantage for women (even for those employed by a leader in equality opportunity employment), examining the reasons for this pay gap (e.g. difference in career opportunities) is of key importance. Although this study did not lead to the 'solution' for differences in career opportunities, it indicates that the situation has not improved and that during times of financial and economic problems renewed attention is needed on stereotypical perceptions. This can however only happen on a societal level.

A point of attention is the fact that our study made use of cross-sectional data which is sensitive to reversed causality. For future research it would be interesting to have large N panel data. This way reversed causality can be examined while more explanatory variables can be included, thereby reducing the likelihood of having omitted variable bias. Furthermore, this article only shows a first step of possible analyses; additional steps should try to strengthen the conclusions. Future research can expand our model by examining and adding factors which are difficult to integrate in a quantitative study. Consequently a qualitative study on this issue, encompassing multiple case studies of different organizations across several countries with document analysis and interviews can not only be useful as robustness check for the findings in this article but can expand the explanatory model used here.

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8. Tables

Table 1 Descriptive statistics

Variables	Description	Question in survey		Mean		N (% refer to the frequencies)	
		2006	2013	Full sample*	Used sample	Full sample	Used sample
Betterjob (How satisfied are you with your opportunity to get a better job in your organization?)	Categorical (5 cat.)	58	67	2,92	2,95	578979	20000
Very dissatisfied (1)						14,70%	13,96%
Dissatisfied (2)						20,55%	20,89%
Neither satisfied nor dissatisfied (3)						29,18%	29,85%
Satisfied (4)						26,29%	27,13%
Very satisfied (5)						9,28%	8,18%
Gender (0: female; 1: male)	Dummy	DSEX	DSEX	0,58	0,59	423434	20000
Supervisory (What is your supervisory status?)	Dummy	DSUPER	DSUPER	0,18	0,2	562545	20000
Age	Categorical (4 cat.)	DAGEGRP	DAGEGRP	2,32	2,36	554811	20000
Under 40 (1)						20,56%	21,92%
40-49 (2)						29,70%	29,28%
50-59 (3)						37,74%	39,73%
60 or older (4)						12,00%	9,07%
Paygrade (What is your pay category/grade?)	Categorical (3 cat.)	DPAYCAT	DPAYCAT	1,77	1,66	566733	20000
GS 7-12 (1)						49,08%	52,72%
GS 13-15 (2)						28,67%	28,90%
Other (3)						22,25%	18,38%
Yearsfed (How long have you been working for the federal government? 0: fewer than 5 years 1: more than 5 years)	Dummy	DFEDTEN	DFEDTEN	1,75	1,79	432448	20000
Performance appraisal (My performance appraisal is a fair reflection of my performance)	Categorical (5 cat.)	30	15	3,65	3,65	587239	20000
Strongly disagree (1)						6,83%	6,44%
Disagree (2)						9,13%	9,61%
Neither agree nor disagree (3)						15,72%	17,18%
Agree (4)						45,76%	46,40%
Strongly agree (5)						22,55%	20,39%
Encouragement (I feel encouraged to come up with new and better ways of doing things)	Categorical (5 cat.)	4	3	3,48	3,48	591793	20000
Strongly disagree (1)						7,21%	7,01%
Disagree (2)						14,97%	15,32%
Neither agree nor disagree (3)						18,40%	20,07%
Agree (4)						37,72%	37,55%
Strongly agree (5)						21,70%	20,07%
Training (My training needs are assessed)	Categorical (5 cat.)	50	18	3,3	3,3	588347	20000
Very dissatisfied (1)						8,88%	7,94%
Dissatisfied (2)						17,23%	16,40%
Neither satisfied nor dissatisfied (3)						24,73%	25,32%
Satisfied (4)						37,49%	39,36%
Very satisfied (5)						11,67%	10,98%
Year (0:2006; 1: 2013)	Dummy			0,63	0,5	598056	20000

*For the full sample, means have been calculated using the variable POSTWT as weight

