Labour Economics 17 (2010) 998–1009

Contents lists available at ScienceDirect

Labour Economics

journal homepage: www.elsevier.com/locate/labeco

The role of job assignment and human capital endowments in explaining gender differences in job performance and promotion

Elda Pema *, Stephen Mehay

Graduate School of Business and Public Policy, Naval Postgraduate School, 555 Dyer Road, Monterey, California 93943, United States

ARTICLE INFO

Article history:
Received 4 March 2009
Received in revised form 18 February 2010
Accepted 21 February 2010
Available online 1 March 2010

JEL classification:
J16

Keywords:
Gender gap in pay and promotions
Job assignment
Fast tracks
Internal labor markets

ABSTRACT

We test a job ladders theory of career progression within internal labor markets as developed by Lazear and Rosen (1990). The theory argues that gender promotion gaps are due to sorting of men and women into career tracks with different promotion opportunities based on *ex ante* quit probabilities. Analyzing US federal government employees using a dynamic unobserved panel data model, we find that job assignment is one of the strongest predictors of gender differences in promotion. We also find that women have to jump higher performance hurdles to promote across grades, but, within grades, their promotion probabilities are comparable to those of men. In this organization, women can be found in both fast- and slow-track jobs, based on their promotion history, suggesting that unobserved heterogeneity is revealed to the firm over the worker's career.

Published by Elsevier B.V.

1. Introduction

Research on the gender pay gap has recently focused on career differences within large hierarchical organizations. In part this trend has been driven by limited information on human capital endowments in standard public-use data (Donald and Hamermesh, 2004).[1] The data limitations present obstacles to distinguishing among competing theories on gender pay gaps, including discrimination, occupational sorting, and job assignment. Separating unobservable characteristics, such as ability or quit propensities, from discrimination and endowment differences has been especially difficult. While women's labor force participation, educational attainment, and representation in traditionally-male occupations has risen dramatically in recent years, the question remains: will these changes be enough to eradicate gender-based differences in wages and career progression?

Following the recent trend of studying male–female career differences in the context of firm-level decisions on optimal incentive pay and promotions, we focus on professional workers in a large hierarchical organization. Using longitudinal data on U.S. federal government employees, we test hypotheses generated from the Lazear and Rosen (1990) jobs-based model of gender differences in career progression. The model suggests that gender pay differences arise from the assignment of males to 'fast track' jobs that require heavier investments in specific human capital and thus stronger job attachment. Because women have higher productivity in non-market activities, they are more likely to separate and, therefore, are assigned to jobs that have flatter career paths. Using a dynamic unobserved panel data model, we find that job assignment is one of the strongest predictors of gender differences in promotions. However, we also find that women can be on both fast and slow tracks, based on their promotion history, suggesting that the separation probability is revealed to the firm over the worker's career. Contributing to the internal labor market literature more generally, we find that promotions resulting only in wage growth are characterized by different dynamics than promotions involving a change in responsibilities.

2. Background

Lazear and Rosen (hereafter L&R) distinguish between two types of jobs: type-A jobs that require extensive firm-specific training, and type-B jobs that do not require as much training or job attachment. In return for extensive training, type-A jobs offer better promotion prospects and higher pay over the life-cycle than type-B jobs. Organizations offer earnings-tenure profiles within each job ladder to create incentives for workers to undertake the required specific training. Since the payoff to training is delayed, workers who expect to leave are less likely to undertake, or to be offered, the required training. Asymmetric information is important in the optimal pay structure because firms cannot observe an individual's propensity to leave and workers have no incentive to voluntarily reveal their true propensities. To induce worker sorting, firms set higher ability

---

* Corresponding author. Tel.: +1 831 656 3631.
E-mail address: epema@nps.edu (E. Pema).

[1] For a survey on the gender pay gap see Blau and Kahn (2000); for a survey on the 'glass ceiling' literature see McDowell et al. (2001).

0927-5371/$ – see front matter. Published by Elsevier B.V.
doi:10.1016/j.labeco.2010.02.006

thresholds for groups with higher *ex ante* turnover probabilities. Even if firms are unable to design contracts that induce employees to self-select into different job ladders, the ability thresholds solve the internal promotion problem. As testable implications, this model suggests that: (1) average observed ability is higher for women than for men; (2) women earn less than men because they occupy lower-tier jobs; and (3) within jobs women earn at least as much as men (or more) because of their higher ability.

Lazear and Rosen build upon the idea that firms use promotions to sort employees by ability, thus resulting in individuals who move faster up the hierarchy as if they were on 'fast tracks.' Baker et al. (1994b) find that within a large firm employee wages are positively correlated over time. In addition, wage increases are positively correlated with current wage, suggesting that employees who are more able or who accumulate more human capital advance along the hierarchy more quickly.[2] The L&R model assumes that the human capital accumulation varies by gender, hence resulting in different tracks for men and women.

Winter-Ebmer and Zweimuller (1997) (hereafter W&Z) extend the L&R model to explain job assignment at entry. They argue that employers apply the same considerations when assigning workers to entry jobs that are considered 'promotion-track' positions. Using cross-sectional data, W&Z analyze gender differences in initial assignment and promotion. If a person is observed in a job rank that is higher than the corresponding endowment (mainly education) they assume that the person has been promoted. They decompose the gender gap into a portion explained by the ability threshold and a portion explained by endowment differences. They find that women are concentrated in lower-tier jobs and must possess higher endowments to reach higher-ranked positions. However, differences in endowments and predicted turnover account for only a small portion of the observed differences in promotion and initial placement. They conclude that there is unequal treatment of women in professional careers.

