

# Double Jeopardy? The Interaction of Gender and Race on Earnings in the United States

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*There are sizeable earnings differentials by gender and race in the U.S. labor market, with women earning less than men and most racial/ethnic minority groups earning less than whites. It has been proposed in the previous literature that the effects of gender and race on earnings are additive, so that minority women suffer the full disadvantage of each status. We test this proposition for a broad range of minority groups in the United States. We find that women of all minority groups suffer a smaller gender penalty than white women (relative to same-race men). Exploring the potential role of racial variation in gender role specialization in producing such differentials, we find some empirical evidence suggesting that white families specialize more than families of most other races.*

A large body of literature in both sociology and economics has been devoted to documenting the earnings differentials by gender and by race/ethnicity in the United States. In general, such work has found that 1.) women earn less than men, 2.) most racial/ethnic minority groups earn less than whites, and 3.) such differentials cannot be fully attributed to human capital factors (Corcoran and Duncan 1979). Despite the significance of this topic and the enormous attention given to gender inequality and racial inequality in the past social science literature, our empirical knowledge of the differences in labor force outcomes by gender *and* race is surprisingly poor. This paper remedies this omission by providing a systematic, empirical investigation of earnings differentials by race *and* gender across the full spectrum of racial/ethnic groups in the United States.

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## Double Jeopardy?

A substantial body of literature argues for “intersectionality” or the recognition that group identities such as race and gender cannot be understood in isolation from one another. Intersectional perspectives argue that the meaning of gender differs across racial groups and the meaning of race differs for men and women. Intersectionality has made valuable contributions towards understanding the lives of minority women, who do not necessarily experience race in the same way as minority men or gender in the same way as white women (Browne and Misra 2003; McCall 2005). Yet few empirical studies on earnings inequality by race and gender have adopted this perspective (Brewer, Conrad and King 2002. For an overview of these studies, see Browne and Misra 2003).

Most existing studies of earnings inequality focus on either racial inequality among men or gender inequality among whites, often overlooking minority women (Malveaux 1986). Work that does address the earnings of minority women often still fails to consider race and gender jointly. A common research design is to compare minority women either to minority men of the same group in the gender-centered approach (Blau and Beller 1988) or to white female workers in the race/ethnicity-centered approach (Bound and Dresser 1999; Corcoran 1999). While the two approaches avoid confounding race and gender, they preclude direct comparisons between any two groups that differ from one another in both race and gender. To overcome this limitation, two alternative practices have emerged in the literature. The first is to compare all gender-race combinations simultaneously to one reference group, usually white men (Corcoran and Duncan 1979; Farley 1984); the second is to understand gender effects by race and then, sequentially, to understand race effects by gender (Kilbourne, England and Beron 1994).

These two alternative practices have an advantage over either the gender-centered approach or the race/ethnicity-centered approach in avoiding a strong assumption: additivity, which assumes that minority women incur two earnings disadvantages additively, one associated with being female and another associated with being nonwhite. Thus, there would be no intersection of race and gender, and the total disadvantage faced by minority women relative to white men would be simply the sum of the gender penalty and the race penalty. Deborah King (1988:47) aptly referred to the additivity assumption as “double jeopardy.” While few researchers explicitly put forth this assumption, it is invoked implicitly whenever researchers draw inferences about “the race gap” or “the gender gap” from studies that focus on only one or the other.

There is already a great deal of evidence that calls into question the double jeopardy characterization. The additivity assumption is problematic

because it ignores the ways in which minority women's experiences are unique, comparable neither to those of white women nor to those of men of the same race/ethnicity (King 1988). While minority women of most ethnicities are clearly disadvantaged, their earnings are often still higher than one might predict based on their race and gender alone. Many studies have shown that the earnings of black women are higher relative to those of white women than the earnings of black men relative to those of white men (Blau and Beller 1988, 1992; Cancio, Evans and Maume 1996; Carlson and Swartz 1988; King 1988; Marini 1989). While few studies have considered other races and ethnicities (Browne and Misra 2003), several have uncovered a similar pattern among various Hispanic and/or Asian ethnic groups in relation to whites (Carlson and Swartz 1988; England, Christopher and Reid 1999; Xie and Goyette 2004).

Despite the suggestiveness of these findings, most previous research on race and gender earnings gaps has not attempted to address the additivity assumption directly. Even when their empirical results show clear deviations from the double jeopardy characterization, researchers frequently pay little attention to the underlying reasons for, and sometimes even fail to comment on, the apparent interactions between race and gender (e.g., Blau and Beller 1992; Darity, Guilkey and Winfrey 1996; Padavic and Reskin 2002). To be sure, several studies have explored race/gender interactions in the earnings determination process. For example, studies have focused on variation by both race and gender in the rewards attached to human capital and job characteristics (England, Christopher and Reid 1999; Kilbourne, England and Beron 1993; McGuire and Reskin 1993), the effects of local economic structure (McCall 2001), and earnings trends over time (Blau and Beller 1992; Cotter, Hermsen and Vanneman 1999). For example, McGuire and Reskin (1993) consider differences by gender and race in the ability to translate job authority and human capital into earnings. They find that black women are the most disadvantaged in both respects, but this disadvantage is less than the sum of the disadvantages faced by white women and black men (relative to white men). While contributing valuable evidence about intersectionality in the earnings determination process, none of these earlier studies has made racial variation in the gender earnings gap its explicit focus.

Hence, the extent of racial variation in the gender earnings gap remains to be fully documented and understood. In numerous studies in sociology and economics, the interaction effects between race and gender have often been apparent, but they have been treated more as empirical nuances than as subjects to investigate. This study represents a systematic effort to study racial patterns in the gender earnings gap and draw meaningful theoretical implications from such patterns. To this end, we make racial variation in the gender earnings gap the explicit focus of our study.

## Theoretical Issues

We know that differences in productivity-related factors – such as education and work experience – account for some of the observed differences in earnings by race/ethnicity and gender. While disagreement lingers concerning the interpretation of the unexplained portion of the observed group differences, a long tradition treats such residuals from regression analysis as measures of discrimination (Cole 1979). Past research has shown that, net of human capital factors, gender differences in earnings are considerably larger than racial differences between whites and blacks (Durden and Gaynor 1998; Farley 1984). Does this mean that racial discrimination is smaller than gender discrimination? An answer of “yes” would contradict common wisdom about structural inequalities in the United States, where racial barriers to some highly valued socioeconomic resources (such as quality education) appear much greater than gender barriers.

To answer this question, we need to conceptualize race and gender differentials not as two indicators of a single underlying phenomenon, but rather as two separate dimensions of inequality, each with unique structural determinants. For example, although black-white relations have epitomized racial relations in the United States due to their historical prominence, there are also many other racial/ethnic groups with varying historical experiences. The number of racial/ethnic groups is increasing and the boundaries between some are becoming blurred, due in part to the increasing prominence of multiracial groups. Gender, by contrast, is fixed at two categories, and its distribution is relatively unchanging. Although there is little difference in the distribution of gender across racial/ethnic categories, it is possible that the social *meaning* attached to gender may vary by race/ethnicity.

There is something else unique to gender. Men and women, to a much greater extent than individuals of different races, are frequently part of the same families – through either marriage, cohabitation, having children together or some combination of these. The family is fundamental to the structure of gender relations. As has long been recognized in both economics and sociology, an adequate explanation of gender inequality in the labor force therefore requires the researcher to go beyond discrimination and productivity-related attributes (i.e., human capital) and to consider the role of the family (Becker 1973, 1974, 1991; Mincer and Polachek 1974; many others). The family must be considered in studies of gender inequality for several reasons. First, because resources are typically pooled across family members, gender inequality in earnings is not necessarily reflected in inequality in economic well-being among married or cohabiting adults.<sup>1</sup> That is, an adult’s economic and social position in society is affected not only by how well he or she does in the labor market, but also by whether and to whom he or she is married or partnered. Second, the traditional

division of labor within married-couple families has placed responsibility for the domestic work and child care primarily on the wife (Brines 1994), generating significant barriers to success in the labor market for married women (Budig and England 2001; Goldin 1990; Noonan 2001; Waldfogel 1997). Gender roles within the family are thus intimately connected with gender inequality in the workplace.

