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Gender Compensation Differentials in Jamaica

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FOREWORD

The role of women in economic development is a subject that has attracted much attention in recent years. Among the important issues under study in all countries is whether women are subject to labor market discrimination. There is a paucity of evidence on this subject in developing countries where, one might argue, the issue is most critical.

Professors Julie Hotchkiss and Robert Moore add to this literature with their case study of Jamaica. They make use of a unique data set to estimate male/female compensation differentials. Julie Hotchkiss and Robert Moore are Assistant Professors of Economics and Senior Associates in the Policy Research Center. This paper is an outgrowth of USAID Contract Number 532-0095-90/1.

The authors express appreciation for helpful comments to: Paula Stephan, David Sjoquist, Roy Bahl, Kathy Terrell, Jorge Martinez, Keith Ihlanfeldt, and Fitzroy Lee.

Roy Bahl

March 1993
GENDER COMPENSATION DIFFERENTIALS IN JAMAICA

Julie L. Hotchkiss and Robert E. Moore

EXECUTIVE SUMMARY

This paper utilizes a unique data set to investigate labor market discrimination in Jamaica. This investigation estimates and decomposes female/male wage and compensation differentials into a portion explained by differences in individual characteristics and an unexplained portion. The unexplained portion is generally considered to measure labor market discrimination. In addition, occupational segregation is investigated as a source of compensation differences. Finally, a probit analysis of the entire compensation package helps to determine whether women are treated differently in the receipt of fringe benefits.

It is found that the compensation differential in Jamaica is quite small, with women earning 81c for every $1 earned by men. However, 95 percent of that differential cannot be explained by differences in individual characteristics. In addition, there is no substantial difference across gender in the extent to which allowances (benefits) are offered, and men and women are almost identically distributed across occupational groups, but the compensation differential is smaller in those occupations in which women are better represented.
# TABLE OF CONTENTS

FOREWORD ...............................................................  i

EXECUTIVE SUMMARY ............................................... ii

LIST OF TABLES ....................................................... iv

LIST OF FIGURES ..................................................... v

I. INTRODUCTION AND BACKGROUND ............................... 1

II. METHODOLOGY ...................................................... 4
    Treatment in the Labor Market ................................. 4
    The Incidence of Allowances .................................. 6
    Occupational Segregation ...................................... 7
    Data Description ................................................ 8

III. RESULTS ........................................................... 11
    Earnings Equation Estimates ................................. 11
    Probit Estimates of Allowances .............................. 18
    Duncan Index ................................................... 20

IV. CONCLUDING REMARKS ........................................... 21

REFERENCES .......................................................... 24
LIST OF TABLES

TABLE 1  Labor Force and Population Statistics for Jamaica, April 1988 ............... 2
TABLE 2  Weighted Sample Means ................................................. 11
TABLE 3  Ordinary Least Squares Earnings Equation Estimates ............................. 13
TABLE 4  Expected Salary and Total Compensation ........................................... 16
TABLE 5  Decomposition of Earnings Differentials ............................................ 17
TABLE 6  Probit Estimates .............................................................................. 19
TABLE 7  Female Representation, Average Compensation, and Compensation Differentials, by Occupational Category ......................... 21
LIST OF FIGURES

FIGURE 1  Log Annual Total Compensation for Support Workers, by Age ........ 15
FIGURE 2  Log Annual Total Compensation for Support Workers, by Firm Size .... 15
I. INTRODUCTION AND BACKGROUND

Basing an individual’s labor market compensation on characteristics unrelated to his or her productivity is referred to as labor market discrimination. Many governments have taken active roles in trying to eliminate discriminatory practices in their labor markets. The justification for these actions stems both from the high value society places on equality and from the recognition that discrimination may hinder economic growth. In general, if the compensation designated for a resource does not match its value or productivity, an inefficient allocation of that resource will result, constricting growth. This potential hindrance to growth is of particular concern to developing economies.

This paper investigates the nature of female/male compensation differentials and occupational segregation in the formal sector in Jamaica. Formal sector jobs in a developing country are characterized as better-paying and having better working conditions than underground or self-employed-type jobs. ¹ 48.4 percent of workers in Jamaica were employed in formal sector jobs in April 1988 (see Table 1). If certain members of an economy are either excluded from the formal sector (through discrimination) or do not find it in their interest (in terms of relative rewards) to pursue jobs in the formal sector, the economy loses valuable human productivity and the government loses revenues from those potential taxpayers.

¹See Sethuraman (1976). In addition to poorer working conditions, income from these types of jobs typically escapes taxation, resulting in lower revenues to the government.
TABLE 1
Labor Force and Population Statistics for Jamaica, April 1988

<table>
<thead>
<tr>
<th></th>
<th>Number (in Thousands)</th>
<th>Percent of Labor Force</th>
<th>Percent of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed in Formal Sector</td>
<td>524.0</td>
<td>48.4</td>
<td>34.6</td>
</tr>
<tr>
<td>Total Employed</td>
<td>882.7</td>
<td>81.6</td>
<td>58.3</td>
</tr>
<tr>
<td>Men Employed</td>
<td>516.2</td>
<td>88.2</td>
<td>70.6</td>
</tr>
<tr>
<td>Women Employed</td>
<td>366.5</td>
<td>73.8</td>
<td>46.8</td>
</tr>
</tbody>
</table>


The mean salary for women in the Jamaican formal sector is 80 percent of the mean salary for men. Any government that is concerned with unequal treatment of men and women in the labor market or with the potential impact this wage differential has on productivity and labor supply behavior must have a clear understanding of the nature and the source(s) of the wage differentials that exist. By controlling for various human capital and job characteristics, this paper identifies to what degree wage differentials in Jamaica are explained by differences in individual characteristics and the degree to which they are left unexplained. An analysis of two additional sources of differential treatment is also presented. First, the extent to which women are more or less likely to receive certain fringe benefits as part of their compensation is examined. Second, the degree to which men and women are segregated by occupation (potentially an important source of compensation disparity) is explored.

Several studies have documented the presence of female/male wage differentials within a wide array of developed and developing economies. Among industrialized economies, female/male wage differentials in 1980 ranged from 0.54 in Japan to 0.90 in Sweden; the wage differential in the United States was (and has been for decades) 0.66 (Gunderson, 1989). Among studies of developing economies, female/male wage differentials ranged in 1989 from 0.60 in
Bolivia and Cyprus to 0.97 in Paraguay (Terrell, 1992). These wage differentials may be explained in part by differences in human capital attainment between men and women (both formally through educational attainment and informally through job experience). Several studies, however, have identified significant portions of these wage differentials that cannot be explained by differences in individual characteristics; that unexplained portion is typically attributed to labor market discrimination. At the very least, one can reject the hypothesis that the characteristics of men and women are valued, or treated, equally in the labor market. The proportion of the overall wage differential between men and women that has been attributed to discrimination ranges from a low of 2 percent in Tanzania (Knight and Sabot, 1982) to a high of 63 percent in Cyprus (House, 1983).

In addition to direct wage discrimination, many researchers point to a high degree of asymmetrical distribution of men and women across occupations (occupational segregation) as a source of observed female/male wage differentials. Occupational segregation serves as a source of wage differentials because men are typically over-represented in high-paying occupations and women are typically over-represented in low-paying occupations.

Jamaica is similar to the countries mentioned above, in that it has been observed that there are significant female/male wage differentials in that labor market, as well. Scott (1991)

---

2A comprehensive analysis of changes in male/female wage differentials across economic fluctuations is provided by Gindling (1993) for the case of Costa Rica.

3Discrimination in Taiwan accounted for 60 percent of the wage differential in that country (Gannicott, 1986), and Chapman and Harding (1986) merely state that discrimination accounts for "some part" of the wage differential observed in Malaysia.

reports that women in Jamaica receive only 58 percent of the compensation of men. Our results differ substantially from those of Scott. This may be due to the differences in the data used and availability of explanatory variables: her data set does not include any occupation-specific characteristics or allowances (fringe benefits) received by men and women; however, it does include non-workers (allowing her to control for selectivity of women into the labor market).

This paper improves upon the current information related to the labor market structure in Jamaica because of access to a new, extensive, and uniquely reliable data set, and by contributing an investigation of the female/male wage differential by firm type and occupation. The labor market data that are used were obtained directly from firm payroll and tax records by government auditors; failure to comply was punishable by law. The sample is drawn from a random sample of all firms, whether or not they pay taxes.⁵

II. METHODOLOGY

Treatment in the Labor Market

Separate compensation equations are estimated for men and women, using job characteristics and age (as a proxy for labor market experience) as regressors.⁶ The overall estimated compensation differential between men and women is decomposed into an explained portion, which measures differences in the value of regressors of the two groups, and an unexplained portion, which measures regression coefficients. A relatively large explained

⁵Scott (1991) makes use of data from the October 1991 labor force survey. The data set used for this paper has two advantages over the labor force survey: 1) the raw sample has over 3,000 more observations of working individuals; and 2) the information on earnings, and especially allowances (not contained in the labor force survey), is expected to be more accurate since it comes directly from company files.

⁶Age may be a misleading proxy for experience if women spend more years out of the labor force or unemployed than men. Other human capital characteristics, such as education, are not available in the data set used. The implication of the absence of education is discussed later.
portion suggests that the majority of the wage differential is due to differences in age and job characteristics between men and women; e.g., men earn more because they are older (more labor market experience), or are more likely to hold full-time jobs than women. On the other hand, a relatively large unexplained portion suggests that the labor market values human capital, and other characteristics associated with women, differently (usually less) from those of equally qualified men.\(^7\)

The specific earnings equations estimated may be expressed as:

\[ \ln E_f = X_f \beta_f + \epsilon_f \text{ for women, and} \]
\[ \ln E_m = X_m \beta_m + \epsilon_m \text{ for men.} \]

\(\ln E\) is the natural logarithm of annual earnings, \(X\) is a vector of individual and job-specific characteristics, and \(\beta\) is a vector of parameters to be estimated. Examination of the raw data suggests that female/male wage differentials vary considerably by the individual’s occupation, the sector (private, public enterprise, or government) of employment, the size of the firm where the individual is employed, the individual’s full-time/part-time status, and the individual’s age; thus each of these variables will be included as regressors in the earnings equations.

The Oaxaca (1973)/Blinder (1973) method of decomposition will be employed to decompose the overall earnings differential into explained and unexplained portions. The difference in mean (log) earnings between men and women will be decomposed as

\[ \ln E_m - \ln E_f = .5(\hat{\beta}_m + \hat{\beta}_f)'(\bar{X}_m - \bar{X}_f) + .5(\hat{\beta}_m + \hat{\beta}_f)'(\bar{X}_m + \bar{X}_f). \]

The right-hand side terms correspond, respectively, to the explained and unexplained portions of the estimated difference in log annual earnings. Oaxaca (1973), Reimers (1983), and Cotton

\(^7\)For reasons outlined in Jones (1983), the authors refrain from interpreting the unexplained portion strictly as discrimination. See the section of this paper on occupational segregation.

\(^8\)The foundation for these earnings equation specifications is found in Mincer (1974).
(1988) discuss the indexing problem inherent in this decomposition technique, and justification for the use of averages (or a weight of 0.5) in calculating the decomposition is found in Idson and Feaster (1990) and Holtmann and Idson (1993).

Total compensation in the formal sector in Jamaica consists of the typical wage or salary and potentially a wide array of allowances, which include payments for work-related expenses ranging from laundry to holiday pay. On average, allowances make up 13.2 percent of total compensation. With this degree of flexibility in compensation, the labor market may not only differentiate in its treatment of men and women through wage and salary payments, but also through the generosity or incidence of various allowances. The above earnings estimation and decomposition are performed with salary as the dependent variable and with total compensation (salary plus the dollar value of allowances) as the dependent variable. These analyses will help to pinpoint the source of observed differences in observed compensation between men and women.

The Incidence of Allowances

A second way in which differential treatment may take place is in the granting of allowances. Not only is there a potential to observe differences in the value of allowances (thus total compensation) between men and women, but it may also be the case that men are more (or less) likely to receive certain allowances at all (a difference in the incidence of allowances). To determine whether gender (controlling for other individual and job-specific characteristics) is an important determinant of whether an individual receives a certain allowance, the following model is specified:

$$\bar{Y}_i = Z_i'\gamma + F_i\alpha + \xi_i,$$  \hspace{1cm} (3)
where $Y_i$ is the probability of individual $i$ receiving a certain allowance, $Z_i$ is a vector of characteristics unique to individual $i$ and individual $i$'s job, $F_i$ is the female dummy variable, $\gamma$ and $\alpha$ are parameter coefficients to be estimated, and $\xi_i \sim N(0,1)$. Since the dependent variable is a latent (unobserved) variable, the following indicator function is specified:

$$Y_i = \begin{cases} 1 & \text{if } \bar{Y}_i > 0 \\ 0 & \text{if } \bar{Y}_i \leq 0 \end{cases}$$

(4)

Using this indicator function, the following probit specification of the likelihood function is estimated, where $\Phi(.)$ is the standard normal distribution function:

$$L(\gamma, \alpha | Z, F) = \prod_{Y_i=0} \Phi(-Z_i' \gamma - F_i \alpha) \prod_{Y_i=1} [1 - \Phi(-Z_i' \gamma - F_i \alpha)] .$$

(5)

Data were collected for 12 different allowances, although only eight of the allowances have enough variation in the incidence to obtain reliable results, so likelihood function (5) will be estimated eight times. The focus of these estimation results will be on the parameter coefficient, $\alpha$.

**Occupational Segregation**

It has been found in other countries, both developing and developed, that an important source of earnings differentials is the asymmetric distribution of men and women across occupations. In particular, women are likely to be concentrated in low-paying occupations (Terrell, 1992). Our ability to control for occupation in the earnings equation could be why we find smaller earnings differentials than Scott (1991) and may also mask this important source of discrimination. Therefore, it is important to determine the degree of occupational segregation.

---

9Probit models and their statistical properties are described in detail in Maddala (1983), Chapter 2.
at the level of occupational aggregation in our data. The Duncan index will be used for this purpose. The Duncan index \((D)\) is:

\[
D = (.5) \sum_{j=1}^{N} | F_{j} - M_{j} | ,
\]

where \(N\) is the total number of occupations and \(F_{j}\) (\(M_{j}\)) is the proportion of all females (males), in occupation \(j\) (Duncan and Duncan, 1955). For example, 36 percent of employed women are in service occupations, therefore \(F_{\text{service}}\) is equal to .36. The index is equal to one-half the sum of the absolute differences in the proportion of women and men in each occupation. An index equal to zero means that women and men have identical employment distributions across occupations. An index equal to one corresponds to the extreme situation of complete segregation (no women and men work in the same occupation). Another way to interpret \(D\) is as the percentage of women (or men) who would have to change occupations in order to eliminate the difference in occupational distributions (Fuchs, 1988).

During the 1960s, it was found that this index of occupational segregation ranged from a high of 0.49 in Latin America (including Jamaica) to a low of 0.28 in Asia (Boulding et al., 1976). Europe and North America had a Duncan index of 0.37 for this time period.

**Data Description**

The data for this paper were collected as part of the Jamaica Tax Review Project (Bahl et al., 1992) under a contract with the U.S. Agency for International Development, by auditors trained by the Revenue Board of the Government of Jamaica who had the force of law to ensure complete disclosure of company payroll and tax records (see Bahl et al., 1993). The data are for the year 1988, and are unique with regard to the accuracy, extensiveness, and level of detail of payroll records for Jamaica.
6,511 observations were collected through an unbalanced and stratified sampling procedure. The sample is unbalanced since different proportions are sampled from each firm size category. It is stratified in that a random sample of firms is then selected from each size category instead of from the population as a whole. In addition, depending on the firm size, a different number of employees was randomly selected from each firm. Private firms, government agencies, and public enterprise firms are all represented in the sample. \footnote{Employers, regardless of sector, are responsible for paying their workers’ income tax in Jamaica.} Weights are used in all estimations to adjust for the stratified and unbalanced nature of the data set. The final sample used for estimation contains 4,925 observations, as a result of missing age variables for the remainder of the sample. \footnote{Individuals for whom the age variable is missing have a slightly higher representation in government sector, part-time, and unskilled jobs and are less represented in support, professional, and private sector jobs than those for whom age is available. The differences in the means for the two samples are not statistically significant.}

Information about the size of each sub-group is used to construct the weights that are used with this type of sample. The formula for the weight for each individual employee is:

\[ \omega = 1/(\rho_f \rho_e), \]  

(7)

where \( \rho_f \) is the probability that the firm is drawn and \( \rho_e \) is the probability that the employee is drawn from the selected firm. \footnote{\( \rho_f \) and \( \rho_e \) are defined as:

\[ \rho_f = \frac{\text{# of firms in sub-group sample}}{\text{# of firms in sub-group}} \quad \rho_e = \frac{\text{# of employees in firm sample}}{\text{# of employees in firm}}. \]}

Weighted means of the final sample are presented in Table 2. Merely using the raw weighted means, we observe an 80 percent female/male differential in annual salary and an 81
percent differential in total compensation (which includes the value of allowances). From a crude perusal of the means, reasons that suggest themselves as sources for this differential are that women in the labor market are slightly younger than the men (suggesting they may have less labor market experience); women are more likely to be found in smaller firms than men (smaller firms may pay less, on average, than larger firms); and women have a slightly higher representation in unskilled laborer jobs and a lower representation in service and professional jobs (compensation differentials between occupations may be a factor). Since both men and women are equally likely to be employed part-time and to be found in the private, government, and public enterprise sectors of the economy, these employment characteristics may not play an important role in accounting for the compensation differential. As far as the allowances are concerned, women are slightly less likely to receive car and housing allowances, but more likely to receive uniform and meal allowances. These allowances may be closely tied to the distribution of men and women across the different occupations. Clearly, no unambiguous conclusions can be drawn regarding the source of the observed compensation differential without further analysis which controls for the differential individual and job characteristics highlighted in Table 2.

Although workers’ education levels were not available (they are not kept in company records), the completeness of the information that is available and the details related to the individual’s occupation, firm type, and age will allow a number of conclusions regarding female/male wage differentials to be drawn with confidence.
TABLE 2
Weighted Sample Means

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Observations</td>
<td>4,925</td>
<td>2,691</td>
<td>2,234</td>
</tr>
<tr>
<td>Annual Salary</td>
<td>J$19,710.64</td>
<td>J$21,539.45</td>
<td>J$17,338.28</td>
</tr>
<tr>
<td>Annual Total Compensation</td>
<td>J$22,712.18</td>
<td>J$24,783.44</td>
<td>J$20,026.74</td>
</tr>
<tr>
<td>Age</td>
<td>36.08</td>
<td>36.85</td>
<td>35.07</td>
</tr>
<tr>
<td>Firm Size</td>
<td>1048.27</td>
<td>1174.54</td>
<td>884.47</td>
</tr>
<tr>
<td>Part-time Employed = 1</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Occupations:

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Full Sample</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unskilled Laborer = 1</td>
<td>0.29</td>
<td>0.27</td>
<td>0.31</td>
</tr>
<tr>
<td>Skilled Laborer = 1</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Agriculture = 1</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Support = 1</td>
<td>0.34</td>
<td>0.31</td>
<td>0.36</td>
</tr>
<tr>
<td>Service = 1</td>
<td>0.27</td>
<td>0.29</td>
<td>0.25</td>
</tr>
<tr>
<td>Professional = 1</td>
<td>0.07</td>
<td>0.08</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Labor Market Sectors:

<table>
<thead>
<tr>
<th>Sector</th>
<th>Full Sample</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private = 1</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
</tr>
<tr>
<td>Government = 1</td>
<td>0.23</td>
<td>0.23</td>
<td>0.23</td>
</tr>
<tr>
<td>Public Enterprise = 1</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Allowances:

<table>
<thead>
<tr>
<th>Allowance</th>
<th>Full Sample</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car = 1</td>
<td>0.03</td>
<td>0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Entertainment = 1</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Housing = 1</td>
<td>0.14</td>
<td>0.15</td>
<td>0.12</td>
</tr>
<tr>
<td>Laundry = 1</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
</tr>
<tr>
<td>Meals = 1</td>
<td>0.13</td>
<td>0.12</td>
<td>0.15</td>
</tr>
<tr>
<td>Traveling = 1</td>
<td>0.04</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>Uniform = 1</td>
<td>0.26</td>
<td>0.24</td>
<td>0.29</td>
</tr>
<tr>
<td>Utilities = 1</td>
<td>0.03</td>
<td>0.02</td>
<td>0.03</td>
</tr>
</tbody>
</table>

III. RESULTS

Earnings Equation Estimates

Table 3 contains the OLS parameter estimates for the earnings equations; Columns 1 and 2 present the estimates for men and women when salary is the dependent variable, and Columns 3 and 4 present the estimates for men and women when total compensation (salary plus value...
of allowances) is used as the dependent variable. In addition to the regressors listed in the table, the labor market sector dummy variables were interacted with age and firm size, and the occupation dummies were interacted with firm size. The coefficients on these interaction terms were significantly different from zero (for the most part), and are excluded from the table to save space.\textsuperscript{13} The intercept corresponds to full-time unskilled laborers employed in the private sector, neither paid on a monthly basis nor receiving a super-annuated salary.\textsuperscript{14}

In general, the parameter estimates in all four equations are highly significant, and the fit (measured by the adjusted R squared) is very good. Both the salary and compensation equations exhibit the typical concave age/earnings profile (the coefficient on age is positive and the coefficient on age squared is negative). For both males and females, a worker who is older, employed in a larger firm, not an unskilled laborer, not employed in the private sector, employed full-time, paid monthly (as opposed to more frequently), and receiving a super-annuated (contributions to retirement) salary can expect to receive both a higher salary and higher total compensation. Chi-squared test statistics indicate that the parameter coefficients from the male and female pairs of regressions are significantly different from one another at the 1-percent level.

In the absence of education as an explanatory variable, age and the occupational dummies are the most likely candidates to pick up the effect of education on earnings. For example, since age and education are likely to be positively correlated, the coefficient on age (in the absence of an education control) will potentially be biased upward. The coefficients on the occupational dummies will be similarly biased. The presence of such a large (relative to other earnings

\textsuperscript{13}Parameter estimates for the interaction terms are available from the authors upon request.

\textsuperscript{14}If an employee receives a super-annuated salary, his or her employer is making contributions to a retirement fund for that individual.
studies) coefficient of determination, however, suggests that even without education we are still able to explain 50 to 60 percent of the variation in earnings.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Ordinary Least Squares Earnings Equation Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable= Annual Salary($S$) Annual Total Comp.($S$)</strong></td>
<td><strong>Males</strong> <strong>Females</strong> <strong>Males</strong> <strong>Females</strong></td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td><strong>Males</strong></td>
</tr>
<tr>
<td>Intercept</td>
<td>7.3139⁺</td>
</tr>
<tr>
<td>(0.1185)</td>
<td>(0.1346)</td>
</tr>
<tr>
<td>Age</td>
<td>0.0765⁺</td>
</tr>
<tr>
<td>(0.0060)</td>
<td>(0.0070)</td>
</tr>
<tr>
<td>Age²</td>
<td>-0.0008⁻</td>
</tr>
<tr>
<td>(0.0001)</td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Firm Size</td>
<td>0.0008⁺</td>
</tr>
<tr>
<td>(0.0002)</td>
<td>(0.0002)</td>
</tr>
<tr>
<td>(Firm Size)²</td>
<td>-6E⁻⁷⁺</td>
</tr>
<tr>
<td>(3E⁻⁵)</td>
<td>(2E⁻⁵)</td>
</tr>
<tr>
<td><strong>Occupation Dummies:</strong></td>
<td></td>
</tr>
<tr>
<td>Service = 1</td>
<td>0.0291</td>
</tr>
<tr>
<td>(0.0459)</td>
<td>(0.0469)</td>
</tr>
<tr>
<td>Skilled Laborer = 1</td>
<td>0.0651</td>
</tr>
<tr>
<td>(0.1373)</td>
<td>(0.1676)</td>
</tr>
<tr>
<td>Professional = 1</td>
<td>0.7675⁺</td>
</tr>
<tr>
<td>(0.0565)</td>
<td>(0.0680)</td>
</tr>
<tr>
<td>Agriculture = 1</td>
<td>1.0521⁺</td>
</tr>
<tr>
<td>(0.4310)</td>
<td>(0.2006)</td>
</tr>
<tr>
<td>Support = 1</td>
<td>0.1779</td>
</tr>
<tr>
<td>(0.0410)</td>
<td>(0.0409)</td>
</tr>
<tr>
<td><strong>Sector Dummies:</strong></td>
<td></td>
</tr>
<tr>
<td>Government = 1</td>
<td>1.5093⁺</td>
</tr>
<tr>
<td>(0.2550)</td>
<td>(0.3241)</td>
</tr>
<tr>
<td>Public Enterprise = 1</td>
<td>1.6927⁺</td>
</tr>
<tr>
<td>(0.5889)</td>
<td>(0.7210)</td>
</tr>
<tr>
<td>Part-time = 1</td>
<td>-0.3368⁻</td>
</tr>
<tr>
<td>(0.1487)</td>
<td>(0.1524)</td>
</tr>
<tr>
<td>Paid Monthly = 1</td>
<td>0.4409⁺</td>
</tr>
<tr>
<td>(0.0315)</td>
<td>(0.0283)</td>
</tr>
<tr>
<td>Super-Annuation = 1</td>
<td>0.3139⁺</td>
</tr>
<tr>
<td>(0.2681)</td>
<td>(0.0279)</td>
</tr>
<tr>
<td>F-statistic</td>
<td>95.28⁺</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.5286</td>
</tr>
</tbody>
</table>

Notes: Standard errors are in parentheses. * = significance at the 1% level, and + = significance at the 5% level. Estimations also included certain interaction terms detailed in the discussion of Table 3 in the text.
The profiles in Figure 1 illustrate and contrast the compensation experiences of men and women in support occupations in the private and government sectors at varying ages (labor market experience). The private sector profiles exhibit the usual concave shape, with women earning less than men at every age, and the disparity becoming slightly greater with age. Both men and women in the private sector earn more than women in the government at all ages. Men employed in the government, however, start out earning more than men and women in the private sector but their earnings are quickly overtaken (at age 22 by private sector males and at age 26 by private sector females) because of the flat nature of their profile. In addition, women in the government earn considerably less than men in the government at every age. The gap becomes even wider for older workers. Although this figure corresponds only to those in support occupations, it gives some detailed insight as to exactly what the differential looks like for workers in these occupations; the astounding differential in pay between men and women in the government is what apparently drives the overall differential observed in the support occupations.

Figure 2 provides profiles depicting the compensation experiences of men and women in support occupations in the private and government sectors at varying firm sizes. Again, we see the typical concave earnings profile for men and women in the private sector (earnings increase at a decreasing rate as firm size increases). In addition, the compensation differential between men and women in the private sector is greatest in the middle-sized firms (where we observe most women employed). Men and women employed in the government earn less than those in the private sector at all but the very smallest "firm" size. The total compensation

---

15 The support occupation was chosen for illustrative purposes because it is the largest occupational group.

16 Firm size in the government can be regarded as department size.
of women in government jobs exhibits a decline over size, whereas the earnings of men increase at an increasing rate as firm size increases. This last phenomenon is puzzling.

FIGURE 1
Log Annual Total Compensation for Support Workers, by Age

Note: Age profiles corresponding to support workers by gender and employment sector are predicted for the full-time worker at the average-sized firm (1048.27), not receiving a monthly or super-annuated salary.

FIGURE 2
Log Annual Total Compensation for Support Workers, by Firm Size

Note: Firm size profiles corresponding to support workers by gender and employment sector are predicted for the full-time worker of average age (36.08), not receiving a monthly or super-annuated salary.
Figures 1 and 2 illustrate that even within one occupational category (support workers), the compensation experiences of men and women and the disparities in experiences are complicated. This observation basically reaffirms the necessity of controlling for as many factors as possible when analyzing compensation differentials. Based on the parameter estimates in Table 3, Table 4 presents the expected salaries and total compensation for males and females.

Females can expect to earn a salary that is 81 percent the size of males', and have a total compensation package that is also 81 percent the size of males'. Taking allowances into account doesn’t alter the measured differential.

TABLE 4
Expected Salary and Total Compensation

<table>
<thead>
<tr>
<th>Annual Earnings Category</th>
<th>Females</th>
<th>Males</th>
<th>Female/Male Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Salary</td>
<td>J$14,057.83</td>
<td>J$17,425.08</td>
<td>81%</td>
</tr>
<tr>
<td>Expected Total Compensation</td>
<td>J$16,447.04</td>
<td>J$20,390.37</td>
<td>81%</td>
</tr>
</tbody>
</table>

Table 5 breaks down the predicted (log) earnings differentials into the portion explained by differences in endowments that men and women bring to the labor market (or are associated with the types of jobs they hold), and a portion that remains unexplained. This decomposition is performed according to Equation (2). 94 percent (95 percent) of the predicted difference in salary (total compensation) cannot be explained by differences in individual characteristics.\(^7\) It is also of interest to note, by breaking down the differential into the contributions of each variable, that a substantial part of the differential is attributable to the combination of women

---

\(^7\)Scott (1991) also finds a sizable unexplained portion in her wage decomposition but reports a negative endowment effect, meaning that women's characteristics included in her analysis (experience, education, and hours only) work to reduce the observed earnings differential.
being employed in smaller firms, on average, and receiving smaller rewards as firm size increases.\textsuperscript{18}

\begin{table}
\centering
\caption{Decomposition of Earnings Differentials}
\begin{tabular}{llll}
\hline
Predicted & Total Predicted & Portion of Difference Explained by & Portion of Difference Remaining Unexplained \\
Earnings & Difference & Differences in Individual Characteristics & \hspace{1cm} (\% of total) & \hspace{1cm} (\% of total) \\
Category & (in logs) & \hspace{1cm} \% of total) & \hspace{1cm} \% of total) \\
\hline
Salary & 0.2206 & 0.0128 \ (6\%) & 0.2078 \ (94\%) \\
Total Compensation & 0.2175 & 0.0112 \ (5\%) & 0.2064 \ (95\%) \\
\hline
\end{tabular}
\end{table}

The most important variable excluded from this analysis is probably education (which, in addition to experience, proxied by age, is considered an important measure of human capital). The analysis by Scott (1991) indicates that women in Jamaica have slightly more education than men and that (unlike the case in the United States) women experience greater returns to their educational attainment than men. Higher educational attainment by women, along with an expected positive coefficient on that variable, would reduce the portion of the earnings differential attributable to individual characteristics. In addition, if women experience greater returns to their educational attainment, the amount of the differential left unexplained would also decrease. Consequently, since both the absolute size of the portion explained by differences in individual characteristics and the absolute size of the unexplained portion are likely to be lower when education enters as a regressor, the total predicted difference reported in Table 5 should be considered an upper-bound for the earnings differentials between men and women in Jamaica.

\textsuperscript{18}A table containing the contribution of each variable to the wage and total compensation differentials is available from the authors upon request.
This means that the earnings of women in Jamaica are much closer to those of men than has previously been reported (and perhaps even closer than reported here).

**Probit Estimates of Allowances**

Table 6 contains the probit estimates for eight allowances. The last row in Table 6 reports the partial derivative (and associated standard error) of the probability of receiving the allowance in that column with respect to the female dummy. In other words, that partial derivative tells us how being female affects the probability of receiving that allowance in that column. The receipt of many allowances is highly correlated with occupation, so the occupational dummies were excluded. Consequently, the female effect may be capturing some of the representation of females in the different occupations. The next section addresses this issue.

