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## Performance-Support Bias and the Gender Pay Gap among Stockbrokers

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## Performance-Support Bias and the Gender Pay Gap among Stockbrokers

### Abstract

Organizational mechanisms, and their contexts, leading to gender inequality among stockbrokers in two large brokerages are analyzed. Inequality is the result of gender differences in sales, as both firms use performance-based pay, paying entirely by commissions. This paper develops and tests whether *performance-support bias*, whereby women receive inferior sales support and sales assignments, causes the commissions gap. Newly available data on the brokerages' internal transfers of accounts among brokers allows measurement of performance-support bias. Gender differences in the quality and quantity of transferred accounts provide a way to measure gender differences in the assignment of sales opportunities and support. Sales generated from internally transferred accounts, controlling for the accounts' sales histories, provide a "natural experiment" testing for gender differences in sales capacities. The evidence for performance-support bias is: (1) women are assigned inferior accounts; and (2) women produce sales equivalent to men when given accounts with equivalent prior sales histories.

### Keywords

Bonuses, Commission, Compensation, Consumer Discrimination, Earnings, Economics, Employees, Financial Services, Gender, Gender Inequality, Gender Pay Gap, Human Relations, Income, Inequality, Labor, Labor Relations, Men, Merit Based Pay, Organizational Dynamics, Organizational Policies, Organizations, Pay, Performance, Performance Based Pay, Performance Evaluations, Performance Rewards, Promotions, Salary Increases, Sex, Stockbrokers, Women

### Disciplines

Demography, Population, and Ecology | Gender and Sexuality | Inequality and Stratification | Social and Behavioral Sciences | Sociology | Work, Economy and Organizations

### Comments

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**Performance-Support Bias and the Gender Pay Gap among Stockbrokers**

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## Abstract

Organizational mechanisms, and their contexts, leading to gender inequality among stockbrokers in two large brokerages are analyzed. Inequality is the result of gender differences in sales, as both firms use performance-based pay, paying entirely by commissions. This paper develops and tests whether *performance-support bias*, whereby women receive inferior sales support and sales assignments, causes the commissions gap. Newly available data on the brokerages' internal transfers of accounts among brokers allows measurement of performance-support bias. Gender differences in the quality and quantity of transferred accounts provide a way to measure gender differences in the assignment of sales opportunities and support. Sales generated from internally transferred accounts, controlling for the accounts' sales histories, provide a "natural experiment" testing for gender differences in sales capacities. The evidence for performance-support bias is: (1) women are assigned inferior accounts; and (2) women produce sales equivalent to men when given accounts with equivalent prior sales histories.

## I. INTRODUCTION

Women have accounted for about a third of full time securities and financial services sales workers (i.e., stockbrokers) in the last 15 years (see Figure 1), with little change over the time period.<sup>1</sup> The earnings of women employed in this occupation have increased slightly

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<sup>1</sup> For 1994 through 2002, the dotted lines on Figure 1, reflect the 1990 Standard Occupational Classification (SOC) while the 2000-2010 period, the solid lines on Figure 1, reflect the 2000 SOC. The SOC is the federal government's classification scheme for occupational data. In the 2000 SOC, stockbrokers are included in the category "securities, commodities, and financial services sales" and in the 1990 SOC, stockbrokers are included in "securities and financial services sales." The data for 2000-2002 were coded using both occupational classifications. The cross-coding shows that the 1990 SOC category includes about a third

relative to men, gradually and sporadically growing from 54 percent to two-thirds of men's earnings.<sup>2</sup> Although stockbroker is the highest paid sales worker occupation,<sup>3</sup> the gender pay gap is the largest among sales occupations and also very high relative to other detailed occupations, which decreased the gender pay gap as women's earnings increased from 75 to 82 percent of men's over the same time period.<sup>4</sup>

Compensation for stockbrokers is generally based on the commissions earned on the securities sales that they generate.<sup>5</sup> In fact, stockbrokers at the largest retail brokerage houses in the United States were exclusively paid on commissions from the sales of securities to their clients through the mid 1990s. The larger gender pay inequality resulting from the formalized commissions algorithm used to pay stockbrokers seemingly refutes the hypothesis that standardized or formalized organizational policies of performance-based pay reduce gender inequality. As others have found (Castilla 2008, Stainback et al 2010), however, the effects of formalized policies depend on the context, or the other characteristics, of the organization. The informal or subjective ways that other decisions are made within the organization may mediate the effects of even highly formalized pay policies. I develop and test several propositions with respect to the mechanism that I identify as *performance-*

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more workers than the 2000 SOC category, Figure 1 is consistent, however, with these differences having little systematic effect on the measurement of gender differentials.

2 For 2007, the Current Population Survey data show a gender wage ratio of 82.9%, but that ratio, given that the ratio in 2006 is 66.5% and in 2008 is 59.7%, is probably subject to measurement error.

3 For 2010, men employed full time in the occupation had usual weekly earnings of \$1,423 and women had \$892, according to the Current Population Survey data.

4 Calculations by author based on CPS annual occupational earnings data; the calculation reflects an unweighted average of the gender pay gap across all reported occupations in each year. Lips (2003) lists securities and financial services sales workers as the occupation with the greatest gender pay gap.

5 For example, Harlan (1993) reports on a U.S. Securities and Exchange Commission campaign to change the securities firms' compensation systems that were "almost exclusively quantitative" or based on

*support bias*, whereby management consciously or unconsciously impedes the performance of women, leading to greater gender inequality in pay.

As a result of class action sex discrimination lawsuits filed against two of the largest national stockbrokerage firms in the late 1990s, data including the personnel histories of all stockbrokers and the records of asset values, trading, and broker management for all accounts managed by the two brokerages became available to me. These unique data allowed me to analyze the sources of compensation (that is, sales commissions) differentials by gender among stockbrokers in these firms. Some combination of gender differences in sales capacities (the result of “historic” discrimination in opportunities prior to getting a stockbroker job, of consumer reluctance to deal with women stockbrokers, or of gender differentials in selection into the stockbroker job) or of differential treatment by the brokerage management (unequal assignments of sales opportunities and sales support services by gender, or performance-support bias) must cause the gap.

This study uses data on the brokerage management’s internal transfers of customer accounts among stockbrokers to quantify the extent to which performance-support bias arising from management’s discretion in supporting job performance levels versus “true performance” differences contributes to gender inequality among stockbrokers who are paid using a formalized merit-based pay plan. First, the quality and quantity of accounts that the brokerages transfer to men and women stockbrokers are used to test for performance-support bias; that is, whether there are gender differences in the assignment of sales opportunities and supportive inputs. Second, the commissions generated on the customer accounts transferred to brokers, after controlling for these accounts’ inherent capacities to yield sales or

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commissions.

commissions, provide a “natural experiment” to determine whether there are “true performance” differences by gender in sales output when the opportunities to sell (that is, the prior sales histories of transferred accounts assigned to them) are equivalent for men and women.

I find that women in these two firms received inferior account assignments than men (that is, accounts with lower historic commissions and/or asset values). Because I also find that there are no sales differences by gender for brokers assigned transferred accounts with equivalent prior sales histories, I conclude that there are no gender differences in sales capacities arising from either historic differences in opportunities, or in consumer discrimination, or in selection into the job among these stockbrokers. The evidence supports performance-support bias: gender differences in management’s discretionary assignments of sales opportunities, and not in sales capacities, account for the gender pay gap among stockbrokers in these two firms.