This interplay between family factors and women's labor force outcomes is at the heart of neoclassical economic explanations for women's lower earnings. While there is a great deal of diversity in modern family structures, the neoclassical explanation primarily focuses on married-couple families with children (or on persons who anticipate one day being part of such a family). There are three key components to this explanation. First, it is assumed that economic resources are a family-level utility that is shared equally between the spouses (Becker 1973, 1974, 1991; Lundberg and Pollak 1993; Mincer and Polachek 1974). Second, it is assumed that there is an efficiency gain in having one spouse (typically the husband) specialize in market production, and the other spouse (typically the wife) specialize in domestic production. This efficiency gain is the result of the wage rate of the spouse who specializes in the market exceeding that of the other spouse. Third, due to anticipation of withdrawing from the labor force and/or working parttime during childrearing, women tend to under-invest in their human capital and receive lower returns on their work experience (Mincer and Polachek 1974). Thus, neoclassical economics provides a theoretical framework that explicitly links gender inequality at work with gender inequality at home.<sup>2</sup> Let us refer to this explanation as "role specialization theory."

The theory is silent on issues of race. However, we know that the theory, even if it is true, can only be a crude approximation of a reality that is far more complicated. The problem is that not all families meet the ideal conditions assumed by role specialization theory. First, not all women or men intend to marry or have good prospects to marry. Similarly, not all married couples have or intend to have children, and in the absence of children the advantages to gender role specialization are substantially reduced. Second, in a growing number of families wives earn more than husbands (Brines 1994; Raley et al. 2006), giving them a comparative advantage, rather than a disadvantage, in the labor market. Finally, past research has suggested that the assumption of pooled income and consumption may not be correct, even within married-couple families: at a fixed level of family income, direct expenditures on the well-being of the wife and children are larger if the wife herself has greater control over economic resources (Lundberg and Pollak 1996). Hence, the extent to which role specialization theory is applicable can vary substantially across families.

We conjecture that the applicability of role specialization theory may vary across racial/ethnic groups. We give three reasons for this conjecture. The

first is that certain family-related attitudes and practices are cultural and as such are maintained more in some racial/ethnic groups than in others (Blee and Tickamyer 1995; Kane 2000; McLoyd et al. 2000; Ransford and Miller 1983). For example, researchers have found that African Americans and Mexican Americans both express greater support than whites for the idea that married women should contribute financially to the family (Blee and Tickamyer 1995; Taylor, Tucker, and Mitchell-Kernan 1999) – despite the fact that this and other research has repeatedly found that African Americans and some groups of Hispanics tend to express more traditional (that is, patriarchal) gender role attitudes than whites with respect to other issues, such as women’s role in politics or their responsibility for home and family (Blee and Tickamyer 1995; Bolzendahl and Myers 2004; McLoyd et al. 2000; Ransford and Miller 1983; Taylor, Tucker and Mitchell-Kernan 1999). On the other hand, despite such attitudinal differences, research has also shown that black husbands do a greater share of housework than white husbands do (Kamo and Cohen 1998; John and Shelton 1997). Thus, the relationship between race and gender role attitudes and practices is probably quite complex. Such differences are likely to affect men’s and women’s choices about work and family, including the extent to which they specialize according to traditional gender norms.

The second reason, which is widely recognized in the literature, is the more difficult economic circumstances facing many minority groups. The higher unemployment rates and lower earnings among many groups of minority men undermine the applicability of role specialization theory. For example, lower rates of marriage in some minority communities, especially impoverished African American communities, are partially attributable to the lack of “marriageable” men with steady, well-paying jobs (Lichter et al. 1992; Wilson 1996). Even among married couples in economically disadvantaged minority groups, role specialization may not be an option if the husband does not have sufficient earnings to be the primary, if not the sole, breadwinner for the family (Padavic and Reskin 2002). Furthermore, higher rates of marital instability in economically disadvantaged minority groups (Ruggles 1997) would make specialization in domestic production, and the degree of economic dependency it entails, a very risky strategy for a woman (Edin 2005; Smock, Manning and Gupta 1999). There are thus several reasons to suspect that role specialization theory may apply better to middle-class whites than to economically disadvantaged minority groups.

Third, it has been well documented that most Asian American groups actually attain higher average economic status than whites (Xie and Goyette 2004). However, most Asian Americans are recent immigrants or children of immigrants, and as newcomers to the United States, attaining economic security is a high priority. Thus, Asian Americans’ family-level strategies for economic adaptation may render role specialization less

applicable to Asian Americans than to whites.

This study examines gender inequality in earnings across all major racial and ethnic minority groups in the United States, while previous studies have examined only one or two groups at a time. From the previous literature, one expects a positive interaction between race and gender for African American women (and a few indications of a similar effect for certain groups of Asian American and Hispanic women), but it is unknown whether this pattern may hold for minority groups more generally. A systematic metric measures the extent to which the effects of race and gender deviate from the assumption of additivity, which facilitates comparisons between different racial groups. We also explore whether racial variation in the applicability of role specialization theory contributes to the race/gender interaction in earnings – first by looking at how the race/gender interaction varies across marital/parental status groups and then by gauging the extent to which gender role specialization varies by race.

### Methodology

McCall (2005) presents a detailed discussion of the methodological issues confronting researchers who study intersectionality. This study’s methodology falls within the domain that she terms “intercategorical.” While much work on intersectionality criticizes or even rejects categories such as race and gender, arguing that inequality is inseparable from the process by which social categories are generated and maintained (McCall 2005), the intercategorical approach provisionally accepts such categories in order to study empirical patterns across groups. Hence, while fully realizing limitations of such categories as race and gender, we use these categories in this research to better understand patterns of between-group earnings inequality in the United States.

The first task is to determine empirically whether there is indeed evidence of intersectionality between race and gender in the labor market. If there is no interaction between race/ethnicity and gender, then the earnings ratio of minority women relative to white men can be determined as an additive function of their race/ethnicity-based and gender-based disadvantages. In this case, the earnings ratio of minority women could be inferred from two pieces of information: The female-to-male earnings ratio among whites, and the minority-to-white earnings ratio among males of the same group.

#### Earnings Ratio Relative to White Men:

|          | Men | Women |
|----------|-----|-------|
| White    | 1.0 | .8    |
| Minority | .9  | X     |

Here, in the absence of an interaction, minority women will have an earnings ratio of .72. That is, relative to minority men they suffer a penalty of 20 percent, the same as the penalty suffered by white women relative to white men. Relative to white women, minority women suffer a penalty of 10 percent, the same as the penalty of minority men relative to white men. This can be calculated as the product of the earnings ratios of white women and minority men,  $.8 \times .9$ .

The following discussion uses the natural logarithm transformation of earnings in order to permit discussion of the relationship between sex and race in log-additive, rather than multiplicative, terms. The relationship can be stated with reference to the following table. Let  $k$  denote the  $k$ th group, with  $k = 1, \dots, K$ .