Jones and Makepeace (1996) use personnel data from a U.K. financial firm to test the L&R model. Contrary to W&Z, they find that 69–87% of gender differences in job grades are due to endowment differences, most notably differences in tenure. They also find that women face higher ability thresholds for promotion.

These represent only two studies in a growing literature on promotion and career progression, but are the only ones that explicitly test the L&R model.[3] However, neither study models the dynamic nature of promotions within a career ladder. This is important because higher-order promotions depend upon the entire history of past promotions, and L&R attribute gender differences to these career paths differences.[4]

3. Empirical approach

In testing the L&R hypotheses, we must distinguish two competing factors. First, as identical employees move up the hierarchy, fewer possible promotion steps remain and conditional promotion probabilities decline over time. Second, future promotions may depend on success at "key" career points, so promotions in previous periods may *causally* affect future promotions. In the L&R model future promotions depend on the past history of promotions when workers are placed on certain career tracks. This temporal correlation in promotions represents true state dependence. In contrast, the temporal correlation in promotions as a result of the constraints imposed by the hierarchy would be largely spurious. Unobserved heterogeneity complicates the estimation of state dependence. If unobserved heterogeneity persists over time, we cannot distinguish between the effects of job assignment (differences in state dependence) and unobserved heterogeneity. Therefore, we cannot distinguish whether women are in lower-level positions because of their endowments (including unobservables) or because they are assigned to different tracks.

The L&R model suggests that unobserved heterogeneity (which includes *ex ante* quit probabilities) explains the different career paths for men and women. Their model suggests positive state dependence, especially for the type-A jobs that provide more promotion possibilities. The L&R model, however, does not analyze these propositions against the constraints of a finite firm hierarchy. Incorporating a limited number of promotion steps induces negative state dependence, which may be stronger for type-A jobs because incumbents are more likely to face these constraints or to face them sooner. In addition, if we fail to account for the firm's hierarchy, differential job assignments by gender may generate the spurious finding that women promote at higher rates than men because men tend to hit the hierarchical constraints earlier. Therefore, we view state dependence as the *net effect* of a finite hierarchy and being in a fast or slow job track.[5] Finally, the L&R model also implies that the assignment of women to type-B jobs is optimal. Empirically, this can only be validated if we also observe that, within jobs, men and women promote at similar rates. Otherwise, the differential assignment could also be due to discrimination at entry.

To reduce the set of unobservables that drive promotion, we focus on high-ability white-collar workers within an organization and control for variables that are typically unavailable in public data, such as job performance, firm-specific human capital, and promotion history. We specify the following dynamic model for our latent variable:

$$y_{it}^{*} = \rho y_{i,t-1} + \delta \text{female}_i + \mathbf{z}_{it}\gamma + c_i + u_{it} \tag{1}$$

where y_{it} represents promotion at time t, $\mathbf{z}_{it}$ represents strictly exogenous variables, c_i represents unobserved heterogeneity and u_{it} represents a random disturbance.[6] Our exogenous variables include performance ratings, dummies for advanced degrees (master's and doctorate), race (black, Hispanic, and other), age, departments (Army, Air Force, and headquarters), occupation (professional, administrative, clerical, technical, other white collar), tenure, and time dummies. One assumption in Eq. (1) is that the model correctly specifies the promotion dynamics and only one lag of y_{it} belongs in the model.[7] We also assume that c_i does not vary by gender but by individual, to allow females to also be type A and males to also be type B. The L&R model suggests that the unobserved heterogeneity that drives job assignment and promotion is related to performance and job attachment rather than to gender itself.

Occupational sorting may partially explain observed gender differences in careers, in which case occupation may be endogenous in Eq. (1). However, occupational sorting may be driven by a similar

---

[2] This evidence is obtained across job levels. Within-job levels Baker et al. (1994a) find a negative correlation between both percentage and dollar increases in wages and current wages (referred to as the 'green card effect'). For a theoretical treatment of fast tracks, see Bernhardt (1995).

[3] Cabral et al. (1981) and Gerhart and Milkovich (1987) find that women enter in lower positions than men with comparable qualifications, which explains their lower promotion rates and salaries. Ginther and Hayes (1999) find substantial gender differences in promotion among academics even after controlling for productivity differences. McDowell et al. (1999, 2001) find that promotion rates of female academic economists are below those of men, but these differences have narrowed over time.

[4] Belzil and Bognanno (2008) model career progression within firms in a dynamic setting. Their data, however, do not include information on gender.

[5] See Belzil and Bognanno (2004) for an alternative way of investigating fast tracks while circumventing the spurious negative correlation due to the finite hierarchy. Our focus in this paper is in estimating the relative difference in state dependence between women and men, rather than obtaining estimates of the state dependence in promotions (free from any spuriousness induced by administrative constraints). Since both men and women face the same hierarchical constraints, for our purposes, the spuriousness induced by the finite hierarchy does not pose a problem. Additionally, women in our sample are observed to promote all the way to the top, thus eliminating the possibility that men and women face implicitly different hierarchies.

[6] We assume that unobserved heterogeneity remains fixed over time. Implicitly, this requires that a type-A worker remains a type A and does not become a type B, at least not during the period under consideration.

[7] We relax this assumption later.

دریافت فوری ← **متن کامل مقاله**

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات