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I. Introduction

Literature states that "the United States is one of only a handful of nations in which immigrant women outnumber immigrant men" (Vernez, 1999). Over time, these women have come from increasingly diverse regions such as North America, Latin America, Asia, Africa and the Middle East (Vernez, 1999). Clearly then, immigrant women have the potential to make a significant contribution to the U.S. labor force, not only in number, but also in ethnic diversity. Yet, there has been little systematic research on the work experiences of these women. Most past studies have focused on male immigrants, even though females are more likely to face cultural and social barriers in the U.S. labor force (Vernez, 1999). Even amongst the few studies that have focused on women, only a limited number have examined the existence of an amplified negative effect caused by the noteworthy combination of gender and ethnicity. Therefore, this paper aims at expanding the previous literature by providing some insight into the formerly neglected dimension of female immigrant performance as it relates to pay inequities based on sex and nationality.

The purpose of this paper is to examine the sources of the wage differentials between immigrant females, immigrant males, native females and native males in the U.S. labor force, paying particular attention to earnings inequalities created by the interaction of gender and ethnicity. Such research will hopefully suggest directions for policy changes aimed at reducing income disparities across immigrant and native groups.

The significance of performing this study is made obvious by the existence of substantial earnings inequalities between different genders and ethnic groups. Table 1 emphasizes the presence of such wage gaps. For a more detailed version of the table, refer to appendix A.

Table 1: Total Money Earnings of Year-Round Full-Time Workers by Sex and World Region of Birth: March 2002

SEX AND MONEY EARNINGS 1/ 2/			WORLD REGION OF BIRTH			
	NATIVE	FOREIGN BORN	EUROPE	ASIA	LATIN AMERICA	OTHER AREAS
	Percent	Percent	Percent	Percent	Percent	Percent
TOTAL with earnings 3/						
$1 to $34,999	49.40	63.65	45.00	45.90	78.50	53.50
$35000 or more	50.60	36.35	55.00	54.10	21.50	46.50
MALES with earnings 3/						
$1 to $34,999	40.55	59.80	35.80	38.55	76.10	47.10
$35000 or more	59.75	40.20	64.20	61.55	23.90	52.90
FEMALES with earnings 3/						
$1 to $34,999	61.55	70.50	59.15	56.40	83.70	64.10
$35000 or more	38.55	29.50	40.85	43.60	16.30	34.90

Notes:

1/ The majority of those born in 'Latin America' are from Mexico. Those born in 'Other Areas' are from Africa, Oceania, Bermuda and Canada.

2/ Age 15 years and over.

3/ Earnings for previous calendar year.

4/ Sample Size = 85,835

SOURCE: U.S. Census Bureau, Current Population Survey, March 2002

Internet Release date: March 10, 2003

Note the dissimilar concentrations across the groups. The highest percentages of all natives and native males are found in the higher income group, whereas the highest percentages of all foreign-born workers and foreign-born males are found in the lower income group. On the other hand, both native and foreign-born females are most highly clustered in the lower income group. Further, there are noteworthy differences even among the foreign-born workers. Latin American workers are most highly concentrated in the lower income bracket, but Asian workers are found mostly in the higher income bracket. Clearly then, it is worth our time to study the impact of birth place, gender, and ethnicity on economic performance.

The paper will proceed as follows. Section II discusses the theoretical framework which is based on human capital theory. It also reviews the most important literature on female immigration, race-based earnings gaps and gender-based earnings gaps. Section III describes the IPUMS data set and explains the regression analyses that are used in the empirical model. Section IV presents the regression results. Finally, Section V discusses policy implications and conclusions.

II. Theory and Literature Review

Human capital theory states that as long as all firms are alike and all workers are equally productive, and both are able to freely enter and exit the marketplace, there should be a single wage in the economy (Borjas, 2000). However, table 1 shows significant earning differentials across natives and immigrants by gender and ethnicity. In the absence of wage discrimination, such pay inequities should be explained by differences in worker characteristics (Borjas, 2000). In this paper, worker characteristics are defined in terms of human capital, gender and ethnicity.