Log of earnings:

|                     | Men      | Women    |
|---------------------|----------|----------|
| White ( $k = 1$ )   | $Y_{11}$ | $Y_{12}$ |
| Black ( $k = 2$ )   | $Y_{21}$ | $Y_{22}$ |
| Mexican ( $k = 3$ ) | $Y_{31}$ | $Y_{32}$ |
| $K$                 | $Y_{K1}$ | $Y_{K2}$ |

In the absence of an interaction, the gender effect is defined to be the same across racial/ethnic groups:

$$(1) Y_{k2} - Y_{k1} = g, \text{ with } k = 1, \dots, K,$$

where  $g$  is a constant representing the gender effect. The female-to-male ratio in earnings is the same for all race/ethnicity groups:  $\exp(g)$ .

Equivalently, we also have a race/ethnicity effect that does not vary by gender:

$$(2) Y_{k1} - Y_{k'1} = Y_{k2} - Y_{k'2}, \text{ with } k \neq k',$$

where  $k$  and  $k'$  are two different race/ethnicity groups. Now let us define the following quantity (which is actually the difference-in-difference estimator), with whites as the reference group:

$$(3) d_k = (Y_{k2} - Y_{k1}) - (Y_{12} - Y_{11})$$

The condition of no interaction means that  $d_k = 0$ , for  $k = 1 \dots K$ . This can be derived either from equation (1) or equation (2).

In this scenario, the earnings difference between whites and minority group  $k$  is the same for men and women, and the earnings difference

between men and women is the same for whites and for minority group  $k$ . This indicates that there is an additive effect of being minority and being female – minority women suffer the full disadvantage of each status. This formulation represents the “double jeopardy” characterization assumed in much of the previous literature.

If the effects of being minority and being female are not additive, there are two possible alternatives. The first is as follows:

$$(4) Y_{11} - Y_{12} > Y_{k1} - Y_{k2}$$

(or equivalently  $Y_{11} - Y_{k1} > Y_{12} - Y_{k2}$ )

Here, we have  $d_k > 0$ . If  $d_k > 0$ , there is a positive interaction between being minority and being female. This positive interaction can be interpreted to mean that there is a smaller penalty for being female among minorities, or a smaller penalty for being nonwhite among females.

Alternatively, there could be a negative interaction between being minority and being female. In this case, the following equations would hold:

$$(5) Y_{11} - Y_{12} < Y_{k1} - Y_{k2}$$

(or equivalently  $Y_{11} - Y_{k1} < Y_{12} - Y_{k2}$ )

In this case,  $d_k < 0$ . This negative interaction can be interpreted as meaning either that being nonwhite carries a greater penalty for females than males, or being female is a greater disadvantage among minorities than among whites.

The relationship between race/ethnicity and gender in earnings determination is examined with the following methodology: For each racial or ethnic group  $k$ , we compute the quantity  $d_k$ , which represents the difference between the minority gender earnings gap and that of whites. Previous literature suggests that  $d_k$  will be positive for some racial groups, but it is not known how generally this is true. Although there is no theoretical reason to believe that  $d_k$  may be negative for any group, such a relationship is possible and cannot be ruled out a priori. In addition to the unadjusted  $d_k$ , we compute  $d_k$  after adjusting for earnings-relevant characteristics. These include education, experience and region.

We next examine  $d_k$  across subpopulations. Role specialization theory is a theory of the family. If it is to explain racial variation in the gender earnings gap, there should be a stronger interaction between race/ethnicity and gender among the married than among the unmarried. For this reason, the sample is disaggregated by marital status and re-compute  $d_k$ . Significant differences in  $d_k$  by parental status are also tested.

Finally, this research asks whether families in different racial/ethnic groups are equally likely to practice gender role specialization along the

lines predicted by role specialization theory. While a thorough examination of this topic would be a paper in itself, this study looks for indicators as to whether racial differences in the applicability of role specialization theory would be a reasonable avenue for further exploration in future work. Role specialization theory implies that, at least for some families, couples will prefer for the wife to specialize in caring for young children if this is economically feasible. The contention that role specialization theory may not apply equally in minority families is based in part on the insight that non-economic factors, such as racial differences in gender role attitudes, divorce rates and expectations about work, may lead to lower specialization in minority families *above and beyond* racial differences in economic circumstances. We therefore measure the applicability of role specialization theory by measuring the responsiveness of wives' employment to husbands' income in families with young children (defined as 12 or younger). Across racial/ethnic groups, wives' lower response in employment to husbands' income indicates a lower preference for gender role specialization. In the statistical analysis, the log-odds of wives' employment in the past year are modeled as a function of alternative family income, which is defined by subtracting wives' earnings from total family income.<sup>3</sup> We then examine whether or not the effects of alternative family income are weaker (i.e., less negative) for racial/ethnic minority groups than for whites.

## Data

Data come from the Public Use Micro Sample of the 2000 Census. PUMS provides the only data with a large enough sample size to allow the study of smaller racial and ethnic minority groups. In order to get desirable sample sizes for each racial group, the analytical sample is comprised of the following: a 10 percent sample of mono-racial whites from the 1% PUMS, all mono-racial blacks from the 1% PUMS, and all other groups from the 5% PUMS. When appropriate, the data are weighted according to the inverse probability of being in the sample.

Race is measured with a system of 19 mutually exclusive categories. In addition to non-Hispanic whites, blacks and Native Americans, the larger Asian and Hispanic ethnic groups are treated as distinct categories. The 2000 U.S. Census data identify bi-racial or multi-racial individuals. The most common combinations of two races (Asian-white, black-white, Native American-white and black-Asian) are treated as distinct categories. Finally, individuals who report more than two races or who do not fit into any other racial category are coded as "other." Because Hispanics are treated as an ethnic rather than a racial category in the census, Hispanics can be of any race. Therefore, to achieve exclusivity, individuals reporting Hispanic

ethnicity are coded into the appropriate Hispanic category, regardless of race. Thus, all individuals in race categories other than “Mexican,” “Cuban,” “Puerto Rican” or “Other Hispanic” are non-Hispanic. Appendix A gives sample sizes of each of these racial/ethnic groups.

Because earnings determination is more complex for immigrants than for the native-born (Zeng and Xie 2004), only U.S.-born workers are examined. This restriction limits the generalizability of the findings for many of the groups studied. Because of the preponderance of immigrants in many Asian and Hispanic ethnic groups, we emphasize that our results apply only to the subsets of these populations that were born in the United States. To assure comparability of workers in the analysis, the sample is restricted to full-time, full-year workers ages 25-55. To assess the sensitivity of results to this selection of workers, we also report a secondary analysis including all workers (parttime or part-year).

### Statistical Models

OLS regression is used to estimate  $d_k$ . The log of annual earnings is the dependent variable. We first estimate a simple model that includes only race and sex as regressors, with no controls. Race is included as a series of 18 dummy variables, with whites as the omitted category. Sex is included as a dummy variable equaling 1 if female. Finally, the sex and race dummy variables are interacted. This leaves white males as the excluded category to which all other groups are compared. The coefficients on the K-1 race dummy variables give the log of the earnings ratio of men of group k to white men, while the coefficient on the sex dummy variable gives the log of the female-to-male earnings ratio for whites. The coefficients of primary interest, however, are those of the race-sex interaction terms. These coefficients are equal to the log of the ratio of observed to expected earnings for minority women, or  $d_k$ . In other words, these coefficients represent the extent to which being a member of group k has a different effect for women than for men, or alternatively, the extent to which being female has a different effect for members of group k than for whites.  $\text{Exp}(d_k)$ , which gives the ratio of observed to expected earnings for women in each group, is presented in the tables.

After computing this baseline model, a multivariate model with controls for several standard earnings-relevant characteristics is estimated. The coefficients on the sex-race interaction terms can be interpreted as estimates of  $d_k$  net of the additional control variables. This is referred to as the “adjusted”  $d_k$ . The model includes weights that adjust for racial differences in the probability of being included in the sample. Thus, the estimated parameters of the statistical controls are population average effects for native-born, full-time workers age 25-55.