In general, the older a worker is, the more likely he or she is to receive any of the allowances, except laundry and meals; the larger the firm, the more likely is the worker to receive any of the allowances, except entertainment and housing; government workers are more likely than private sector workers to receive entertainment, housing, travel, and uniform allowances, but less likely than private sector workers to receive car, laundry, meal, and utility allowances; public enterprise workers are less likely than private sector workers to receive each allowance, except housing, laundry, and meals; and if a worker receives a super-annuated salary (one for which pension contributions are made by the employer) he or she is more likely to receive each of the allowances.

Women are less likely to receive only three of the eight allowances examined. These are the car, housing, and travel allowances. In addition, women are no more and no less likely to
receive entertainment or laundry allowances. In fact, women are more likely to receive meal, uniform, and utility allowances. Consequently, it does not appear as though a differential incidence of allowances contributes to the measured compensation differentials between men and women.

<table>
<thead>
<tr>
<th>TABLE 6</th>
<th>Probit Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable = 1 if person received allowance in the respective column.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Car</th>
<th>Entertain-</th>
<th>Housing</th>
<th>Laundry</th>
<th>Meals</th>
<th>Travel</th>
<th>Uniform</th>
<th>Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.567*</td>
<td>-.568*</td>
<td>-.302*</td>
<td>-.6074*</td>
<td>-.114*</td>
<td>-2.551*</td>
<td>-2.09*</td>
<td>-3.99*</td>
</tr>
<tr>
<td>(Age)</td>
<td>(.858)</td>
<td>(.1124)</td>
<td>(.0398)</td>
<td>(.0288)</td>
<td>(.0347)</td>
<td>(.0477)</td>
<td>(.0310)</td>
<td>(.0665)</td>
</tr>
<tr>
<td>Age</td>
<td>.1353*</td>
<td>.0864*</td>
<td>.0555*</td>
<td>-.0148*</td>
<td>-.0081*</td>
<td>-.0309*</td>
<td>.0442*</td>
<td>.0701*</td>
</tr>
<tr>
<td>Age^2</td>
<td>(.0039)</td>
<td>(.0048)</td>
<td>(.0020)</td>
<td>(.0015)</td>
<td>(.0019)</td>
<td>(.0024)</td>
<td>(.0016)</td>
<td>(.0032)</td>
</tr>
<tr>
<td>Firm Size</td>
<td>-.0012*</td>
<td>-.0006*</td>
<td>-.0006*</td>
<td>1E^5</td>
<td>-.3E^5</td>
<td>-.0003*</td>
<td>-.0006*</td>
<td>-.0007*</td>
</tr>
<tr>
<td>(Firm Size)^2</td>
<td>(.4E^5)</td>
<td>(.3E^5)</td>
<td>(.2E^5)</td>
<td>(.2E^5)</td>
<td>(.2E^5)</td>
<td>(.3E^5)</td>
<td>(.3E^5)</td>
<td>(.4E^5)</td>
</tr>
<tr>
<td>Sector Dummies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gov’n = 1</td>
<td>-.8970*</td>
<td>1.088*</td>
<td>.3215*</td>
<td>-.1705*</td>
<td>-.2121*</td>
<td>.0386*</td>
<td>1.1311*</td>
<td>-.3329*</td>
</tr>
<tr>
<td>Pub.</td>
<td>(.1323)</td>
<td>(.0222)</td>
<td>(.0128)</td>
<td>(.0186)</td>
<td>(.0285)</td>
<td>(.0191)</td>
<td>(.0112)</td>
<td>(.0255)</td>
</tr>
<tr>
<td>Ent. = 1</td>
<td>-.0403</td>
<td>.1136</td>
<td>.0153</td>
<td>.0142</td>
<td>.0150</td>
<td>.0223</td>
<td>.0202</td>
<td>.0535</td>
</tr>
<tr>
<td>Part-time = 1</td>
<td>.3262*</td>
<td>-.1024*</td>
<td>.8170*</td>
<td>.7529*</td>
<td>.1290*</td>
<td>-.0197</td>
<td>-.6660*</td>
<td>-.9162*</td>
</tr>
<tr>
<td>Paid Monthly = 1</td>
<td>(.1761)</td>
<td>1.078*</td>
<td>.9699*</td>
<td>-.1516*</td>
<td>-.3458*</td>
<td>-.0896*</td>
<td>-.3293*</td>
<td>-.2461*</td>
</tr>
<tr>
<td>Super-Ann. = 1</td>
<td>.7091*</td>
<td>(.0271)</td>
<td>.0083</td>
<td>.0073</td>
<td>.0087</td>
<td>.0108</td>
<td>.0075</td>
<td>.0134</td>
</tr>
<tr>
<td>Female = 1</td>
<td>(.0141)</td>
<td>.2967*</td>
<td>.7323*</td>
<td>1.0315*</td>
<td>.7657*</td>
<td>.4724*</td>
<td>.7300*</td>
<td>.8517*</td>
</tr>
<tr>
<td>†/Female = 1</td>
<td>-.2948*</td>
<td>(.0184)</td>
<td>.0081</td>
<td>.0064</td>
<td>.0074*</td>
<td>.0103*</td>
<td>.0066*</td>
<td>.0127*</td>
</tr>
<tr>
<td>% of Sample Receiving Allowance</td>
<td>3%</td>
<td>1%</td>
<td>14%</td>
<td>26%</td>
<td>13%</td>
<td>4%</td>
<td>26%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Notes: Standard errors are in parentheses. *⇒ significance at the 1% level, +⇒ significance at the 5% level, and *⇒ significance at the 10% level.