The next section reviews previous research on the organizational mechanisms and contexts affecting gender inequality in general, and gender inequality in pay in particular. The section describes performance-support bias and discusses its measurement. Section 3 describes the data, the brokerages, and the gender inequality in pay. Section 4 presents evidence on gender differences in performance-support by tracing the quantity and quality of accounts that the brokerages distribute to stockbrokers by gender. The fifth section presents the results of the “natural experiment” measuring gender differences in current sales capacities of stockbrokers. The final section discusses the results and summarizes the conclusions.

## II. BACKGROUND

Extensive research in sociology and economics has analyzed the roles of mechanisms generating inequality in the labor market as a whole and also within organizations or workplaces. The sources of gender inequality in the national labor market (Peterson and Saporta 2004) have been sorted into pay differences arising within jobs and organizations (Groschen 1991b, Petersen and Morgan 1995, D.M. Smith 2002, Ransom and Oaxaca 2005, Malkiel and Malkiel 1973) and into pay differences across jobs arising from either allocative discrimination (Ransom and Oaxaca 2005, Malkiel and Malkiel 1973) or valuative discrimination (Sorenson 1990, England 1992, Baker and Fortin 2004). More recently, however, sociologists have turned to studying how mechanisms within individual organizations, and also how the larger context of the organization, affect gender inequality.

As formalized, merit-based practices of pay and promotion have steadily replaced seniority-based systems (Cappelli 1999), research has focused on measuring the effects of these types of within organization practices on gender inequality. Formalized processes are expected to reduce the effects of managers' social or psychological biases on their decisions, leading scholars (Stainback et al 2010) to hypothesize that more formalized personnel practices should be associated with less gender inequality. On the one hand, there is empirical support for this hypothesis. Anderson and Tomaskovi-Devey (1995) and Elvira and Graham (2002) find smaller gender wage disparities in organizations governed by more formalized procedures. Reskin and McBrier (2000) find women are a larger proportion of managers in firms with more formalized employment procedures. On the other hand, many studies have shown that the effects of formalization on inequality are not unconditional, but depend on the larger context in which the formalized mechanisms are imbedded. Women do

better in firms organizing work into teams and encouraging cooperation, rather than competition, among workers (Kalev 2009, Smith-Doerr 2004). At least in manufacturing, firms using teams and encouraging cooperation have less wage inequality by gender (Shin 2009). In a recent review of sociological research on inequality in organizations, Stainback et al (2010) conclude that the empirical evidence supports the hypothesis that formalization of human resource processes reduces inequality in hierarchically organized workplaces that also make managers accountable for decisions.

Among formalized human resources policies, merit or performance-based pay -- formal compensation mechanisms by which bonuses, salary increases, and/or complete compensation are based on merit as measured by evaluations, and sometimes on pure counts of output such as commissions or piece rates, of performance or fulfilling goals -- has received less attention. A series of laboratory studies, as well as reviews of assessments in firms and by assessment centers, have generally found that the quality of the work performance of men and women is evaluated equivalently (Bartol 1999). Workplaces using performance evaluations, then, might be expected to have less gender inequality. Some studies show, however, that women are affected by other management decisions that sustain gender inequality in pay, even in the presence of formalized procedures to determine pay. Although Elvira and Graham's (2002) study of a financial services organization finds no gender differentials in merit pay increases based on performance evaluations, they find large differences in incentive bonuses based on formalized performance criteria requiring the fulfillment of individual-specific goals set by the supervisor. Castilla (2008) finds no gender or racial/ethnic differences in performance evaluations at a large workplace in the service industry, but finds that positive evaluations have subsequently greater compensation payoffs

for men and non minority workers, a phenomenon that he labels performance-reward bias. Castilla concludes that formalization of performance management systems may introduce new mechanisms, such as the pay or promotion decisions following performance evaluations, which can continue to produce biased and discriminatory outcomes.

Most research on gender differentials and performance-based pay, however, analyzes subjective *evaluations* of performance, or in some cases the setting and attainment of goals by the direct supervisor, to decide on bonuses, raises, and promotions. There are very few studies of pure behavioral performance-based pay derived from an algorithm using output counts, such as sales commissions. While one study (Heywood and Jirjahn 2002) finds that gender pay inequality among sales workers is greater when pay is commissioned-based (as opposed to time-based), it does not analyze the organizational mechanisms underlying the observed gender inequality. Also, the organizational context for the stockbroker sales position, which is the highest paid and has the greatest gender inequality among all sales worker jobs, is likely to differ from most other sales jobs in critical ways.

As noted by Roth (2003), the institutional context for securities firms differs from other organizations. Formalized, performance-based pay is the norm for the industry. Most employees are compensated either with variable bonuses or commissions, resulting in greater variation in compensation within the same job than is the case in other industries. Stock brokerages are less hierarchical than most organizations in that they have a relatively small number of job levels. Stockbrokers, in particular, are all in the same job (no hierarchy) and their pay is based entirely on commissions generated from their sales of securities, not on supervisors' more subjective evaluations of their performance. There are really only two basic reasons for a gender gap in compensation derived from commissions on sales: (1) sales

capacities or achievement -- women are less effective at sales, on average, than men; and/or (2) performance-support bias – the sales opportunities, including account assignments and the various supports used to produce sales, assigned to women are inferior to those assigned to men, the phenomenon that I identify as performance-support bias.

### *Sales Capacities*

Women may achieve less or produce a lower volume of sales than men because there are gender differences in sales capacities, arising because consumers prefer men as their stockbrokers, because women are selected differently than men into commission sales, or because gender differences in the household division of labor result in many women working less intensely than men.

While there is no basis for hypothesizing that women stockbrokers have less “innate” sales abilities than comparable (in education, experience, etc.) men, other social circumstances may render women stockbrokers less able to generate securities sales. Were some clients or potential clients, due to their own bias or discrimination (in contrast to discrimination by the brokerage firm), to make fewer purchases when dealing with women as their stockbrokers, then women would realize fewer sales of securities to clients when exerting the same effort, and with otherwise the same ability, as men. In her study of the broader financial service professions, Roth (2004) cites an example of such customer bias in her description of a financial analyst who is a woman whose clients presumed that a woman must be the junior analyst. Consumer discrimination would lower achievement or the sales productivity, and commissions, of women who are stockbrokers (Becker 1971).

Gender differences in the decision to become or remain a stockbroker (that is, selection into the job) may also lead to gender differences in sales capacities among the men

and women who end up in the job. If relative to men, women, especially those who are less effective at sales, were to find stockbroker jobs more attractive than their other labor market alternatives, then women stockbrokers with less sales ability would be more likely than comparable men to self-select into the job or to remain in the job. If this were the case, the women “selected” into the job would, on average, produce lower commissions than the average men “selected” into the job. Women with the same capacity and effort levels as men would not be producing less. Instead, women who have less sales capabilities or who provide lower effort levels would continue as stockbrokers while comparable men have left for other jobs. In sum, the men with comparable lower commissions performance to the lower performing women have “selected” out of the job while the women remain.

There may also be gender differences in sales efforts (hours worked), which lead to different sales output. Because the household division of labor often results in women taking greater responsibility for household work than men (Blau, Ferber and Winkler 2010; Bianchi et. al. 2000) and because those responsibilities may lead to fewer work hours or less intensity when at work, women, even those working full time, may work less intensely on average than men and, therefore, yield fewer commissions (Hersch and Stratton 1994). Blair-Loy’s (2009) qualitative study of family-work conflict for commissions-based stockbrokers in three small brokerages reports that the brokers worked an average of 55 hours a week, often including evening and weekend work.

Consumer prejudice or discrimination, gender differences in the process of self-selection into the stockbroker position, and/or gender differences in intensity of work effort may result in women stockbrokers having lower achievement or productivity than observationally equivalent men.

### *Performance-support Bias*

Although the firm determines compensation as a function of sales, using the same algorithms to translate sales into compensation for men and women, bias may still occur if the firm supports brokers' sales by providing opportunities to sell differently by gender. As Gorman and Kmec (2009) find in their study of gender differentials in hiring and promotions in corporate law firms, managers making decisions in settings with more uncertainty, and where men are the dominant players, are more likely to use gender to indicate competence. Gender bias may occur in the distribution of performance support because it is difficult to predict future sales success of brokers and almost ninety percent of the brokers in these two organizations are men. Just as Costilla (2008) established performance-reward bias in a large service industry organization where the potentially equalizing effects of performance evaluations were undermined by the gender disparate effects of the evaluations on pay, other gender-biased management decisions may result in gender differences in sales, and, therefore, create gender disparities in commissions. There are many ways that firms support the performance or sales success of brokers (Chan et. al. 1991). Working conditions (support staff, title, office environment, mentors, etc.) under the control of the firm affect the capacities of brokers to generate sales. The size and quality (i.e., number of windows, view, furnishings) of a worker's office affect his or her productivity in several ways. Personal comfort during work affects the intensity of effort that workers bring to a task and also the duration of their work (Wineman 1982). Stockbrokers are not likely to be an exception: a better office improves performance. Office amenities also affect the ability of stockbrokers to acquire accounts or clients. Clients are more likely to conduct transactions with stockbrokers whom they trust. Clients' perceptions of the quality of salespersons are likely to

be influenced by their office space (Bitner 1992). The titles that stockbrokers are allowed to use on their business cards affect the perceptions of customers and, therefore, the commissions generated. Both the number, and the abilities, of the support staff assigned to assist a stockbroker support his or her ability to generate new business and maintain continuing clients. The quality of mentors provided early in a career and the mentor's sharing of advice and clients also affect the sales performance of stockbrokers. The size and quality of accounts handled by stockbrokers obviously affect commissions and the acquisition of accounts depends both on the business that the brokers generate themselves and on business coming to the firm that is directed or assigned to individual brokers. Roth (2006) recognized the potential role of inequality in account distributions on the gender gap in pay and cited an informant in her study who alleges such inequality by gender.

Identifying and quantifying the mechanisms generating the gender pay gap among stockbrokers requires empirically separating sales capacity differences by gender (not caused by the organization) from differences in sales due to the organization's performance-support bias.

This study of gender inequality in stockbroker compensation extends research on the gender gap in performance-based pay in three ways. First, it examines gender differences in pay based on behavioral measurements (commissions), rather than subjective evaluations. Second, by measuring the relative contributions to sales outcomes of gender differences in both current sales capacities and performance-support bias, this study is the first to show that bias affects behavioral performance-based pay, as opposed to evaluations of performance. Third, by showing that gender differences in assignments to sales opportunities create the gender pay inequality derived from commissions, this study identifies and quantifies a

previously unstudied organizational context, performance-support bias, which interacts with formalized procedures to sustain gender inequality.

### **III. THE BROKERAGES AND THE DATA**

The two organizations that I study are large, national full-service retail brokerages. They sell financial products primarily to individual (as opposed to institutional) investors. Women account for a small minority (11.2 percent and 13.8 percent) of brokers at both organizations. There are significant gender gaps in compensation among stockbrokers at both brokerages in 1995.

Both brokerage firms classify stockbrokers within experience groups based on length of service (LOS) as a broker employed by any firm, generally equivalent to the number of years since passing the General Securities Representative (“Series 7”) Exam. For the first two years after passing the exam, LOS 1 or LOS 2, brokers are in training and are paid by salary. Over these two years, however, the salary component of pay proportionately declines and commissions proportionately increase. By the end of the second year, pay is 100 percent commissions so that brokers in these two organizations are not compensated by a “salary” set by management. At this point, both brokerage houses pay brokers for the amount of financial services sold to clients, as measured by “production credits” or units, which are converted into compensation based on a preset formula. The formula basically yields annual compensation as a stated percentage of the annual revenue that a broker generates on sales of a financial product; the percentage is progressive, increasing with the total annual sales produced. The formula is known to the brokers and cannot be changed by managers. While neither brokerage uses the total asset value of the accounts under a broker’s management in

the compensation algorithms, total asset value of accounts, ranked relative to other brokers of comparable LOS, is used in the assignment of various components of sales support, such as training.

Table 1 reports the compensation differences by gender, which are smaller than in the U.S. Census data for the occupation as a whole (see Figure 1). At the first firm (given the pseudonym Melburn Brokerage), the median compensation of women is 18.4 percent less than that of men. When stockbroker experience (years since passing licensure exam) is controlled, women still earn 11.8 percent less than men at Melburn. While the second firm (given the pseudonym Jones Brokerage) has higher compensation levels for both men and women, the gender compensation gap is similar: 20 percent difference in the medians and 12.8 percent difference for brokers with 6-10 years of experience and 18.2 percent for brokers with 10-25 years of experience when experience is controlled.

I conducted the analyses reported in this paper after being retained as an expert witness for the plaintiffs in class action lawsuits brought against these two brokerage firms. The confidentiality agreements allow me to publish only my analyses that were made public in judicial hearings. For this reason, I cannot always present results using the same model specifications for the two firms or the coefficients for all of the independent variables included in an equation. While the databases are not publically available, the opportunity to analyze data on firm practices that have never been made available to researchers hopefully offset this disadvantage. Although the confidentiality agreements allow me to identify the firms, I use the pseudonyms of Melburn Brokerage and Jones Brokerage in this paper. Both class actions were settled before trial, although the statistical evidence presented in this paper

was presented, reviewed, and accepted, by the courts.<sup>6</sup> As part of the settlement of these cases, both brokerage firms revised their procedures for distributing accounts to brokers allowing for less management discretion and the use of a more standardized set of criteria.

The salaries at these two firms, as shown in Table 1, are considerably higher for both men and women than the means of \$26,312 for women and \$48,672 for men reported in the same year (1995) by the U.S. Bureau of Labor Statistics (BLS) for full time full year securities and financial services sales workers.<sup>7</sup> The gender pay gap at these two firms is substantially smaller than the gap of 45.9 percent for 1995 reported by BLS; the representation of women in the occupation is also substantially less than the 35.4 percent reported nationally. The differences between these firms' data and the national data are consistent with the national gender pay gap within the stockbroker occupation arising in part from gender differences in employers: women are less represented among employees of the higher paying firms such as those studied here. Gerhart (2003) and Groshen (1991a and 1991b), for example, find that establishment differences, particularly differences in size, account for much of the variance in pay within occupations.

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6 The defendant brokerages never challenged my analyses of differences in accounts distributed to women and men as reported in Tables 2 and 3 nor the "natural experiment" results reported in Table 5. Defendants proposed an alternative analysis for the results reported in Table 4: they showed that there were no statistically significant gender differences in total asset values for transferred accounts when all account transfers (including those that management did not assign) were included and a control for the prior year's commissions earned by recipient brokers was added to the regression. As discussed below, the evidence shows gender differences in the assignment of accounts from the very beginning of commission-based compensation, rendering prior commissions endogenous, reflecting the historic gender differences in the process. The brokerages also noted that most (90%) transfers occurred within particular offices and complexes, not transferring across offices. On that basis, they challenged the gender differences in prior commissions on the accounts transferred reported in Table 4 for not considering office or complex. Because there are no significant gender differences in the distribution of brokers across offices and complexes, however, it is not surprising that when I repeat the analysis on Table 4 (available from author) adding controls for office, I find very similar statistically significant gender differences.

7 Bureau of Labor Statistics, Current Population Survey, "Median weekly earnings of wage and salary workers by detailed occupation and sex, 1983-2002" (electronic file provide in response to request).

While managers had substantial discretion in 1995 as to how the inputs supporting sales performance were distributed among brokers in their offices, the value of the assets managed by a stockbroker and the commissions generated by those assets were used to distribute many of these inputs supporting sales performance at both firms included in this study. Managers provide improvements in office space, staff support, and other inputs that support sales based in part on the size and commission productivity of a stockbroker's book (the portfolio of accounts under her management). Managers' distribution or assignment of accounts to brokers directly increases the size and quality of their books. Brokerage management also affects the books of brokers through the assignment of leads on potential customers, referrals of continuing customers, and assignments of customers who simply walk in and ask for a broker.

There are no data on the distribution of most forms of performance-support to individual brokers, including the quality of office space, support staff, or mentoring. The brokerage firms also do not keep records on the assignments of client walk-ins, leads, or referrals to brokers. Therefore, it is not possible to assess directly whether gender affects how management distributes these particular forms of performance-support to individual brokers. The same managers who distribute other forms of performance-support to brokers, however, also distribute the accounts of brokers who leave the brokerage firm for employment elsewhere to other brokers. I can measure whether, and how much, gender affects the distribution of these transferred accounts. The account data maintained by the brokerages identify every change in managing broker. Because I am interested in the firm's assignment of accounts and of other forms of performance-support, I focus on the accounts

that change brokers due solely to management decisions.<sup>8</sup> When brokers leave for employment elsewhere, managers immediately (as legally required) assign new brokers to the accounts. I examine this distribution of accounts from departing brokers to determine whether such distributions are gender neutral. Managers' decisions with respect to the distribution of assets from departing brokers and the distribution of other forms of performance-support are likely to be similarly influenced by gender. The pay effects of any systematic gender differences in the assignment of performance-support are amplified by other policies that then reward the "success" that follows from access to the originally gender-differentiated performance-support. A slight edge in accounts awarded, or in other forms of performance-support, early in a career allows a broker to qualify for additional performance-support that increases her client base even more in the future. The effects of small annual differences in the distribution of accounts or of other forms of performance support accumulate over a career as early career differences allow brokers to qualify for additional benefits (such as titles, office space, etc.) based on account size or production.

Both organizations provided data on over a billion individual transactions on customer accounts within each firm for 1994, 1995, and 1996. These data identify the broker who managed the account and all transactions, including commissions generated and any changes in managing broker, for 1994 through 1996. Because these data are central to the operations of both brokerage firms and required by law, they are accurately maintained. I

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<sup>8</sup> Accounts can also be transferred from brokers who retire or from brokers who leave due to disability, or death. In these cases, the decisions on account transfers are often strongly influenced by the departing broker, rather than solely by the managers who allocate other inputs. The firm has no reason to consider the preferences of brokers leaving for employment elsewhere, whose departures are usually a surprise, when deciding how to distribute assets previously managed by the departing broker. For transfers of accounts arising from the departure of a broker for employment elsewhere, I am able to isolate the effects of management decision making from those of broker decision making.

also have data on the complete employment histories of brokers from each brokerage. The brokers included in this study are employed full time for the entire year (1995). The employment history data include all hire, termination, reasons for termination, and licensure dates, dates of any leaves, as well as sex for each broker.<sup>9</sup> The data allow the computation of time since licensure as a broker and actual tenure, adjusted for any leaves, that the employee spent as a broker with the current brokerage firm. The data identify account transfers that were tied to the departure of a broker for employment elsewhere and also the brokers who were eligible to receive the transfers. The account data also include the commissions generated by the prior managing broker on each transferred account and, subsequently, by the recipient managing broker or her successor.

An evaluation of the quality of account transfers and of sales by recipient brokers on those transferred accounts requires asset value and commission data on those accounts for the year before. I use the account data to identify all accounts transferred from brokers departing for employment elsewhere in 1995.<sup>10</sup> I have identified 1,209 brokers who left Melburn and 1,543 brokers who left Jones in 1995 for employment elsewhere (that is, not due to death, disability, or retirement) and who also had accounts to transfer at the time of their departure. Because brokers are fully compensated by commissions only after they have completed two years of training, I analyze account transfers to brokers with LOS greater than two. In order

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9 While the employment histories do not include any demographic data on marital status or number of children, they include the data relevant to measuring experience accurately for both men and women. Because these data were used to generate paychecks, they are accurate and complete.

10 I identified the accounts transferred each month from these departing brokers for three years: 1994, 1995, and 1996, comparing transfers from their books each month before and after their departure dates. These data indicate that there is substantially greater transfer activity from departing brokers in the three months that include the month prior to, the month of, and the month after their recorded date of resignation than for other months. Therefore, I defined all account transfers in this time period (the month before departure, the month of departure, and the month after departure) to be the direct result of their departures; that is, these are the accounts

to eliminate the possibility that brokers were not active at the time a transfer was made, I include only brokers employed the full year of 1995.

#### **IV. GENDER DIFFERENCES IN SALES OPPORTUNITIES: THE DISTRIBUTION OF ACCOUNTS**

There are two ways that women may be disadvantaged in the distribution of accounts. Women may be less likely to receive any transferred accounts and/or they may receive accounts that have less value than those distributed to men. I consider both possibilities separately and then in combination.

##### *Gender Differences in the Probability of Receiving Transferred Accounts*

First, I examine whether men and women were equally likely to receive transferred accounts. Table 2 shows the numbers of men and women in each firm who were full year (for 1995) full time brokers with LOS greater than two who receive a transferred account from a departing broker in 1995. At Melburn, women are significantly less likely to receive transferred assets. At Jones, brokers of both genders are less likely than those at Melburn to receive transferred assets, but there are no statistically significant gender differences in the probability of receiving a transfer.

##### *Gender Differences in the Asset Value and Commission Histories of Accounts Transferred to Brokers*

Not all transferred accounts are of equal value to brokers. If there were scale economies in dealing with one large account as opposed to several small accounts that yield similar production values, then having a few larger accounts that total \$50,000,000 in asset value is better than having hundreds of accounts with the same total value. Larger accounts

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that are highly likely to have been redistributed to other brokers by the firm.

are generally more valuable than smaller accounts; accounts with higher commission rate histories are more valuable than lower commission accounts.

I examine whether individual transferred accounts with higher total asset values or with higher revenue or commissions are less likely to be transferred to women. Logistic regression analysis tests whether the assets value of an account, or its commission yield over the previous calendar year, are associated with the probability that it was transferred to a woman. The basic specification is:

$$\ln (P_i/(1-P_i)) = a + bX_i$$

where  $X_i$  is either the total value of the assets at the time of transfer or the prior year's revenue or commissions generated by a given account  $i$ ;  $P_i$  is the probability (i.e., 0 or 1) that the broker who receives account  $i$  is a woman;  $a$  and  $b$  are the estimated parameters. I perform separate regression analysis to measure how higher asset values and how higher commission histories for accounts affect the probability that they are transferred to women. Because higher commission accounts are of value to the recipient broker, regardless of the asset value of the account, and higher asset values are of value, regardless of the commissions of the account, the separate, independent effects, rather than the joint or interacted effects, of account value and commissions are of interest. Because the unit of observation for these logistic regression analyses is the individual transferred account, the analyses only measure the commission and asset value effects by gender among brokers who received a transferred account. Table 3 shows the results, that is the value of "b" for the asset value or prior year commissions of accounts from these logistic regression analyses on transferred accounts to brokers in both firms. The asset characteristic effects on whether a woman receives an account, as reported in Table 3, occur *in addition to* the gender differential in the probability

of receiving any accounts. At Melburn, where women are less likely than men to receive any transfers, the women who receive accounts are actually more likely to receive accounts with larger asset values, but less likely to receive those with higher commissions. When Melburn transfers accounts to women, the transferred accounts tend to be larger valued accounts with lower commissions, such as accounts held by more conservative clients who make fewer trades. These accounts, even though they include more assets, produce less compensation than high commission accounts with fewer assets. At Jones, where there were no gender differences in the probability of receiving transfers, women receive accounts that have both lower asset values and lower commissions.

*The Overall Effects of Gender on Total Asset Values under Management and on Production for Brokers*

I use censored regressions analysis (“tobit”) to analyze the combined effects of gender differences in the probability of receiving any transferred accounts and in the quality of all transferred accounts to brokers. The analysis switches from the transferred account to the stockbroker as the unit of observation. The specification is:

$$\begin{aligned}
 y_i &= bX_i + u_i && \text{if } bX_i + u_i > 0 \\
 &= 0 && \text{if } bX_i + u_i \leq 0 \\
 &&& i = 1, 2, \dots, N
 \end{aligned}$$

where N is the number of stockbrokers,  $y_i$  is the total annual prior commissions or the total value of the assets transferred on all accounts received from departing brokers for the year by stockbroker i,  $X_i$  is a vector of independent variables (gender and/or experience of stockbroker i), b is a vector of coefficients, and  $u_i$  is an independently distributed error term

assumed to be normal with zero mean and constant variance  $\sigma^2$ . The expected value of  $y$  in the model is:

$$E_y = bXF(z) + \sigma f(z)$$

where  $z = bX/\sigma$ ,  $f(z)$  is the unit normal density, and  $F(z)$  is the cumulative normal distribution function. The model therefore measures the combined effects of  $X$  (gender) on the probability that a stockbroker receives a transfer and on the value of the transfers (McDonald and Moffitt 1980).

Table 4 presents the results of the tobit regressions for total asset values and for prior year's total commissions summed over all assets received by the broker in 1995. The columns labeled "No Controls" report the result when only gender is included as an independent variable in the regression; the column labeled "Experience Controlled" reports the gender effect when time since licensure as a broker and time employed as a broker at the specific brokerage firm are added to the regression.<sup>11</sup>

Women employed as brokers at Melburn received total accounts that are not statistically different in asset values from those of the total accounts received by men. Women, however, received significantly less productive (i.e., lower commission) accounts. For Jones, the accounts received by women were both lower in asset values and in prior year's commissions.

The coefficient for women recipients is lower when experience is controlled for both Melburn and Jones Brokerages in Table 4, indicating that women's disadvantage in account

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11 No other characteristics of brokers (besides gender, experience as a broker and experience in the current firm) are available. Both brokerage firms asserted that variation in education was not connected to variation in compensation among their stockbrokers and they collected no data on education. In any case, there is no reason to expect that women would have less education than comparably experienced men. The coefficient for the experience variables could not be reported on Table 4 because they were not included on the tables

transfers increases in both brokerages when brokers of similar experience are compared. The decrease in the value of the coefficient for being a woman after controlling for experience (between columns 1 and 2, and columns 3 and 4) occurs because women were more likely than men to be at the experience levels (that is, more junior) receiving higher value transfers.<sup>12</sup>

## V. “NATURAL EXPERIMENT”: GENDER DIFFERENCES IN SALES, CONTROLLING FOR QUALITY OF SALES OPPORTUNITY

When the *prior year's* commissions earned by recipient-eligible brokers are added to the controls in the tobit regressions reported in Table 4 (not presented, available from author), there are no significant gender differences in either the asset values or historic commissions of transferred accounts at both brokerage firms. Both brokerage firms alleged that women receive inferior account transfers because they generated lower commissions in the prior year and the prior year's commissions were used to allocate transferred accounts. In other words, prior year's commissions were the basis for assigning accounts in the current year and women received fewer transfers because they had been less productive in the prior year. As discussed above, women would have systematically lower productivity in the prior year than men if consumers are less willing to buy from women, workers select themselves into stockbroker positions differentially by gender, or women provide less effort,<sup>13</sup> and/or if they were given inferior sales opportunities (i.e., performance-support bias).

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produced at the public hearings.

12 Neither brokerage firm had an explicit policy of transferring accounts to more junior brokers. Neither brokerage challenged this finding about experience, however, nor explained why less experienced brokers were preferred.

13 The firms never claimed that their gender differences in “prior year's productivity” were the result of

An alternative hypothesis to performance-support bias, then, for the gender differential in transferred assets is that consumer discrimination, or differential work intensity among full time full year workers, or some sort of selection occurs that results in women being less productive than men. Just as a broker's current year's commission history and compensation are affected by the accounts transferred to her and by the quality and quantity of the other forms of performance-support provided by the employer, prior years' commissions are affected the same way: the prior year's commissions are affected by management's earlier decisions on performance-support. The lower historic commissions generated by women may be the result of accumulated gender disparities in performance-support. Or, they may arise because women are less productive due to consumer discrimination, selection biases, or gender differences in effort net of the differences in transfers and inputs, in generating business.

*The "Natural Experiment"*

The data on transferred accounts provide a "natural experiment" testing whether there are gender differences in sales *when men and women are assigned the same sales opportunities* -- that is, accounts with equivalent trade or buying tendencies. The historic 1994 commissions (generated on accounts transferred from departing brokers in 1995) proxy the underling tendency of each account to trade.<sup>14</sup> The subsequent 1996 commissions are

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consumer discrimination, work effort, or selection. Rather, they made reference to a research literature that shows that women trade on their own personal portfolios at a lower rate than men do (Lewellen, Lease, and Schlarbaum 1977 and Barber and Odean 2001). The fact that women as a group are more conservative than men as a group in trading their personal assets, however, tells us nothing about trading of women who are stockbrokers relative to comparable men. Trading by stockbrokers on client accounts is surely different than the averages for all traders on their personal accounts. Stockbrokers are a group selected differently from the group of all asset holders. Furthermore, when trading on "other people's" portfolios both men and women brokers face the same incentives to encourage trading by their clients.

14 Research shows very different trading tendencies across consumers. See, for example, Wood and

the result of the receiving broker's efforts; the 1994 commissions provide a control for the inherent capacity of the account to yield commissions. (1995 commissions are not analyzed because they arise from the efforts of two brokers -- the departing broker and the receiving broker.) If the ratio of own (1996) commissions to the prior or inherent (1994) commissions for women who receive accounts is less than for men, then the productivity of women (as a result of consumer discrimination, selection, or intensity of work effort) is lower and a productivity differential by gender contributes to gender differences in commissions and to the pay gap.

When a broker leaves for employment elsewhere, that "elsewhere" is usually a competing brokerage firm. In that case, the departing broker tries to bring her clients or accounts with her to her new employer. Many accounts leave with the departing broker. Because accounts are reassigned by brokerage management before it is certain which accounts will leave and which will stay, some reassigned accounts leave irrespective of any activities by the recipient broker. There are, then, two ways to compare commissions. First, I compare 1996 to 1994 commissions on all accounts transferred, including those that left the brokerage by 1996 and therefore yielded no commissions. Second, I compare 1996 to 1994 commissions on accounts that stayed at the brokerages. If there were some possibility that recipient broker actions affect the retention of clients, then the first comparison is the more relevant.

#### *The Results of the Experiment*

Table 5 shows the results for both firms of the two comparisons of the ratio of 1996 commissions on an account to 1994 commissions, by gender of the recipient broker. For

Melburn, women who received accounts produce over the year of 1996 an average 57.6 percent of the commissions generated in the calendar year prior to transfer of the account (1994), while men in 1996 were receiving only 25.8 percent of the 1994 commissions, when all transferred accounts are included. When the analysis is restricted to accounts that stayed, women generated 129 percent of the commissions on the accounts in the year prior to transfer while men only generated 65 percent. These gender differences are not statistically significant, largely due to the massive volatility in the ratios of 1996 to 1994 commissions on these accounts. Another way to make the comparison of production by gender of broker recipient is to compute the proportion of accounts transferred to men and to women for which commissions were as high, or higher, in 1996 than they were in 1994 and test whether the gender differences in the proportions were the same. For Melburn, women who received transferred accounts did at least as well in 1996 as the prior broker did in 1994 on 66 percent of the accounts that they received while men did so on a statistically significant lower 63.2 percent of the accounts they received. When the comparison is restricted to accounts that stayed at the firm, women did as well on 73.2 percent of the accounts and men did as well on 71.1 percent. The superior output of women is statistically significant.

For Jones, women in 1996 generated on average 50.0 percent of the commissions in the calendar year prior to transfer of the account, while men were receiving 51.9 percent of the prior year's commissions, when all transferred accounts are included. When the analysis is restricted to accounts that stayed, women generated 75.6 percent of the commissions for the year prior to transfer while men generated 76.8 percent. These gender differences are not statistically significant. When the proportions of accounts transferred to men and to women for which commissions were as high, or higher, in 1996 than they were in 1994 are

compared, women did at least as well as the prior broker on 47.7 percent of the accounts that they received while men did so on at a statistically equivalent 47.3 percent of the accounts they received. When the comparison is restricted to accounts that stayed at the firm, women did as well on 50.7 percent of the accounts and men did as well on 47.7 percent. These proportions are also statistically equivalent.

For Melburn, the women who received accounts outperformed the men in generating commissions, when the prior commission capacity of the accounts is controlled. For Jones, the evidence indicates that men and women performed comparably. Recall from the evidence in Table 2, women are significantly less likely than men to be recipients at Melburn, while there is no significant gender difference at Jones.<sup>15</sup> If both firms, within gender groups, select the more productive brokers to be recipients, then it is not surprising that the women outperform the men in Melburn: the selectivity cutoff for women is higher, so they are, on average, better producers than the men who received transfers.

Women generated commissions at the same rate as men when they were assigned accounts with equivalent innate “productive capacities” (as measured by their commissions histories) and when there were no gender differences in selection (as measured by no difference by gender in the probability of receiving a transfer--that is, in being selected into the experiment as was the case for Jones). Women generated commissions at a higher rate than men when they faced a greater barrier to receive accounts (i.e., were a more “selective” population) but were assigned accounts with equivalent innate “productive capacities.”

While these results are consistent with the hypothesis that women generate

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<sup>15</sup> Because women at Jones received significantly inferior accounts, there is evidence of performance-support bias at Jones, as well as at Melburn. Women in Jones were as likely as men to receive accounts so they were equally likely as men to be included in the “natural experiment.”

commissions at least as effectively as men and that gender differences in sales capacity are not the reason for the gender pay gap, there are some issues with the “natural experiment” that may cloud this interpretation of the results. First, and most important, the distribution of accounts to brokers was not random. Brokerage management is expected to distribute accounts to the brokers they believe will generate more sales on the account. Simply, the brokers who received accounts were not randomly selected. Furthermore, the accounts were also not randomly distributed among the brokers selected to receive accounts. Second, the role of other forms of performance-support bias was not completely removed from the sales outcomes. Even when men’s and women’s sales were observed on accounts with equivalent client capacities to yield sales (based on their prior sales histories), potential gender differentials in the quantity and quality of other forms of performance-support, such as office space, support staff, etc., may have yielded gender differences in sales due to ascriptive firm assignments or discrimination, rather than to gender differences in achievement or productivity.

#### *Nonrandom Assignment of Accounts*

Because only 40 to 60 percent of the brokers received transfers (see Table 2), and because the brokers who received the transferred accounts are reasonably expected to be the more productive brokers, it is possible that it is the women who did not receive any transfers create the pay gap measured at the mean or median for all brokers. If this were the case, there would be no difference, or at least a much smaller difference, in 1995 sales by gender for brokers who actually receive transfers and it would not be surprising to see no difference in sales performance for this selection of brokers. If this were the case, the “natural experiment” cannot dismiss selection differentials, or work intensity differences, by gender as

the basis for commission differentials by gender for the overall broker population.

To investigate this possibility, I examine the gender pay gap among stockbrokers in the upper end of the compensation distribution. Although I am constrained to use only the data and analyses that were included in the public records for the hearings for the litigation, some data are available on the distribution of compensation by gender for one of the firms for the relevant time period. Table 6 shows the compensation distribution of men and women who were stockbrokers at Jones for 1995. If I take this distribution and assign the persons in each cell their cell's median compensation, then the mean 1995 compensation is computed as \$126,554 for 1,062 women and as \$165,103 for the 6,664 men, a pay gap of 23.3 percent; and the median compensation is \$114,063 for women and \$125,035 for men, a gap of 7.8 percent. Clearly, these rough computations based on assignments of compensation to individuals in each cell using the broadly banded distributional data in Table 6 yield a smaller gender pay gap than the computations based on the medians for individual data as reported in Table 1. Nonetheless, these data can tell us whether there is a different gender pay gap, and therefore a different commissions or sales performance gap, among all brokers than there is among the brokers who are the higher earners and more likely to be included in the "natural experiment" as account recipients.<sup>16</sup>

For Jones in 1995, Table 2 indicates that 38.9 percent of the men, and 40.1 percent of the women who were full time full year stockbrokers, received transfers and are therefore included in the "natural experiment" analysis of productivity or commissions on transferred assets with known prior commissions records. Based on the same method of computing

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<sup>16</sup> The positive correlation between earnings and receipt of transferred accounts is far from perfect. As a reviewer pointed out, I find above that brokers with less experience, who also are more likely to earn less, are more likely to receive transfers. Within each level of experience, however, it is expected that higher earning

mean and median compensation from the Table 6 data, the top 38.9 percent of Jones men had a mean compensation of \$290,249 and a median of \$244,556 and the top 40.1 percent of women had a mean compensation of \$210,974 and a median of \$180,085. For this group, the gender pay gap at the mean compensation was 27.3 percent and at the median is 26.4 percent. Among all brokers, the pay gap was 23.3 percent (mean) or 7.8 percent (median) and among brokers more likely to receive transfers (assuming that selection was based in part on prior generation of commissions), the pay gap was 27.3 percent (mean) or 26.4 percent (median). If accounts were more likely to be transferred, among men and among women, within higher commissions rankings, there is no evidence that gender differentials in probability of selection into the group of recipient stockbrokers accounted for gender differences in sales and, therefore, in pay. There is no evidence to suggest that the gender gap in sales is smaller among brokers more likely to be selected to receive transfers than among all brokers.

Another selection issue is that, among recipient brokers, the accounts were not randomly distributed. Managers were likely to match accounts to brokers based, in at least some cases, on their assessment of the quality of the match between the client and the broker.

Therefore, the effects of consumer discrimination on worker productivity could have been alleviated by the matching of accounts to recipient brokers. Management may well have assessed the willingness of clients to deal with women as stockbrokers and assigned discriminating consumers to men and non-discriminating consumers to women.

Unfortunately, I have no data on the characteristics of the clients (as opposed to the prior history of trades and the types of assets in the account).<sup>17</sup>

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brokers would be more likely to receive transfers.

<sup>17</sup> An analysis of broker commissions on transferred accounts controlling for the gender of the previous broker and of the recipient broker might have provided some evidence of the potential for the matching of

### *Performance-Support Not Controlled*

Although I am able to test for gender differences in sales when men and women are assigned equivalent accounts, any other gender differences in performance-supports that affect sales -- such as titles, support staff and office space -- cannot be controlled and may not be equivalent by gender. Gender differences in access to inputs, therefore, could result in commissions differentials by gender even when the quality of the transferred accounts and the efforts and talents of brokers are identical by gender.

## **VII. DISCUSSION AND CONCLUSIONS**

Women stockbrokers earned between 18 and 20 percent less than men at two of the nation's largest commercial brokerage houses in 1995. Gender differences in overall experience as a stockbroker or in tenure at the firm accounted for about a third of this gender pay gap. As both brokerage houses compensated brokers entirely by commissions using an algorithm that was the same for men and women, the gender pay gap was the result of gender differences in sales. The brokerage houses asserted that gender differences in achievement or sales capacities accounted for the gap; women brokers asserted that gender differences in the way the firms supported and provided sales opportunities, that is organizational performance-support bias, produced the pay gap. The women brokers sued for sex discrimination. Both lawsuits were settled on terms that the media regarded as favorable to plaintiffs. The lawsuits produced the data and analyses used in this paper.

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accounts to brokers to reduce the effects of consumer discrimination. Because neither brokerage firm contended that consumer discrimination contributed to gender differences in commissions, however, no such analyses were part of the court proceedings. As indicated above, I am restricted to the analyses actually made public at judicial hearings and cannot perform new analyses on the data which are controlled by confidentiality agreements.

The “natural experiment” of observing sales by gender when stockbrokers were assigned accounts with equivalent prior sales histories yields evidence consistent with the hypothesis that there are no gender differences in sales capacities or productivity at these large retail brokerage houses. There is some evidence of stronger sales achievement for women in the organization (Melburn) at which women were less likely than men to receive transferred accounts, that is, when women were less likely to be selected into the experiment. When men and women were equally likely to be included in the experiment, at Jones where equivalent proportions of men and women stockbrokers received transferred accounts, there were no gender differentials in sales performance on accounts of equivalent prior sales histories.

The results of the “natural experiment” provide strong evidence that neither gender differences in selection into the stockbroker job nor in work intensity have led to the observed gender differences in sales achievement or productivity. As discussed above, that leaves two other mechanisms that could have generated the gender pay and sales gap: (1) achievement or productivity differences arising from discrimination by customers; and (2) performance-support bias such that organization provides different sales opportunities, in terms of inputs and accounts, to women brokers.

The “natural experiment” evidence is less convincing as the basis for dismissing customer discrimination in producing gender differences in sales than in showing that neither selection nor intensity of work accounts for gender differences in achievement. Because the “natural experiment” allowed accounts to be assigned to brokers based on customer preferences (discrimination), I cannot dismiss the possibility that women were

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only given the accounts of clients who did not discriminate against women. If this were the case, a random distribution of the accounts, ignoring customer discrimination, would be more likely to have led to greater sales achievement for men than for women. Customer discrimination, therefore, could still be a basis for gender differences in sales even given the results of the “natural experiment.”

Other evidence, however, while far from conclusive, does not seem to support customer discrimination as an explanation for an 11 to 18 percent gender sales gap, after controlling for broker experience. First, neither organization contends that women stockbrokers were constrained because their customers discriminated against women. Second, at Jones, where men and women brokers were equally likely to receive accounts (albeit with women receiving lower quality or “lower commission” accounts), there were no gender differentials in sales production when men and women received accounts of equivalent prior sales histories. While Jones managers may have distributed the accounts of customers they knew were open to women stockbrokers to women and the accounts of discriminators to men, the fact that there were sufficient non-discriminating customer accounts to provide accounts to the same proportion of women as were provided to men weakens the plausible role of customer discrimination in limiting sales opportunities for women. Third, there are similar numbers of women and men large wealthholders in the U.S.,<sup>18</sup> implying that the customer base of both firms would include similar numbers of men and women. Given that women accounted for between 11 and 13 percent of stockbrokers,

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18 For 2004, for example, the IRS reported there were 1,030,000 women with net worth over \$1,500,000 and 1,167,000 men. Computation by author from U.S. Internal Revenue Service, *Female Top Wealthholders by Size of Net Worth, 2004* and *Male Top Wealthholders by Size of Net Worth, 2004* <http://www.irs.gov/taxstats/indtaxstats/article/0,,id=185880,00.html>

for there to be an insufficient number of non-discriminatory customers to fill the books of women stockbrokers with non-discriminating customers, there would have to be massive and widespread gender discrimination among both men and women clients. It still could be the case, however, that while there was no shortage of non-discriminating customers, the non-discriminating customers were more conservative in their trading, leading to fewer sales for women stockbrokers.

The “natural experiment” also does not control for the sales effects of any gender differentials in access to other forms of organization-provided performance-support. The same managers who distribute these inputs also distribute accounts to brokers. The analysis of account distributions discussed above shows evidence consistent with the hypothesis that these managers transferred accounts of departing brokers differently by gender. To the extent that there are gender differentials in access to other forms of performance-support, the “natural experiment” results understate the sales performance of women relative to men in a completely unbiased context. Under these conditions, if the gender comparisons of sales productivity could have been between men and women with accounts of equivalent sales histories and also with equivalent other forms of performance-support, the performance of women would have been more likely to exceed that of men, decreasing the role of achievement and increasing the role of the organization’s performance-support bias (and potentially consumer discrimination) in creating the gender pay gap.

The evidence clearly points to organizational performance-support bias, as the mechanism generating the gender pay gap among stockbrokers. While discrimination by consumers cannot be dismissed as contributing to the gap, the evidence is consistent with

women's lower compensation *and sales performance* being the result of performance-support bias, the employer assigning women inferior sales opportunities.

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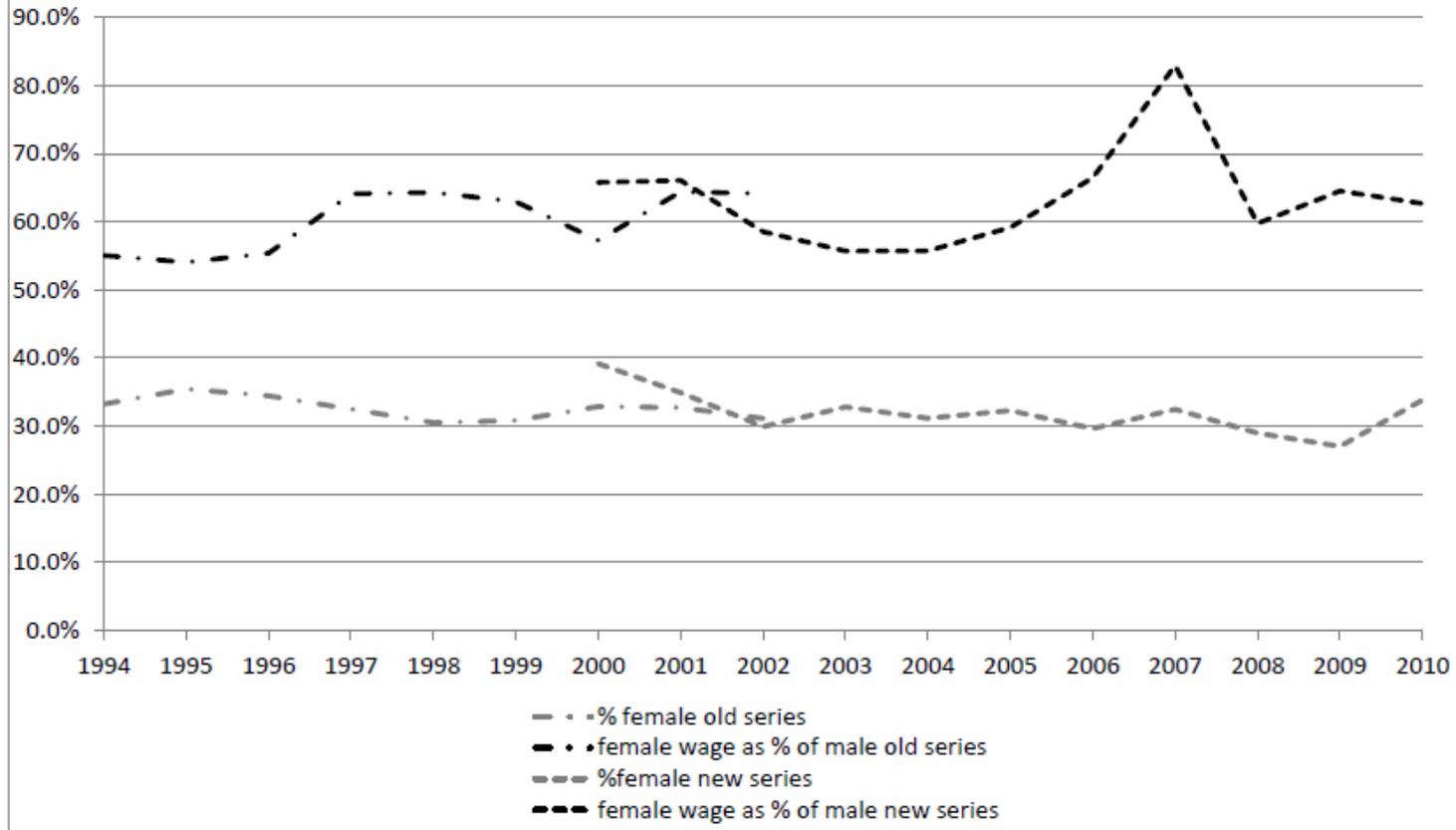
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**Figure 1**  
**Current Population Survey Data, Proportions of Men and Women Employed, and Gender Wage Ratios, in Sales of Securities and Financial Services Occupation, 1994-2010**



**Table 1**  
**Characteristics of Stockbrokers by Gender and Brokerage in 1995**

	<b>Melburn</b>	<b>Jones</b>
<b>Number of Stockbrokers</b>		
Men	6,848	8,229
Women	1,100	1,029
Percent Women	13.8%	11.2%
<b>Median Compensation</b>		
Men	\$108,993	\$118,603
Women	88,975	94,603
<b>Percentage Pay Gap for Women</b>		
Medians, no controls	18.4%	20.0%
Controlling for experience (years since obtaining broker license)	11.8%***	12.8%/18.2% <sup>a</sup> ***
t statistic	4.22	3.38/5.75 <sup>a</sup>

Source: Based on analysis of the human resource records of brokerage firms. The analyses of compensation reported here were performed by Professor Jerry Goldman as part of the court records.

Significance is reported at the 0.01\*\*\* level, 0.05\*\* level, and 0.1\*\*\* level.

<sup>a</sup> The regression analyses controlling for experience were not conducted for the entire broker population, but only for two experience segments of Jones's brokers. The reported percentages and t statistics are for brokers between 6 and 10 years after licensure and between 10 and 25 years since licensure.

<b>Table 2</b>				
<b>Accounts Transferred to Brokers Employed Full Year 1995 from Brokers Departing in 1995, by Gender and Brokerage</b>				
	<b>Melburn</b>		<b>Jones</b>	
	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>
<b>Number Receiving Transfers</b>	4,711	567	2,613	430
<b>Percentage of Full-Year 1995 Brokers</b>	59.3%	54.8%	38.9%	40.1%
<b>P-value of gender difference (Chi-square)</b>	0.006***		0.570	

Source: Based on author's analysis of the human resource and account transfer records of brokerage firms.  
Significance of the gender difference: \*\*\* p< 0.01; \*\* p< 0.05; \*p<0.1.

<b>Table 3</b>			
<b>Logistic Regression Coefficients for Account Transferred to a Woman on Transferred Account's Asset Value and Prior Year's Commissions, by Brokerage</b>			
<b>(Dependent variable is a dummy variable equal to 1 if account is transferred to a woman; unit of observation is the transferred account)</b>			
	<b>Melburn</b>	<b>Jones</b>	
<b>Regression 1</b>			
<b>Coefficient for Total Asset Value</b>	1,737***	-201.8***	
t statistic	6.00	4.62	
N	167,874	144,307	
Chi-square	34.8	136.9	
<b>Regression 2</b>			
<b>Coefficient for Prior Year Commissions</b>	-10.0**	-18.3***	
t statistic	2.13	3.97	
N	167,874	144,471	
Chi-square	5.2	37.4	

Source: Based on author's analysis of the human resource and account transfer records of brokerage firms.

Significance of the gender difference: \*\*\* p< 0.01; \*\* p< 0.05; \*p<0.1.