Table 2 Pairwise correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Betterjob	(1)	1									
Age	(2)	0.0222***	1								
Gender	(3)	0.0295***	0.0126*	1							
Supervisory	(4)	0.136***	0.128***	0.117***	1						
Paygrade	(5)	0.0224***	0.0704***	0.113***	0.143***	1					
Yearsfed	(6)	-0.00695	0.392***	-0.0389***	0.157***	0.0251***	1				
Training	(7)	0.479***	0.0184***	-0.00950	0.0415***	0.00846	-0.0339***	1			
Encouragement	(8)	0.502***	0.0416***	-0.0194***	0.122***	0.00970	0.00683	0.500***	1		
Performance	(9)	0.398***	0.00657	-0.0299***	0.0360***	-0.0114	-0.0555***	0.427***	0.453***	1	
Year	(10)	-0.0374***	-0.0346***	-0.0495***	-0.0560***	0.156***	-0.192***	-0.0257***	-0.0427***	0.0586***	1

* p<0.10, ** p<0.05, *** p<0.01

Table 3 Estimates

Equation/Variable	(1) Heterogeneous Choice with interaction	(2) Heterogeneous Choice without interaction
Gender (0: female; 1: male)	0.0498* (0.0221)	0.0671*** (0.0160)
Age (Under 40 is reference category)	$\chi^2(3)=7.73$	$\chi^2(3)=9.69^*$
40-49	-0.0339 (0.0231)	-0.0331 (0.0231)
50-59	-0.0655** (0.0228)	-0.0650** (0.0228)
60 or older	-0.0143 (0.0321)	-0.0133 (0.0321)
Supervisory	0.221*** (0.0199)	0.221*** (0.0199)
Years fed	-0.0224 (0.0218)	-0.0221 (0.0218)
Paygrade (GS7-12 is reference category)	$\chi^2(2)=96.88^{***}$	$\chi^2(2)=97.09^{***}$
GS 13-15	0.169*** (0.0188)	0.168*** (0.0188)
Other	-0.0222 (0.0213)	-0.0239 (0.0213)
Performance appraisal (Strongly disagree is reference category)	$\chi^2(4)=495.40^{***}$	$\chi^2(4)=478.87^{***}$
Disagree	0.344*** (0.0418)	0.344*** (0.0418)
Neither agree nor disagree	0.467*** (0.0391)	0.467*** (0.0391)
Agree	0.636*** (0.0375)	0.636*** (0.0375)
Strongly agree	0.819*** (0.0418)	0.819*** (0.0418)
Encouragement (Strongly disagree is reference category)	$\chi^2(4)=559.17^{***}$	$\chi^2(4)=369.64^{***}$
Disagree	0.394*** (0.0382)	0.394*** (0.0382)
Neither agree nor disagree	0.721*** (0.0383)	0.722*** (0.0383)
Agree	1.002*** (0.0382)	1.003*** (0.0382)
Strongly agree	1.340*** (0.0427)	1.339*** (0.0427)
Training (Strongly disagree is reference category)	$\chi^2(6)=536.33^{***}$	$\chi^2(6)=312.41^{***}$
Disagree	0.346*** (0.0360)	0.346*** (0.0360)
Neither agree nor disagree	0.591*** (0.0354)	0.591*** (0.0354)
Agree	0.897*** (0.0360)	0.897*** (0.0360)
Strongly agree	1.443*** (0.0458)	1.443*** (0.0458)
Year (0: 2006; 1: 2013)	-0.0885*** (0.0254)	-0.0662*** (0.0162)
Interaction Year & Gender	0.0358 (0.0315)	
Thresholds		
Cutpoint 1	0.799*** (0.0522)	0.810*** (0.0513)
Cutpoint 2	1.685*** (0.0553)	1.695*** (0.0544)
Cutpoint 3	2.655*** (0.0599)	2.666*** (0.0591)
Cutpoint 4	3.962*** (0.0684)	3.973*** (0.0677)
Variance		
Year	0.0656*** (0.0125)	0.0658*** (0.0125)
Gender	-0.0487*** (0.0128)	-0.0487*** (0.0128)
N	20,000	20,000
Pseudo R ²	0.145	0.145
Model χ^2	8847.95	8846.66
Model d.f.	24	23

Standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05

9. Appendix: Econometric estimates

As Williams (2010) points out, one rationale for the ordered logit model is that there is an underlying latent variable y^* . Suppose this latent variable is linearly related to an observed x through the following model:

$$y^* = \alpha_0 + \alpha_1 x + \sigma \varepsilon, \quad (1)$$

Where the x 's are the explanatory variables, the α 's are coefficients that give the effect of each x on y^* , ε_i is a residual term with a logistic or normal distribution, and σ is a parameter that allows the variance to be adjusted upward or downward (Williams 2010). The latent variable y^* is linked to an observed, variable y , with ordered categories in our case:

$$y = \begin{cases} 1 & \text{if } -\infty < y^* < \kappa_1, \\ 2 & \text{if } \kappa_1 < y^* < \kappa_2, \\ 3 & \text{if } \kappa_2 < y^* < \kappa_3, \\ 4 & \text{if } \kappa_3 < y^* < \kappa_4, \\ 5 & \text{if } \kappa_4 < y^* < +\infty \end{cases} \quad (2)$$

y thus tells us that y^* falls within a particular range, but does not give us the exact value of y^* (Williams 2009; Long and Freese 2006). Since y^* is a latent variable, its metric has to be fixed in some way (Williams, 2010). Normally the residual variance is set to be equal to $\pi^2/3$ (in logit models) or 1 (in probit models). Moreover, because y^* is unobserved, we cannot actually estimate the α 's. The β s are consequently estimated as follows:

$$\beta_k = \alpha_k / \sigma \quad k=1, \dots, K \quad (3)$$

Normally σ is the same for all cases -residuals are homoscedastic- the ratio between the β s and the α s are the same. However when residual variances differ across groups, probit and logit estimates however become unreliable. For example; two groups can have identical values on the α 's, but if their residual variance differs, their β 's will differ.⁸ In such a case, the model is suffering from heteroskedasticity causing standard errors to be wrong and the parameter estimates to be biased. The impact of this problem is linked to models using

⁸ This is a logical consequence since the β 's are calculated using α and σ , see (3)

maximum likelihood models in general (Greene 2003, Wooldridge 2010).⁹ In line with Williams (2010) we thus allow to variance to vary over gender and survey year. This implies that residual variability in attitudes towards career opportunities differed by survey year and by gender, both of which are substantively plausible. The homoscedastic standard deviation $\hat{\sigma}$ is replaced by $\hat{\sigma}_i$ as

$$\sigma_i = e^{\sigma + \omega_i \alpha} \quad (4)$$

Where α are the additional parameters to be estimated and ω_i are the variables which are considered to model the heteroskedasticity (without a constant term). The scale/ variance equation indicates how the underlying latent variable is scaled for each case, i.e. “it reflects differences in residual variability that, if left unaccounted for, would cause values to be scaled differently across cases” (Williams, 2010). This is achieved by running a heterogeneous choice model which simultaneously estimates two equations: one for the determinants of the outcome and for the determinants of the residual variance (Williams, 2010).¹⁰ A wide range of easy accessible literature concerning this model is available, see for instance Cameron & Trivedi (2005) and Williams (2010).¹¹

⁹ Examples of such models are the logit and probit model, the ordered logit, the ordered probit, multinomial models and the tobit model. The problem of heteroskedasticity is not limited to maximum likelihood models, Ordinary Least Square models (OLS) are also affected. Yet the effect will be different for these kind of models since only the standard errors will be incorrect (Cameron and Trivedi 2009). Contrary to maximum likelihood models, the problem of heteroskedasticity in OLS models can also be more easily corrected, namely by using robust standard errors. For a more detailed description of the issue of heteroskedasticity we refer to Williams (2010).

¹⁰ The heterogeneous choice model is an improvement over the initial and often criticized approach of Allison (1999), see for instance Keele and Park (2006), and overcomes its most significant weaknesses (Williams 2009). These models allow for ordinal dependent variables and a much more flexible specification of the variance equation. As Keele and Park (2006) note, if this kind of model is correctly specified “The heteroskedastic ordered probit model can be given a clean bill of health, as both the level of overconfidence and coverage rates are close to ideal.”

¹¹ Admittedly there also exists an alternative approach which is proposed by Long (2009) by plotting differences in predicted probabilities. However, we opt for the method proposed by Williams (2010) since Long’s approach doesn’t try to explain why the differences exist i.e. is it because the effects of variables differ across groups or is it because of differences in residual variability?