Each person brings a unique set of abilities and acquired skills, known as his or her human capital, to the labor force. Most of these skills are developed through school and formal and informal on-the-job training programs. Developing such expertise often requires people to accept low earnings at the times that they are increasing their investments in human capital. However, additions to human capital stock are expected to improve economic fortunes in the future due to the returns received on the higher levels of human capital. Workers choose human capital investments that maximize their earning potential. Therefore, educational and training decisions have a significant impact on income (Borjas, 2000).

These decisions differ on the basis of gender and ethnicity because women and non-whites may come to the labor market with different tastes and abilities than white men. Differences in tastes might mean, for instance, that one group has a greater tolerance for an unpleasant, unhealthy, or dangerous environment than others (Blau, Ferber and Winkler, 2002). An example of differences in ability would be that women tend to be physically weaker than men in general. Social expectations about such differences may result in the channeling of women and non-whites into certain occupations or salary groups. Therefore, gender and ethnicity are important determinants of wage rates as well. Hence, we may conclude that earnings depend on human capital, gender, and ethnicity.

The question of human capital is commonly addressed by considering formal schooling and on-the-job training (Blau, Ferber and Winkler, 2002). Earnings are expected to rise with additional education because of the productivity-enhancing effects of education. Schooling allows one to gain a variety of skills and knowledge that would potentially be useful on the job, such as reasoning ability, writing skills, time management, dependability etc. Further, education may act as a screening device for employers, allowing them to distinguish more productive applicants from less productive ones (Blau, Ferber and Winkler, 2002). Human capital theory also notes, however, that significant productivity increases could be gained via important work skills acquired while on the job. Training could include formal programs or informal instruction which enables job proficiency through the trial and error method, or both (Blau, Ferber and Winkler, 2002). Any of these types of training would augment worker productivity and thus cause an earnings increase (Blau, Ferber and Winkler, 2002). Educational attainment and labor market experience (often used as a measure of training acquired)

differ significantly across gender, ethnicity and source country. Therefore, they may help in explaining a significant portion of the wage gap.

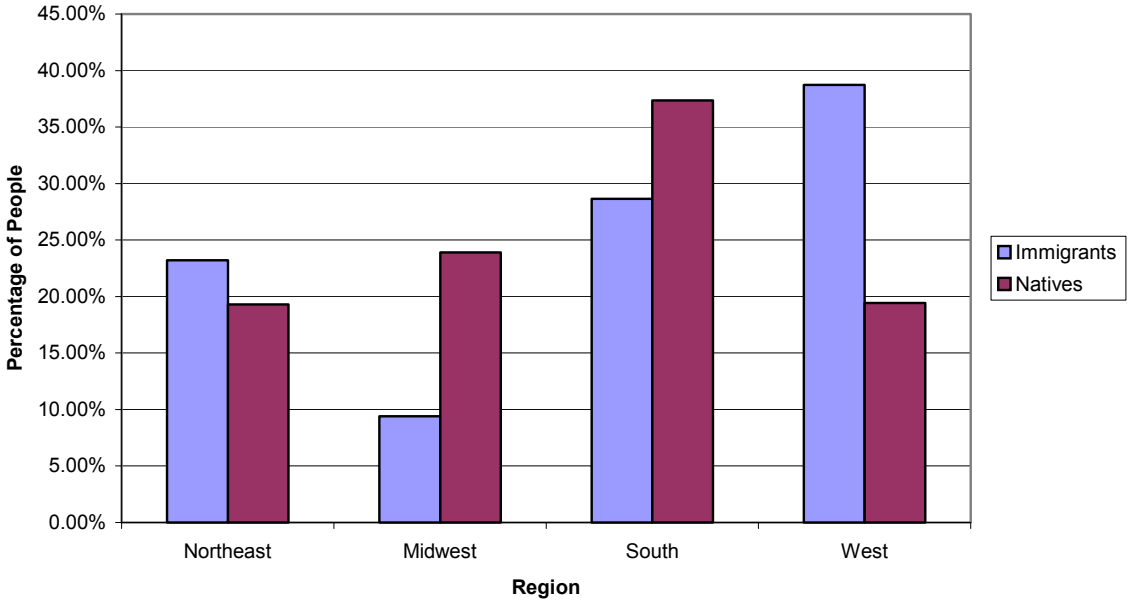
Another important variable is language proficiency. In the U.S., there is a substantial payoff to being able to speak and write English fluently (Schoeni, Assimilation, 1998). It opens up many more opportunities, because bilingual immigrants can look for jobs both inside and outside their ethnic enclave. English proficiency could also serve as a signal of a more able worker (Borjas, 1999).