19For example, being female increases a worker’s probability of receiving a meal allowance by two percentage points.
Duncan Index

The value of the Duncan index is 0.092. This means that only 9 percent of men (or women) would have to change occupations for the distribution of men and women across occupations to be identical.\textsuperscript{20} This suggests that controlling for occupation in the earnings equations (at the degree of occupational aggregation in this data) does not mask an important source of earnings differentials between men and women, because men and women are nearly identically distributed across occupations.

Although the Duncan index is the accepted measure of occupational segregation, it does not account for the possibility that the degree of representation of women in each of the occupations may vary. For example, it may be the case that 2 percent of all women employed have a farming occupation, but that 34 percent of all those employed in farming are women. Women may be distributed equally across occupations (as measured by the Duncan Index) but have different degrees of representation within occupations.\textsuperscript{21} Table 7 lists each of the occupational categories, along with the degree of representation of women in each occupation, the average level of compensation within each occupation, and the estimated female/male compensation differential within each occupation.\textsuperscript{22}

Unlike what one observes in the United States, the average level of compensation in Jamaica is not closely associated with the percentage of women in that occupation (the

\textsuperscript{20}It is well known that the magnitude of the index is affected by the level of aggregation of occupations; the greater the aggregation, the lower will be the index (all else equal) (Strober, forthcoming). As a matter of comparison, the Duncan index calculated for the United States in 1988 at the level of occupational aggregation represented in the Jamaican data has a value of .33, indicating that even at the level of aggregation in the Jamaican data the Duncan index reveals a labor market that is significantly less segregated than that found in the U.S.

\textsuperscript{21}Strober (forthcoming) refers to this issue of representation as vertical segregation.

\textsuperscript{22}The compensation differential in Table 7 was calculated using expected compensation figures from separate earnings equation estimates for each occupation.
correlation between the numbers in Column 1 and Column 2 is -0.14). However, Table 7 indicates that occupations with a higher percentage of women tend to have smaller compensation differentials (the correlation between the numbers in Column 1 and Column 3 is 0.76). It may be that as the representation of women increases in an occupation it becomes harder to compensate women differentially.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Percent Female</th>
<th>Average Compensation</th>
<th>Compensation Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Specialty</td>
<td>29.42</td>
<td>J$52,691.35</td>
<td>0.55</td>
</tr>
<tr>
<td>Skilled Laborer</td>
<td>30.21</td>
<td>J$15,343.46</td>
<td>0.51</td>
</tr>
<tr>
<td>Unskilled Laborer</td>
<td>34.05</td>
<td>J$9,522.22</td>
<td>0.69</td>
</tr>
<tr>
<td>Agriculture</td>
<td>34.22</td>
<td>J$25,423.40</td>
<td>0.96</td>
</tr>
<tr>
<td>Service</td>
<td>38.32</td>
<td>J$16,642.34</td>
<td>0.98</td>
</tr>
<tr>
<td>Support</td>
<td>45.79</td>
<td>J$30,198.03</td>
<td>0.94</td>
</tr>
</tbody>
</table>

IV. CONCLUDING REMARKS

This paper presents and examines evidence on compensation differentials by gender in Jamaica. The data set used was collected directly from firm tax and payroll records under the audit authority of the Government of Jamaica. Therefore, it is expected to be more accurate and extensive regarding the earnings package and job characteristics for formal sector employees in Jamaica than data obtained from labor force surveys.

An earlier study of Jamaica has suggested that women earn only 57 cents for every dollar of wage or salary earned by a man. The earnings equations estimated here suggest much less inequality, however, with women earning 81 cents for every dollar earned by men. The Oaxaca/
Blinder decomposition of the earnings differential suggests that nearly all of the differential -- 94 percent for the salary and 95 percent for total compensation -- is unexplained by differences in individual characteristics. Generally, the unexplained portion of an earnings decomposition is characterized as being the result of discriminatory treatment in the labor market.

A probit analysis was utilized to determine if women are more or less likely to receive any of the typical allowances (benefits). A differential incidence could contribute to the earnings differential for total compensation. The analysis indicated that while women were more likely to receive some allowances and men others, generally the differential incidences of the allowances were not substantial enough to offer much explanation for the total compensation differential. Although the incidence of allowances received by women and men does not differ substantially, there is evidence that the dollar value of those allowances does differ slightly.

The Duncan index was calculated to determine whether occupational segregation contributes to the earnings differentials. The low value of the Duncan index indicates that, at least for the aggregate level observed in these data, occupational segregation is quite low. In addition, unlike the case in the U.S., the mean compensation levels by occupation are not closely associated with the percentage of women in the occupation. However, occupations with a higher percentage of women did tend to treat women and men more equitably than those with a lower percentage of women (as indicated by the higher female/male compensation ratios in the high-percentage-of-women occupations).

Although compensation discrepancies between men and women in the formal labor market in Jamaica are relatively small, only about 4 percent of the total difference can be explained by the differences in the individual job market characteristics of men and women.
This indicates that the Jamaican labor market effectively treats men and women differently (for reason other than those we can control for). This differential treatment occurs through the differential valuation of individual and occupation characteristics between men and women in the determination of total compensation, rather than through the differential awarding of allowances or through the differential distribution of men and women across occupational groups. However, the finding that differences in total compensation between men and women are less in those occupations where women are better represented suggests that the presence of women makes it more difficult to treat them differently from men.
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