The measure of the applicability of role specialization theory is computed using logit regression. For all married women with children under 12, a series of separate logit models is run for each of the 19 racial groups to estimate the group-specific effect of alternative family income on the wife's odds of employment. Wife's employment status (1 = yes) is the dependent variable, and the natural logarithm of alternative family income is the independent variable. To test the differences between whites and each minority group in this measure, data across race is pooled and another logit model estimated (again with wife's employment status as the dependent variable). This time, the independent variables are a series of 18 race dummy variables (with whites as the omitted category), alternative family income, and interactions between the race dummy variables and alternative family income. Finally, this logit model is repeated after adding the same set of controls included in the earnings analysis.

## Results

The main findings of the analysis are presented in Table 1. The racial categories are listed in order of highest to lowest earnings among men, with the exception of whites as the reference category in the first row. Columns 1 and 2 present the geometric mean earnings of each racial group for men and women, respectively. For both sexes, the highest-earning groups are Chinese, Japanese, Koreans and Indians, while the lowest-earning group is Native Americans. While only 4 out of 18 minority groups have higher average earnings than whites among men, the corresponding figure is 9 out of 18 for women. Column 3 gives the female-to-male earnings ratio within each racial group. While white women make about .7 times the earnings of white men, women's relative earnings are uniformly higher in each of the other racial groups. Columns 4 and 5 give the earnings ratio relative to whites of the same sex for minority men and women, respectively. Comparing the two columns, it is clear that minority women's relative earnings are higher than those of minority men. Column 6 gives the antilog of the quantity  $d_k$ , defined above. A positive value of  $d_k$  corresponds to  $\exp(d_k)$  being greater than 1, while a negative value corresponds to  $\exp(d_k)$  being less than 1.  $\exp(d_k)$  represents the ratio of minority women's observed to predicted earnings, where predicted earnings are based on the assumption of additivity between race and gender effects. Column 6, then, quantifies the patterns that can be identified by "eyeballing" columns 3, 4 and 5.

The results in Column 6 are striking. In every case,  $\exp(d_k)$  is greater than 1. The values of  $\exp(d_k)$  indicate that the average earnings of nonwhite women range from about 4 percent to 21 percent higher than predicted under the additivity assumption, with Native American-white bi-racial

Table 1: Earnings and Relative Earnings by Race and Sex

|                       | (1)                                     | (2)                                       | (3)                                    | (4)                                 | (5)                                   | (6)                                       | (7)   |
|-----------------------|---|---|--|-------------------------------------|---------------------------------------|---|---|
|                       | Mean Annual Earnings (Men) <sup>b</sup> | Mean Annual Earnings (Women) <sup>1</sup> | Female-Male Earnings Ratio within Race | Minority-White Earnings Ratio (Men) | Minority-White Earnings Ratio (Women) | Observed-Predicted Earnings Ratio (Women) | Observed-Predicted Earnings Ratio with Controls |
| White Only            | 40,600                                  | 28,700                                    | .71                                    | 1.00                                | 1.00                                  | 1.00                                      | 1.00  |
| Chinese               | 54,600                                  | 44,100                                    | .81                                    | 1.34                                | 1.54                                  | 1.15***                                   | 1.15***   |
| Asian Indian          | 47,700                                  | 38,300                                    | .80                                    | 1.17                                | 1.34                                  | 1.14***                                   | 1.14***   |
| Korean                | 46,300                                  | 39,700                                    | .86                                    | 1.14                                | 1.38                                  | 1.21***                                   | 1.20***   |
| Japanese              | 48,600                                  | 38,300                                    | .79                                    | 1.20                                | 1.33                                  | 1.11***                                   | 1.11***   |
| Cuban                 | 39,400                                  | 32,200                                    | .82                                    | .97                                 | 1.12                                  | 1.16***                                   | 1.12***   |
| Other Asian           | 39,500                                  | 33,400                                    | .85                                    | .97                                 | 1.17                                  | 1.20***                                   | 1.20***   |
| Asian-white           | 39,800                                  | 32,600                                    | .82                                    | .98                                 | 1.13                                  | 1.16***                                   | 1.15***   |
| Black-Asian           | 38,900                                  | 29,900                                    | .77                                    | .96                                 | 1.04                                  | 1.09                                      | 1.10  |
| Filipino              | 37,900                                  | 32,000                                    | .84                                    | .93                                 | 1.12                                  | 1.20***                                   | 1.17***   |
| Other                 | 35,100                                  | 27,700                                    | .79                                    | .86                                 | .96                                   | 1.11***                                   | 1.09***   |
| Vietnamese Only       | 35,300                                  | 27,300                                    | .77                                    | .87                                 | .95                                   | 1.09                                      | 1.08  |
| Black-white           | 34,800                                  | 27,700                                    | .80                                    | .86                                 | .97                                   | 1.13***                                   | 1.10***   |
| Native American-white | 33,300                                  | 24,500                                    | .74                                    | .82                                 | .86                                   | 1.04***                                   | 1.02*   |
| Other Hispanic        | 31,900                                  | 24,900                                    | .78                                    | .79                                 | .87                                   | 1.10***                                   | 1.08***   |
| Puerto Rican          | 32,000                                  | 26,500                                    | .83                                    | .79                                 | .92                                   | 1.17***                                   | 1.12***   |
| Mexican               | 31,600                                  | 24,700                                    | .78                                    | .78                                 | .86                                   | 1.11***                                   | 1.08***   |
| Black                 | 30,000                                  | 25,200                                    | .84                                    | .74                                 | .88                                   | 1.19***                                   | 1.14***   |
| Native American       | 29,400                                  | 23,300                                    | .79                                    | .72                                 | .81                                   | 1.12***                                   | 1.08***   |

Notes: Sample includes full-time, full-year workers between the ages of 25-55 who were born in the United States. Statistical significance refers to the significance of the race-gender interaction. Control variables are: Education, potential work experience, potential work experience squared, hours worked per week (above 35), self-employment and region.

1 Geometric mean of annual earnings.

\* p < .1    \*\* p < .05    \*\*\* p < .01

workers having the lowest value and Korean workers the highest. For 16 out of our 18 minority groups (all groups other than Black-Asians and Vietnamese),  $d_k$  is also statistically significant. This is strong evidence that the effects of race and sex on earnings are not additive. Instead, there is a positive interaction between being female and being a member of a minority group. This interaction is widespread across different ethnicities, with groups as diverse as Mexicans, Filipinos, Koreans, black-white biracials and Native Americans all showing evidence of such an effect.

We next test whether this interaction is robust in a multivariate setting. The log of annual earnings is regressed on a series of race\*sex interaction dummies, with controls for education, potential work experience (calculated as the individual's age-years of schooling-6), potential work experience squared, hours worked per week above the 35 hour full-time cutoff, urban residence, self employment and region of residence. The antilogs of the coefficients on the sex\*race interaction terms give adjusted estimates of  $d_k$ . The results of the multivariate analysis are reported in column 7. The adjustments make little difference for most Asian ethnic groups, with the exception of Filipinos, whose adjusted  $\exp(d_k)$  is 3 percentage points lower than the unadjusted  $\exp(d_k)$ . For the non-Asian racial groups, adjusting for earnings-relevant characteristics lowers  $\exp(d_k)$  by between 2 and 5 percentage points. This reduction in  $\exp(d_k)$  after the inclusion of the control variables indicates that some part of the observed interaction may be due to variation across racial groups in the gender differences in earnings-relevant characteristics. However, the inclusion of these controls does not change the general pattern we discerned in column (6): minority women's earnings are consistently higher than would be predicted under additivity.

The consistently positive pattern of  $d_k$  across all 18 minority groups is surprising. Columns 1 and 2 of Table 1 show large differences in average earnings across the racial/ethnic groups. While blacks, most Hispanic groups and Native Americans all have considerably lower earnings than whites, several Asian groups have considerably higher earnings. Nonetheless, both "disadvantaged" and "advantaged" minority groups have positive values of  $d_k$ . For groups that have lower earnings than whites, this pattern means an attenuation of the race disadvantage among women compared to that among men. However, for women in minority groups with higher earnings than whites, this means a more pronounced *advantage* among women than among men. Women of every group have lower average earnings than men. Therefore, the interpretation of the interaction effect is more straightforward when stated in terms of the variation in the gender effect across racial groups than when stated in terms of the variation in the race effect across gender: The effect of gender is always weaker among minorities than among whites. We also prefer this second interpretation because it is directly linked to our attempt to explain

Table 2: Observed-to-Predicted Earnings Ratios for Minority Women, by Marital Status

|                       | Without Controls |            |         | With Controls |            |         |
|-----------------------|------------------|------------|---------|---------------|------------|---------|
|                       | Married          | Unmarried  | All     | Married       | Unmarried  | All     |
| White Only            | 1.00             | 1.00       | 1.00    | 1.00          | 1.00       | 1.00    |
| Chinese               | 1.13***          | 1.05       | 1.15*** | 1.15***       | 1.08*** ^  | 1.15*** |
| Asian Indian          | 1.10             | 1.01       | 1.14*** | 1.14**        | 1.04       | 1.14*** |
| Korean                | 1.20**           | 1.02       | 1.21*** | 1.20**        | 1.08       | 1.20*** |
| Japanese              | 1.10***          | 1.06**     | 1.11*** | 1.09***       | 1.07***    | 1.11*** |
| Cuban                 | 1.13***          | 1.10***    | 1.16*** | 1.10***       | 1.10***    | 1.12*** |
| Other Asian           | 1.32***          | 1.03 ^^^   | 1.20*** | 1.25***       | 1.06^^     | 1.20*** |
| Asian-white           | 1.14***          | 1.06*      | 1.16*** | 1.13***       | 1.09***    | 1.15*** |
| Black-Asian           | 1.20             | .98        | 1.09    | 1.13          | .99        | 1.10    |
| Filipino              | 1.25***          | 1.01^^^    | 1.20*** | 1.20***       | 1.04^^^    | 1.17*** |
| Other                 | 1.12***          | 1.00^^^    | 1.11*** | 1.10***       | 1.02^^^    | 1.09*** |
| Vietnamese Only       | 1.02             | 1.12       | 1.09    | 1.01          | 1.09       | 1.08    |
| Black-white           | 1.17***          | .99^^^     | 1.13*** | 1.12***       | 1.00^^     | 1.10*** |
| Native American-white | 1.03*            | 1.00       | 1.04*** | 1.01          | 1.01       | 1.02*   |
| Other Hispanic        | 1.13***          | 1.01^^^    | 1.10*** | 1.08***       | 1.03***^^  | 1.08*** |
| Puerto Rican          | 1.23***          | 1.04***^^^ | 1.17*** | 1.14***       | 1.04***^^^ | 1.12*** |
| Mexican               | 1.14***          | 1.01^^^    | 1.11*** | 1.09***       | 1.02^^^    | 1.08*** |
| Black                 | 1.25***          | 1.05***^^^ | 1.19*** | 1.17***       | 1.05*** ^^ | 1.14*** |
| Native American       | 1.16***          | 1.00^^^    | 1.12*** | 1.09***       | 1.01^^^    | 1.08*** |

Notes: Sample includes full-time, full-year workers between the ages of 25-55 who were born in the United States. Control variables are: Education, potential work experience, potential work experience squared, hours worked per week (above 35), self-employment and region. The tests of the difference in coefficients between married and unmarried are from `regs_tests.log`. The actual coefficients are part of `regs.log`.

\*Race-sex interaction statistically significant at the .1 level.

\*\*Race-sex interaction statistically significant at the .05 level.

\*\*\*Race-sex interaction statistically significant at the .01 level.

^Statistically different from married at the .1 level

^^Statistically different from married at the .05 level

^^^Statistically different from married at the .01 level

the observed empirical pattern in terms of differences in the applicability of role specialization theory across racial/ethnic groups.

### Results by Marital Status

Table 2 presents results analogous to those in columns 4 and 5 of Table 1, now disaggregated by marital status. For this portion of the analysis we

originally divided the sample into four groups by both marital and parental status (married with children, married no children, etc.). Surprisingly, the results showed that children make little additional difference above and beyond marital status. Therefore, for parsimony this discussion is framed around differences by marital status only. Results by both marital and parental status are presented in Appendix B. The baseline model without covariates is discussed first. The results among married women are slightly more pronounced than those for all women.  $\text{Exp}(d_k)$  is greater than 1 for every group, and is statistically significant for 15 out of 18 minority groups. The values of  $\text{exp}(d_k)$  indicate that married women's earnings range between 2 percent and 32 percent higher than predicted under additivity. The results for unmarried women, however, are very different. In general, the values of  $\text{exp}(d_k)$  are quite close to 1, and fail to reach statistical significance for the majority of groups. Only five groups (Japanese, Cubans, Asian-whites, Puerto Ricans and blacks) have values of  $\text{exp}(d_k)$  significantly greater than 1. We also test to see if these differences in  $\text{exp}(d_k)$  between married and unmarried women are statistically significant. The difference is indeed significant for 10 out of the 18 groups. Thus, the pattern of higher-than-expected earnings we have found for minority women applies primarily to the married.

The adjusted  $\text{exp}(d_k)$  is also computed for each marital status group, controlling for the same factors as in column 7 of Table 1. The addition of the control variables changes the individual values of  $\text{exp}(d_k)$  somewhat, but it does not change the overall pattern of positive interaction for married women. For unmarried persons,  $\text{exp}(d_k)$  tends to be slightly larger after the addition of the controls, resulting in a greater number of groups with statistically significant values. Nonetheless, it is still much closer to 1 in general for unmarried women than for married women. Statistical tests of the difference between  $\text{exp}(d_k)$  for married and unmarried women indicate that the difference is indeed statistically significant for 10 groups, the same as before the addition of the controls.

### ***Results on Role Specialization***

Results on the variability in role specialization across racial/ethnic groups is shown, beginning with descriptive statistics on employment status for married women with children under 12. Table 3 presents, separately by race, the overall employment rate in column 1 and the rate of full-time, full-year employment in column 3. The second and the fourth columns show the differences in these rates between minority groups and whites. For overall employment, differences between whites and most other groups are relatively small, and they are not consistent. However, notable racial/ethnic differences emerge in the rate of full-time, full-year employment.

Table 3: Racial Differences in Employment For Married Women

|                       | Mothers with Children Under 12 |                        |   |                        |        |
|-----------------------|--------------------------------|------------------------|---|------------------------|--------|
|                       | Proportion Employed            |                        | Proportion Working Fulltime, Year-round |                        | N      |
|                       | Difference                     |                        | Difference                              |                        |        |
|                       | Proportion                     | Difference from Whites | Proportion                              | Difference from Whites |        |
| White Only            | .75                            | .00                    | .35                                     | .00                    | 13,119 |
| Chinese               | .75                            | .01                    | .39                                     | .04                    | 1,070  |
| Asian Indian          | .64                            | -.10                   | .32                                     | -.03                   | 206    |
| Korean                | .73                            | -.02                   | .36                                     | .01                    | 163    |
| Japanese              | .79                            | .05                    | .46                                     | .11                    | 1,370  |
| Cuban                 | .76                            | .02                    | .42                                     | .07                    | 1,031  |
| Other Asian           | .78                            | .03                    | .45                                     | .10                    | 294    |
| Asian-white           | .76                            | .01                    | .38                                     | .03                    | 1,058  |
| Black-Asian           | .76                            | .02                    | .46                                     | .11                    | 67     |
| Filipino              | .79                            | .04                    | .49                                     | .14                    | 909    |
| Other                 | .73                            | -.02                   | .37                                     | .02                    | 4,181  |
| Vietnamese Only       | .57                            | -.18                   | .30                                     | -.05                   | 52     |
| Black-white           | .77                            | .03                    | .37                                     | .02                    | 469    |
| Native American-white | .71                            | -.03                   | .32                                     | -.03                   | 3,308  |
| Other Hispanic        | .73                            | -.02                   | .36                                     | .01                    | 10,915 |
| Puerto Rican          | .70                            | -.05                   | .36                                     | .01                    | 8,872  |
| Mexican               | .73                            | -.02                   | .37                                     | .02                    | 26,845 |
| Black                 | .83                            | .08                    | .49                                     | .15                    | 11,265 |
| Native American       | .73                            | -.02                   | .35                                     | .00                    | 7,006  |

Among married mothers with children under 12, virtually all minority groups are equally or more likely to be employed fulltime, year round than non-Hispanic whites. The largest difference is for black mothers, who are about 15 percentage points more likely to be employed fulltime than their white counterparts. These results thus suggest greater gender role specialization among whites than among other racial/ethnic groups.

Table 4, presents results using our crude measure of the applicability of role specialization theory. The first column shows the estimated effect of logged alternative family income on wife's log-odds of employment for each racial group. As expected, for most groups the likelihood of employment for mothers with children under 12 goes down as alternative family income rises. For 9 of the 19 groups – whites, Chinese, Japanese, Cubans, Asian-whites, Filipinos, black-whites, Native American-whites and "other" Hispanics, the effect is negative and statistically significant. For both blacks and Puerto Ricans, on the other hand, alternative family income is actually positively related to the odds of wives' employment. Thus, for the majority of groups, but not all, there is evidence of gender role specialization.

Table 4: The Effect of Alternative Family Income on Wife's Odds of Working

|                       | No Controls                         |        |                        |        | With Controls          |        | N      |
|-----------------------|-------------------------------------|--------|------------------------|--------|------------------------|--------|--------|
|                       | Effect of Alternative Family Income |        | Difference from Whites |        | Difference from Whites |        |        |
|                       | (coef)                              | (se)   | (coef)                 | (se)   | (coef)                 | (se)   |        |
| White Only            | -.36                                | .03*** |                        |        |                        |        | 13,119 |
| Chinese               | -.31                                | .11*** | .05                    | .12    | .07                    | .12    | 1,070  |
| Asian Indian          | -.05                                | .17    | .31                    | .17*   | .35                    | .17**  | 206    |
| Korean                | .10                                 | .23    | .46                    | .23**  | .45                    | .27*   | 163    |
| Japanese              | -.69                                | .11*** | -.33                   | .11*** | -.27                   | .12**  | 1,370  |
| Cuban                 | -.57                                | .12*** | -.21                   | .12*   | -.22                   | .12*   | 1,031  |
| Other Asian           | -.16                                | .21    | .20                    | .21    | .20                    | .24    | 294    |
| Asian-white           | -.42                                | .11*** | -.06                   | .11    | -.02                   | .12    | 1,058  |
| Black-Asian           | .59                                 | .38    | .95                    | .38**  | .85                    | .42**  | 67     |
| Filipino              | -.59                                | .15*** | -.23                   | .15    | -.15                   | .16    | 909    |
| Other                 | -.08                                | .05    | .28                    | .06*** | .34                    | .07*** | 4,181  |
| Vietnamese Only       | -.03                                | .30    | .33                    | .30    | .51                    | .34    | 52     |
| Black-white           | -.31                                | .14**  | .05                    | .15    | .06                    | .15    | 469    |
| Native American-white | -.20                                | .06*** | .16                    | .07**  | .16                    | .07**  | 3,308  |
| Other Hispanic        | -.06                                | .03**  | .30                    | .04*** | .30                    | .05*** | 10,915 |
| Puerto Rican          | .13                                 | .03*** | .49                    | .04*** | .49                    | .05*** | 8,872  |
| Mexican               | -.03                                | .02    | .33                    | .04*** | .34                    | .04*** | 26,845 |
| Black                 | .07                                 | .03**  | .43                    | .05*** | .48                    | .05*** | 11,265 |
| Native American       | -.03                                | .04    | .33                    | .05*** | .37                    | .05*** | 7,006  |

Notes: The natural logarithm of the dollar amount of alternative family income is used in all models.

Sample includes only married women with children under the age of 12 at home.

Control variables are: Education, potential work experience, potential work experience squared and region.

\* $p < .1$  \*\* $p < .05$  \*\*\* $p < .01$

Next, we measure whether there are racial differences in the extent of specialization. The third column presents the difference between the effect of alternative family income for whites and the effect for each minority group. A positive coefficient in this column indicates that the log-odds of employment for the group in question are affected less negatively by alternative family income than those of whites – or in other words, that minority wives' employment is less responsive to alternative income than that of white wives. There is a statistically significant difference from whites in the effect of alternative family income for 10 of the 18 minority groups, and in all cases but one (the Japanese) the coefficient

is positive. The third column repeats the interactive model in the second column, this time controlling for earnings-relevant characteristics. The results remain essentially the same. After the addition of the controls, the employment of Indian, black-Asian, other race, Native American-white, "other" Hispanic, Puerto Rican, Mexican, black and Native American women is less negatively affected by alternative family income than that of white women. Thus, employment of mothers with young children in these groups is less predicated on family economic status than among whites. Although these results are not definitive, they seem to indicate that role specialization theory may not be as applicable to these groups as to whites. It is particularly interesting to note that the difference from whites is statistically significant among all six of the lowest-earning minority groups. This may indicate that there is an especially strong norm of female employment among the most disadvantaged groups<sup>4</sup>.

### *Sensitivity Analyses*

The main results are robust, as they are not sensitive to several practical choices made for the data analysis. In Appendix C, the primary results (the estimated  $\exp(d_k)$ s) among several slightly different groups of workers is presented. First, we test whether our findings are affected by the decision to focus on full-time, full-year workers. The first column presents results including all workers, but using hourly wages instead of annual earnings as the dependent variable. In the few cases where the results under the new specification differ, they differ in the direction of *strengthening* our substantive conclusion. The estimates in the second column are computed over a sample of workers which excludes the self-employed (instead of including a control variable for being self-employed, as in the main models). The third column excludes workers with either very high (above \$160,000) or very low (below \$6,500) annual earnings. In all three columns, the results are very similar to the main results reported in Table 1. These additional analyses ensure that the findings are not driven by analytical decisions about sample definition.

Finally, we briefly consider the possibility that our primary finding, that minority women's earnings are higher than would be predicted under additivity, could be driven by greater selectivity of minority women than white women into employment. This could come about if the relationship between race and role specialization were the exact opposite of what we suggested – that is, if minority women actually had a stronger preference than white women to specialize in the domestic sphere. In this case, they would need a larger wage incentive than white women to be drawn into employment. Earnings among employed minority women would then be biased upwards compared to those among employed white women

because minority women without sufficiently high earnings capacity would stay out of the labor force. However, this scenario is less plausible in the absence of evidence that minority women's employment rates are lower than white women's. Table 3 shows that married minority women with children typically have employment rates equaling or exceeding those of white women. Appendix C presents similar results for all married women. It is possible that greater economic necessity spurs higher employment rates among lower-earning minority groups, so that if incomes were equalized across races minority women would have lower employment rates than white women; however, the main results pertain equally to groups that have higher earnings than whites. Greater selectivity masked by greater economic necessity is therefore not a possible explanation for the full range of findings. Thus, while the possibility of differential selectivity into the labor force cannot be ruled out, there is no consistent pattern to suggest such selectivity.

## **Discussion and Conclusion**

This study has confirmed the ubiquitous intersectionality of race and gender in the determination of earnings. It is clear that among U.S. workers, there is no such thing as a pure "gender effect" or "race effect" when it comes to earnings. The two must be considered simultaneously. Furthermore, the statistical interaction between being minority and being female is consistently positive: Among groups who are disadvantaged in earnings relative to whites, the race penalty is always smaller among women than among men, while for earnings-advantaged groups, the advantage is greater for women than men. Conversely, for all minority groups the gender penalty is smaller for minority women than for white women. Thus, the "double jeopardy" characterization proposed in the earlier literature is a poor description of minority women's earnings.

It is striking that across such a diverse array of racial groups, including Asians, Hispanics and mixed-race individuals, the same basic pattern holds true. It would be hard to argue that this result could be due to any similarity across such an array of groups. Therefore, the explanation is more likely to be found in something unique about our comparison group – non-Hispanic whites. Up to this point, the discussion of earnings has been framed in terms of the disadvantages associated with being female and (in most cases) with being nonwhite. But instead of concluding that minority women's earnings are higher than expected under additivity, perhaps the results mean that white women's earnings are *lower* than expected. Such would have been our conclusion if we had chosen blacks, for example, instead of whites as the reference group. There is no way to distinguish between these interpretations empirically – they are equally consistent

with the results. Reframing this discussion in terms of unexpectedly low earnings among white women suggests that the explanation for the empirical pattern observed in this study may involve something atypical about the system of gender relations among whites.

The answer may lie in role specialization theory being more applicable to whites than to other groups. Although we cannot test definitively whether this is the case, findings indicate this explanation warrants further investigation. Results by marital status revealed that there were few racial differences in the gender earnings gap among the unmarried, while for the married, the gender earnings gap was significantly smaller for almost every minority group than for whites. These results strongly suggest that the explanation for the race/gender earnings interaction has to do with family factors. Furthermore, the results showed that women's labor force participation is generally less dependent on alternative family income for minority groups than for whites, suggesting less of a tendency toward gender role specialization among minorities. While these results do not permit a decisive conclusion that a greater degree of gender role specialization among whites is behind their larger gender earnings gap, they are consistent with such an explanation.

Why might there be greater gender role specialization among whites than among other groups? Earlier, we suggested that role specialization theory might not be as applicable to economically disadvantaged groups as to more affluent groups. The results are partially consistent with this hypothesis: The six minority groups with the lowest annual earnings were among the nine groups that showed a lesser tendency toward gender role specialization than whites. Meanwhile, of the seven minority groups with the highest annual earnings, only one – Indians – showed such a tendency. Thus, there appears to be a correspondence between the average earnings of a group and how much it differs from whites in its tendency toward gender role specialization. Differences in gender role specialization by average group SES cannot, however, explain the main finding of this paper – that women in *all* the minority groups studied, regardless of average group SES, have a smaller gender earnings penalty relative to men of the same race than white women do. Thus, no explanation relying solely on group differences in SES can be complete.

The primary contribution of this study lies in the documentation of the ubiquity of the gender-race interaction in earnings determination. We are unable to provide a definitive explanation for the greater gender earnings gap among whites than among other racial groups. However, results suggest that gender dynamics within families may be a fruitful area for future research. While researchers have examined racial differences in gender role attitudes, marital relationships, gender division of housework, and other family processes (McLoyd et al. 2000), none has explicitly linked

these differences to racial differences in labor force outcomes (Brewer et al. 2002). Given that another body of literature shows that family-linked processes such as parenthood (Budig and England 2001; Waldfogel 1997) and the gender division of housework affect earnings, it follows that there may be such a link. Hence, we suggest that the intersection of family and labor force outcomes may well hold the key to understanding the intersection of race and gender. We invite other scholars to examine this intersection closely in future research.

## Notes

1. Although cohabiting adults necessarily share some aspects of economic well-being – e.g., housing – there is debate in the literature about the extent to which they pool other economic resources.
2. The applicability of this theory to gender segregation of occupations has been challenged by England (1982, 1988).
3. For most families, the vast majority of such income is the husband's earnings; however, all sources of alternative income are likely to have an effect on a mother's likelihood of employment, so we use alternative family income rather than husband's earnings in our models. Results are very similar if husband's earnings are used.
4. Another potential explanation for these findings is that the effect of alternative family income is nonlinear. As a helpful reviewer put it, there may be a "threshold effect – everybody must work until there is sufficient income for survival." If this were the case, lower-earning minority groups might show less evidence of role specialization simply because they are at a lower point along the income curve. We tested this explanation with several different model specifications allowing income to have a nonlinear effect. While each specification yielded slightly different results, all except one provided evidence of the same interaction effects we report in the main findings.

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Appendix A: Sample Sizes by Race

| Race                  | Men    |         |           | Women  |         |           |        |
|-----------------------|--------|---------|-----------|--------|---------|-----------|--------|
|                       | Total  | Married | Unmarried | Total  | Married | Unmarried | Total  |
| White Only            | 49,895 | 21,894  | 8,289     | 30,183 | 12,412  | 7,300     | 19,712 |
| Chinese               | 4,674  | 1,578   | 1,132     | 2,710  | 1,071   | 893       | 1,964  |
| Asian Indian          | 972    | 280     | 293       | 573    | 199     | 200       | 399    |
| Korean                | 673    | 165     | 197       | 362    | 139     | 172       | 311    |
| Japanese              | 6,133  | 2,041   | 1,392     | 3,433  | 1,593   | 1,107     | 2,700  |
| Cuban                 | 3,347  | 1,162   | 751       | 1,913  | 794     | 640       | 1,434  |
| Other Asian           | 1,211  | 372     | 288       | 660    | 318     | 233       | 551    |
| Asian-white           | 3,600  | 1,202   | 844       | 2,046  | 861     | 693       | 1,554  |
| Black-Asian           | 352    | 102     | 87        | 189    | 62      | 101       | 163    |
| Filipino              | 3,474  | 1,035   | 867       | 1,902  | 881     | 691       | 1,572  |
| Other                 | 16,411 | 5,381   | 3,912     | 9,293  | 3,577   | 3,541     | 7,118  |
| Vietnamese Only       | 211    | 63      | 63        | 126    | 49      | 36        | 85     |
| Black-white           | 1,874  | 490     | 452       | 942    | 347     | 585       | 932    |
| Native American-white | 12,652 | 4,878   | 2,538     | 7,416  | 2,952   | 2,284     | 5,236  |
| Other Hispanic        | 33,117 | 11,718  | 6,579     | 18,297 | 7,922   | 6,898     | 14,820 |
| Puerto Rican          | 29,506 | 10,502  | 6,229     | 16,731 | 6,476   | 6,299     | 12,775 |
| Mexican               | 78,110 | 29,012  | 15,992    | 45,004 | 18,771  | 14,335    | 33,106 |
| Black                 | 57,827 | 15,627  | 12,101    | 27,728 | 11,911  | 18,188    | 30,099 |
| Native American       | 22,026 | 7,494   | 4,471     | 11,965 | 5,340   | 4,721     | 10,061 |

Note: Sample includes full-time, full-year workers between the ages of 25-55

Appendix B: Observed-to-Predicted Earnings Ratios for Minority Women, by Marital and Family Status

|                       | Married       |                  |                              | Unmarried     |                  |                              | All     |
|-----------------------|---------------|------------------|------------------------------|---------------|------------------|------------------------------|---------|
|                       | With Children | Without Children | Different from with Children | With Children | Without Children | Different from with Children |         |
|                       | 1             | 1                | 1                            | 1             | 1                | 1                            |         |
| White Only            | 1.15***       | 1.17***          |                              | 1.33**        | 1.02             | ***                          | 1.15*** |
| Chinese               | 1.04          | 1.11             |                              | —             | .97              | ***                          | 1.14*** |
| Asian Indian          | 1.07          | 1.18             |                              | —             | 1.07             |                              | 1.21*** |
| Korean                | 1.12***       | 1.03             |                              | 1.16*         | 1.03             |                              | 1.11*** |
| Japanese              | 1.16***       | 1.17***          |                              | 1.27***       | 1.07**           |                              | 1.16*** |
| Cuban                 | 1.26***       | 1.17**           |                              | 1.16          | 1.02             |                              | 1.20*** |
| Other Asian           | 1.14***       | 1.16***          |                              | —             | 1.07**           |                              | 1.16*** |
| Asian-white           | 1.16          | —                |                              | —             | .95              |                              | 1.09    |
| Black-Asian           | 1.23***       | 1.26***          |                              | 1.03          | 1.00             |                              | 1.20*** |
| Filipino              | 1.13***       | 1.11***          |                              | 1.07*         | 1.00             |                              | 1.11*** |
| Other                 | —             | —                |                              | —             | 1.14             |                              | 1.09    |
| Vietnamese Only       | 1.18***       | 1.14*            |                              | .93           | 1.01             |                              | 1.13*** |
| Black-white           | 1.08***       | .99              | ***                          | 1.10**        | .97              | **                           | 1.04*** |
| Native American-white | 1.14***       | 1.12***          |                              | 1.06*         | 1.02             |                              | 1.10*** |
| Other Hispanic        | 1.23***       | 1.22***          |                              | 1.10***       | 1.05***          |                              | 1.17*** |
| Puerto Rican          | 1.15***       | 1.14***          |                              | 1.04          | 1.01             |                              | 1.11*** |
| Mexican               | 1.27***       | 1.20***          | ***                          | 1.06**        | 1.08***          |                              | 1.19*** |
| Black                 | 1.21***       | 1.08***          | ***                          | 1.06*         | 1.01             |                              | 1.12*** |
| Native American       |               |                  |                              |               |                  |                              |         |

\*p < .1    \*\*p < .05    \*\*\*p < .01

Appendix C: Sensitivity Analyses

|                       | Model 1                 |                         | Model 2                 |                         | Model 3                |                        | Original Observed-Expected Ratio | Married Women          |                        |     | N    |       |
|-----------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|----------------------------------|------------------------|------------------------|-----|------|-------|
|                       | Observed-Expected Ratio | Observed-Expected Ratio | Observed-Expected Ratio | Observed-Expected Ratio | Employed               |                        |                                  | Fulltime, Year-round   |                        |     |      |       |
|                       |                         |                         |                         |                         | Proportion from Whites | Difference from Whites |                                  | Proportion from Whites | Difference from Whites |     |      |       |
| White Only            |                         |                         |                         |                         |                        |                        | 1.00                             | .79                    | .00                    | .44 | .00  | 28587 |
| Chinese               | 1.16***                 | 1.16***                 | 1.16***                 | 1.16***                 | 1.16***                | 1.16***                | 1.15***                          | .80                    | .02                    | .49 | .05  | 2182  |
| Asian Indian          | 1.22***                 | 1.15***                 | 1.22***                 | 1.22***                 | 1.22***                | 1.22***                | 1.14***                          | .74                    | -.05                   | .42 | -.02 | 464   |
| Korean                | 1.29***                 | 1.17***                 | 1.29***                 | 1.25***                 | 1.25***                | 1.25***                | 1.20***                          | .76                    | -.03                   | .41 | -.03 | 338   |
| Japanese              | 1.10***                 | 1.11***                 | 1.10***                 | 1.10***                 | 1.10***                | 1.10***                | 1.11***                          | .85                    | .06                    | .53 | .09  | 2993  |
| Cuban                 | 1.15***                 | 1.12***                 | 1.12***                 | 1.12***                 | 1.12***                | 1.12***                | 1.12***                          | .80                    | .02                    | .47 | .04  | 1677  |
| Other Asian           | 1.19***                 | 1.19***                 | 1.19***                 | 1.17***                 | 1.17***                | 1.17***                | 1.20***                          | .81                    | .03                    | .52 | .08  | 624   |
| Asian-white           | 1.15***                 | 1.13***                 | 1.13***                 | 1.12***                 | 1.12***                | 1.12***                | 1.15***                          | .80                    | .02                    | .46 | .03  | 1917  |
| Black-Asian           | 1.20***                 | 1.12*                   | 1.12*                   | 1.09                    | 1.09                   | 1.09                   | 1.10                             | .81                    | .02                    | .48 | .04  | 132   |
| Filipino              | 1.19***                 | 1.14***                 | 1.14***                 | 1.13***                 | 1.13***                | 1.13***                | 1.17***                          | .82                    | .03                    | .53 | .09  | 1676  |
| Other                 | 1.10***                 | 1.09***                 | 1.09***                 | 1.08***                 | 1.08***                | 1.08***                | 1.09***                          | .76                    | -.03                   | .42 | -.01 | 8511  |
| Vietnamese Only       | 1.16*                   | 1.03                    | 1.03                    | 1.06                    | 1.06                   | 1.06                   | 1.08                             | .68                    | -.10                   | .36 | -.08 | 125   |
| Black-white           | 1.11***                 | 1.10***                 | 1.10***                 | 1.07***                 | 1.07***                | 1.07***                | 1.10***                          | .80                    | .01                    | .43 | .00  | 828   |
| Native American-white | 1.02*                   | 1.01                    | 1.01                    | 1.00                    | 1.00                   | 1.00                   | 1.02*                            | .73                    | -.06                   | .38 | -.05 | 7984  |
| Other Hispanic        | 1.08***                 | 1.07***                 | 1.07***                 | 1.05***                 | 1.05***                | 1.05***                | 1.08***                          | .74                    | -.05                   | .40 | -.04 | 20248 |
| Puerto Rican          | 1.12***                 | 1.11***                 | 1.11***                 | 1.09***                 | 1.09***                | 1.09***                | 1.12***                          | .70                    | -.08                   | .39 | -.04 | 16427 |
| Mexican               | 1.09***                 | 1.07***                 | 1.07***                 | 1.05***                 | 1.05***                | 1.05***                | 1.08***                          | .75                    | -.04                   | .41 | -.03 | 46957 |
| Black                 | 1.16***                 | 1.13***                 | 1.13***                 | 1.11***                 | 1.11***                | 1.11***                | 1.14***                          | .81                    | .02                    | .50 | .06  | 24197 |
| Native American       | 1.07***                 | 1.06***                 | 1.06***                 | 1.05***                 | 1.05***                | 1.05***                | 1.08***                          | .73                    | -.06                   | .39 | -.05 | 14022 |

Model 1: Uses hourly wages as the dependent variable, includes part-time and part-year workers.

Model 2: Takes out the self-employed.

Model 3: Takes out workers with earnings below \$6,500 or above \$160,000.

\*p < .1    \*\*p < .05    \*\*\*p < .01