Other common variables applied in studying human capital's contribution to immigrant performance include years since immigration and age at the time of arrival in the host country. Immigrants who arrive early obtain more skills that are directly related to the U.S. job market, and are therefore more productive in this country than later arrivals. Their age at arrival determines the amount of U.S. specific schooling that they were able to obtain. Additionally, the coefficients of these variables have served as measures of economic assimilation (Nielsen et al., 2003). Theories of assimilation claim that immigrant and native wages tend to converge over time. An initial difference is caused by the fact that newly arrived immigrants are typically less productive, but as time passes, they acquire language proficiency, cultural qualifications and other more general human capital qualifications, which should enable them to catch up to natives. Therefore, it is important to disentangle the assimilation effect from what could be considered ethnic discrimination by including these variables in the study (Nielsen et al., 2003).

Regional differences serve as important control variables as well. They are captured by the National Compensation Survey (1999) which collects wage and salary data for about 450 occupations throughout the country. This survey has found generally higher earnings on the Atlantic and Pacific coasts than in the middle of the country.

Since wages often reflect working conditions, regional differences in payment imply important geographic dissimilarities in average pay. Daneshvary's (1993) studies found that immigrants were more likely to reside in larger metropolitan areas in the North eastern, Southern and Western parts of the U.S., and less likely to reside in North central (Midwestern) part of the country. They were also more geographically concentrated in general than natives because they tended to locate in areas with higher numbers of fellow countrymen. Figure 1 describes these differences.

Figure 1 - Immigrant and Native Concentration Across Regions: 2000



SOURCE: Authors own calculations based on IPUMS data

Further, the study found that immigrants locating in the northeast tended to receive higher wages, whereas those in the south received lower wages. Thus, regional differences may contribute significantly to the existence of wage differentials.

Significant female-specific factors include spouses' wages and fertility. An increase in the husband's wage could either have an income effect by decreasing the probability that a woman chooses to work (assuming that the wife's leisure time is a

normal good), or have a substitution effect by increasing the husband's price of time and making it more efficient for the family to substitute the wife's time for the husband's time in household production (Schoeni, Assimilation, 1998). Both effects result in a decrease in the wife's labor force participation and therefore, reduce overall female earnings.

Fertility, or number of children born, could also affect earnings (Schoeni, Outcomes, 1998). Traditionally, females have been given the responsibility of child rearing. Hence, higher numbers of children could require mothers to spend more time at home, therefore reducing their ability to acquire additional human capital and participate in the labor force. Employers could thus conceivably assume that women from larger families would be less productive. Clearly then, fertility would have a significant effect on female earnings. This is especially important for immigrant women from certain regions, because they tend to have larger families. The effect may also be greater in the case of families with younger children.

Ethnicity has been addressed above in terms of human capital and regional differences. However, that is not sufficient. Immigrants from different countries not only arrive with distinct levels of human capital, skills and abilities, but also have different political and cultural backgrounds which probably affect the rate at which they advance in the U.S. economy (Schoeni, McCarthy and Vernez, 1996). Therefore, it would be helpful to incorporate groupings by country of birth in order to explain wage differentials across ethnicities. Schoeni, McCarthy and Vernez grouped countries on various pertinent criteria. They required each group to contain a significant share of the immigrant population; countries that were geographically close to each other; and

individuals with common backgrounds and experiences (e.g. – language) that would lead to similar experiences in the U.S. workforce. In doing so, they formed nine groups:

1. Mexico
2. Japan, Korea and China
3. Central America
4. Philippines
5. Europe
6. Middle East and all other Asian countries not listed
7. Africa, Caribbean, South America, and Oceania
8. Indochina and Vietnam
9. United Kingdom and Canada

Similar groupings would help to account for varying worker characteristics across countries in my paper as well.

Ethnicity also affects the decision to participate in the labor force. This is especially important for women of color, who vary greatly in their participation rates. For instance, African American and Asian American women have higher participation rates than those of white and Latina women. Different groups of women of color differ by education, immigration status, and family structure, all of which shape differences in their workplace status (Malveaux, 1999). Therefore, the study should include non-working women and immigrants.

The variables discussed above provide some basis for the existence of wage differentials between natives and immigrants. However, many past researchers controlling for similar variables have continued to find inequalities between immigrants and natives. Such disparities are often attributed to societal and labor market discrimination.

Based on the above discussion, this paper will hypothesize the following:

> After controlling for human capital and region of residence, immigrant women suffer a negative triple effect compared to native men. This triple disadvantage is a combination of a "gender effect", an "ethnicity effect", and an amplification of those effects due to an "interaction effect" between gender and ethnicity.

Hourly Wage = *f*(gender, country of birth, gender*ethnicity, human capital control variables)

There is little known research on the interaction variables which test the presence of a more dramatic negative effect for immigrant females from certain ethnicities. Therefore, the effects of those variables should be particularly interesting. The question of whether or not inequalities can truly be attributed to discrimination is beyond the scope of this paper, but it would serve as an interesting avenue for future research.

III. Data Set and Empirical Model

The proposed hypothesis is tested by using a standard human capital equation with additional variables to account for gender and ethnicity. Following the example of Schoeni (Outcomes, 1998), this paper utilizes the 2000 Integrated Public Use Micro Series created by Ruggles and Sobek at the University of Minnesota to create estimations. The data set provides users with extensive microdata (Ruggles and Sobek) and serves the purposes of this analysis by enabling examination of the several different factors discussed above.

Data are taken from the 5 percent sample of the 2000 IPUMS data set which provides information on approximately 5,663,214 household and 14,081,466 individuals. A random sample of 100,000 immigrants and 50,000 natives is used for this paper. In order to capture working-age people and account for school leaving and retirement, all analyses are restricted to individuals 25 to 60 years old. An immigrant is defined as a person born in a foreign country. People born abroad to American parents (e.g. – born

while the parent(s) was (were) temporarily stationed abroad) are considered to be U.S. natives.[1]

In keeping with the theory, both working and non-working individuals are included in the sample. This inclusion is especially important for women. Previous literature has found that women's work participation decisions are quite different from men's. Traditional gender roles require working women to balance family and work demands. Therefore, they are more likely to withdraw from the labor market on either a temporary or permanent basis (Chuang and Lee, 2003). Since my purpose is to develop an understanding of income inequalities for the whole female immigrant group, including unemployed women in the study will help to develop a complete understanding of the wage differentials faced by women.

The dependent variable is the natural log of wage per hour (LNHRWG), which is calculated as follows:

$$\frac{\text{total earned income (the nominal pre-tax wage and salary income for each individual)}}{\text{usual hours worked per week*weeks worked in previous year}}$$

If the wage per hour is zero, the natural log of one has been used instead. This is an acceptable method because there is not much difference between a wage of $0 and $1. The logarithmic form allows a nonlinearity into the regression analysis (Woolridge, 2003), and is consistent with human capital theory. Also, it allows coefficients to be interpreted as the percent changes in earnings given a one unit change in the independent variable.

The key independent variables examined include gender, country of birth, interactions between gender and ethnicity, educational attainment, on-the-job training,

[1] These criteria are based on Schoeni's Outcomes.

English language proficiency, years in the U.S., age at the time of arrival, region, income from other family members, and fertility (i.e. - number of children).

Gender is studied as a dummy variable with male = 0, and female = 1.

Ethnicity is measured in terms of country of birth. The IPUMS allowed for a modified version of Schoeni, McCarthy, and Vernez's groupings. It is as follows:

1. Mexico
2. Japan
3. Korea
4. China
5. Central America
6. Philippines
7. Europe
8. Middle East and all other Asian countries not listed
9. Africa
10. Caribbean
11. South America and Oceania
12. Indochina and Vietnam
13. United Kingdom and Canada
14. Indian Sub-continent
15. United States of America

Refer to appendix B for a more detailed listing of the countries included in each group. The primary modifications involve splitting up two of Schoeni's groups into the separate countries Japan, Korea, China, Africa, the Caribbean, and South America and including the Indian Sub-continent and the U.S.A. as separate groupings. The former is justified because it allows for better comparison between immigrants with different backgrounds. The individual inclusion of Indians is acceptable because immigration from this area has grown exponentially since 1965 (IACPA). There were 12715 Indian immigrants to the U.S.A. in the year 2000 (Ruggles and Sobek, 2003). Such a large group of people with distinct values and experiences should be observed separately. Considering the U.S.A. in the country of birth variables allows for the inclusion of natives as a control group. A set of dummy variables are identified by creating mutually exclusive dichotomous

dummy variables with the value of 1 for respondents born in the concerned country, with the U.S. serving as the omitted group.

The interaction terms are created by interacting the gender variable with the fourteen ethnic variables (excluding the U.S.), resulting in the use of fourteen interaction variables. The significance level of the coefficients for these variables is a measure of the interaction effect. In other words, a negative coefficient for (female*country of birth) could be interpreted as follows: being female increases the disadvantage attributed to immigration from a certain country for women. Therefore, if the coefficients for birthplace and female are negative, then a negative coefficient for an interaction variable implies the existence of an amplified negative effect due to the interaction of gender and ethnicity, and results in a triple disadvantage.

Educational attainment is studied using dichotomous dummies. Nine groups have been formed as follows:

1. No education-preschool
2. Grades 1-4
3. Grades 5-8
4. Grade 9
5. Grade 10
6. Grade 11
7. Grade 12
8. 1-3 years of college
9. 4+ years of college

Each group is considered as a separate variable, with a value of 1 if the concerned individual falls into the group and a value of 0 otherwise. The first group is the omitted category.

Labor market experience is measured using a proxy. Several human capital studies use potential work experience to account for this. It involves the approximation of time passed since an individual was last in school. The calculation performed for this paper is as follows:

potential work experience = (age at the time of the survey – years of education)

However, this may result in the inclusion of unemployed people, or the exclusion of work experience gained while a person was in school. Unfortunately data restrictions do not allow for a better proxy of this variable.

English language proficiency is studied in four categories, as per IPUMS groupings. Participants were asked to identify if they spoke English very well, well, not well or not at all. Dichotomous dummy variables are used to identify the different classifications, with the group speaking English very well being omitted.

Years passed since the time of immigration is calculated by subtracting the year of immigration from 2000 (the year data were collected). There are two problems with this method of approximation though. Firstly, it may result in a slight bias because individuals could have traveled abroad during that time, but more specific information is not available. Secondly, although natives have not immigrated to the United States, the data set assumes that they have immigrated at age zero, and thus for the purposes of this variable, actual age of natives is used. However, this may result in underestimation because a native who has spent an equal number of years in the United States as an immigrant is likely to be more culturally qualified than the immigrant by virtue of having been raised by people who are well-assimilated to United States culture. Also, the variable is likely to be highly correlated with potential work experience for natives. Unfortunately, data restrictions do not allow for a better estimation.

The square of years spent in the United States is included in the analysis as well because the effect of years spent in the United States on earnings is likely to fall off with time. The squared term accounts for this non-linearity.

Age at the time of arrival is measured by subtracting years spent in the U.S. from age at the time of the survey. This variable is expected to be inversely related to wages because young immigrants obtain more education in the U.S.A. than older immigrants. Education obtained in the U.S.A. may be more relevant to immigrant economic performance than that obtained in the country of birth because it is conducted in English and focuses on American culture and institutions.

Regional divisions are considered using two variables. The first is a dummy variable for metropolitan status, with residing in a metropolitan area = 1, and 0 = otherwise. The IPUMS does not provide information on geographical areas with a population of less than 100,000, so the residences of a large number of people are classified as unknown. However, most metropolitan areas have populations greater than 100,000. Therefore, it is assumed that unknowns do not live in a metropolitan area. They are given a value of 0, which codes them as not living in a metropolitan area. The second is a set of 3 mutually exclusive dichotomous dummy variables, each assigned to a particular region as follows: 1 if Northeast, 0 otherwise; 1 if South, 0 otherwise; and, 1 if West, 0 otherwise. Midwest has been omitted because immigrant concentration is least in that area.

Income from other family members is used instead of spouses' wages (used in past research) because the IPUMS data set does not have a direct variable to account for spouses' wages. Therefore, this analysis uses total family income minus responder's wage instead. Total family income is defined as the total pre-tax money income earned by the primary family of the household head from all sources. This proxy variable is appropriate because increased family income is likely to affect a woman's decision to work in the same manner that increased spouses' income would.

Fertility is measured in terms of the number of own children in the household, together with dummies for children under the age of 5. The number of own children is considered directly, but dichotomous dummies are used for the number of children under 5, with 0 children under 5 being the omitted group. This allows for the additional effects of having younger children to be taken into consideration. This measure may exclude some children (e.g. – adopted or guardian), but the data set did not permit a better direct estimate. Please note that no individuals in the sample had 6 children under 5, so that variable has not been considered.

The hypothesis is tested with an OLS regression that regresses the natural log of hourly wages (LNHRWG) against a dummy variable for gender, fourteen dummies for country of birth, and fourteen interactions between gender and country of birth. Additionally, the regression includes the numerous human capital variables just described. Table 2 presents the key demographic variables that will be considered. For a more comprehensive list of all variables, including the human capital controls, refer to appendix C. The coefficients listed next to the variables in column 1 will be used for interpretation purposes in the next section.

Table 2 – Key Variable Names, Definitions and Hypothesized Signs

VARIABLE NAME	DEFINITION	HYPOTHESIZED SIGN	OMITTED/COMPARISON GROUP (FOR DUMMY VARIABLES)
DEPENDENT VARIABLE			
Lnhrwg	Natural log of wage per hour	N/A	N/A
KEY VARIABLES			
Female ($ß_2$)	1 if female, 0 otherwise	-	Males
Mex ($ß_3$)	1 if born in Mexico, 0 otherwise	-	Born in the U.S.
Japan ($ß_4$)	1 if born in Japan, 0 otherwise	-	Born in the U.S.
Korea ($ß_5$)	1 if born in Korea, 0 otherwise	-	Born in the U.S.
China ($ß_6$)	1 if born in China, 0 otherwise	-	Born in the U.S.
Cename ($ß_7$)	1 if born in Central America, 0 otherwise	-	Born in the U.S.
Phil ($ß_8$)	1 if born in the Philippines, 0 otherwise	-	Born in the U.S.
Europe ($ß_9$)	1 if born in Europe, 0 otherwise	-	Born in the U.S.
Mideas ($ß_{10}$)	1 if born in the Middle East and all Asian countries not otherwise listed, 0 otherwise	-	Born in the U.S.
Africa ($ß_{11}$)	1 if born in Africa, 0 otherwise	-	Born in the U.S.
Caribb ($ß_{12}$)	1 if born in the Caribbean, 0 otherwise	-	Born in the U.S.
Souame ($ß_{13}$)	1 if born in South America, Oceania or Antarctica, 0 otherwise	-	Born in the U.S.
Indoch ($ß_{14}$)	1 if born in Indochina or Vietnam, 0 otherwise	-	Born in the U.S.
Ukcan ($ß_{15}$)	1 if born in the United Kingdom or Canada, 0 otherwise	-	Born in the U.S.
India ($ß_{16}$)	1 if born in the Indian Sub-Continent, 0 otherwise	-	Born in the U.S.
F.mex ($ß_{17}$)	Female*Mex	-	Female*Born in U.S.
F.japan ($ß_{18}$)	Female*Japan	-	Female*Born in U.S.
F.korea ($ß_{19}$)	Female*Korea	-	Female*Born in U.S.
F.china ($ß_{20}$)	Female*China	-	Female*Born in U.S.
F.cenam ($ß_{21}$)	Female*Cename	-	Female*Born in U.S.
F.phil ($ß_{22}$)	Female*Phil	-	Female*Born in U.S.
F.europ ($ß_{23}$)	Female*Europe	-	Female*Born in U.S.
F.midea ($ß_{24}$)	Female*Mideast	-	Female*Born in U.S.
F.afric ($ß_{25}$)	Female*Africa	-	Female*Born in U.S.
F.carib ($ß_{26}$)	Female*Caribb	-	Female*Born in U.S.
F.souam ($ß_{27}$)	Female*Souame	-	Female*Born in U.S.
F.indoc ($ß_{28}$)	Female*Indoch	-	Female*Born in U.S.
F.ukcan ($ß_{29}$)	Female*Ukcan	-	Female*Born in U.S.
F.india ($ß_{30}$)	Female*India	-	Female*Born in U.S.

IV. Results

The key results of the regression are summarized in Table 3. Appendix D provides a more detailed listing of all the results.

Table 3 – Key Results (t-statistics are in parentheses)

DEPENDENT VARIABLE = Lnhrwg				
VARIABLE NAME	RESULTS – MODEL 1 (Demographics only)	RESULTS – MODEL 2 (adding human capital control variables)	HYPOTHESIZED SIGN	OMITTED/COMPARISON GROUP (FOR DUMMY VARIABLES)
Constant	2.305 (289.786)***	1.453 (53.314)***	N/A	N/A
Adjusted R^2	0.083	0.180	N/A	N/A
KEY VARIABLES				
Female ($ß_2$)	-0.420 (-37.830)***	-0.444 (-42.195)***	-	Males
Mex ($ß_3$)	-0.368 (-28.818)***	0.184 (11.461)***	-	Born in the U.S.
Japan ($ß_4$)	0.314 (6.154)***	0.215 (4.385)***	-	Born in the U.S.
Korea ($ß_5$)	-0.276 (-7.229)***	-0.296 (-7.853)***	-	Born in the U.S.
China ($ß_6$)	0.074 (2.698)***	0.049 (1.734)*	-	Born in the U.S.
Cename ($ß_7$)	-0.274 (-11.643)***	0.163 (6.658)***	-	Born in the U.S.
Phil ($ß_8$)	0.200 (6.740)***	0.134 (4.485)***	-	Born in the U.S.
Europe ($ß_9$)	0.072 (4.084)***	0.070 (3.790)***	-	Born in the U.S.
Mideas ($ß_{10}$)	-0.001 (-0.054)	-0.090 (-2.886)***	-	Born in the U.S.
Africa ($ß_{11}$)	-0.011 (-0.351)	-0.080 (-2.453)**	-	Born in the U.S.
Caribb ($ß_{12}$)	-0.283 (-15.774)***	-0.049 (-2.591)**	-	Born in the U.S.
Souame ($ß_{13}$)	-0.123 (-5.285)***	0.021 (0.880)	-	Born in the U.S.
Indoch ($ß_{14}$)	-0.169 (-6.703)***	0.025 (0.999)	-	Born in the U.S.
Ukcan ($ß_{15}$)	0.353 (13.046)***	0.232 (8.678)***	-	Born in the U.S.
India ($ß_{16}$)	0.316 (11.987)***	0.160 (5.893)***	-	Born in the U.S.
F.mex ($ß_{17}$)	-0.386 (-20.756)***	-0.360 (-20.421)***	-	Female*Born in U.S.
F.japan ($ß_{18}$)	-0.646 (-9.697)***	-0.509 (-8.075)***	-	Female*Born in U.S.
F.korea ($ß_{19}$)	-0.195 (-3.890)***	-0.072 (-1.533)	-	Female*Born in U.S.
F.china ($ß_{20}$)	-0.179 (-4.707)***	-0.040 (-1.113)	-	Female*Born in U.S.
F.cenam ($ß_{21}$)	-0.218 (-6.551)***	-0.232 (-7.345)***	-	Female*Born in U.S.
F.phil ($ß_{22}$)	0.129 (3.302)***	0.133 (3.606)***	-	Female*Born in U.S.
F.europ ($ß_{23}$)	-0.219 (-8.876)***	-0.153 (-6.555)***	-	Female*Born in U.S.
F.midea ($ß_{24}$)	-0.472 (-9.730)***	-0.289 (-6.299)***	-	Female*Born in U.S.
F.afric ($ß_{25}$)	-0.041 (-0.839)	0.079 (1.714)**	-	Female*Born in U.S.
F.carib ($ß_{26}$)	0.072 (2.934)***	0.039 (1.673)*	-	Female*Born in U.S.
F.souam ($ß_{27}$)	-0.178 (-5.541)***	-0.129 (-4.231)***	-	Female*Born in U.S.
F.indoc ($ß_{28}$)	-0.083 (-2.356)**	0.040 (1.198)	-	Female*Born in U.S.
F.ukcan ($ß_{29}$)	-0.384 (-10.191)***	-0.279 (-7.824)***	-	Female*Born in U.S.
F.india ($ß_{30}$)	-0.672 (-17.289)***	-0.506 (-13.739)***	-	Female*Born in U.S.

NOTES:

* Significant at the .1 level

** Significant at the .05 level

*** Significant at the .01 level

Model 1 regresses only demographics against LNHRWG, and model 2 regresses those same demographics with the addition of human capital variables against LNHRWG. The complete set of results for model 2, including the human capital controls that have been excluded in table 3, is found in appendix D. The former provides a view of differentials as they are seen in society and serves as ground for comparison, whereas the latter considers the extent to which human capital factors can explain those surface differences. This paper will focus mainly on the results found in model 2, but will refer to model 1 for comparison and interpretation purposes.

Model 1 explains 8.3% and model 2 explains 18% of the variation in LNHRWG. The coefficients of the variables should be interpreted as the percent change in hourly wage, given a one-unit change in the independent variable. In order to test the hypothesis, coefficients must be combined in specific ways. The following example facilitates a better understanding of the joined coefficients:

For model 1, Let:

$$\text{Lnhrwg} = ß_1 + ß_2\,\text{Female} + ß_3\,\text{Mex} + \ldots + ß_{16}\,\text{India} + ß_{17}\,\text{F.Mex} + \ldots + ß_{30}\,\text{F.India} + u$$

Here, *ceteris paribus*, the average salary of a U.S. born male is $ß_1$, and the effect of being a:

U.S. born female = $ß_1 + ß_2$
Male from MEX = $ß_1 + ß_3$
Female from MEX = $ß_1 + ß_2 + ß_3 + ß_{17}$
Male from INDIA = $ß_1 + ß_{16}$
Female from INDIA = $ß_1 + ß_2 + ß_{16} + ß_{30}$

Thus, the:

- Disadvantage faced by native females in the U.S. versus native males is $[(ß_1 + ß_2) – (ß_1)] = ß_2$
- Pay differential for a male from MEX versus native males is $[(ß_1 + ß_3) – (ß_1)] = ß_3$
- Pay differential for a female from MEX versus native males is $[(ß_1 + ß_2 + ß_3 + ß_{17}) – (ß_1)] = ß_2 + ß_3 + ß_{17}$
- Pay differential for a female from MEX versus native females is

$[(ß_1 + ß_2 + ß_3 + ß_{17}) – (ß_1 + ß_2)] = ß_3 + ß_{17}$

- Pay differential for a female from MEX versus a male from MEX is
  $[(ß_1 + ß_2 + ß_3 + ß_{17}) – (ß_1 + ß_3)] = ß_2 + ß_{17}$
- Pay differential for a male from INDIA versus native males is $[(ß_1 + ß_{16}) – (ß_1)] = ß_{16}$
- Pay differential for a female from INDIA versus native males is
  $[(ß_1 + ß_2 + ß_{16} + ß_{30}) – (ß_1)] = ß_2 + ß_{16} + ß_{30}$
- Pay differential for a female from INDIA versus native females is
  $[(ß_1 + ß_2 + ß_{16} + ß_{30}) – (ß_1 + ß_2)] = ß_{16} + ß_{30}$
- Pay differential for a female from INDIA versus a male from INDIA is
  $[(ß_1 + ß_2 + ß_{16} + ß_{30}) – (ß_1 + ß_{16})] = ß_2 + ß_{30}$
- Pay differential between a female from MEX and a female from INDIA is
  $[(ß_1 + ß_2 + ß_3 + ß_{17}) – (ß_1 + ß_2 + ß_{16} + ß_{30})] = ß_3 + ß_{17} + ß_{16} + ß_{30}$
- Pay differential between MEX males and INDIA males is
  $[(ß_1 + ß_3) – (ß_1 + ß_{16})] = ß_3 + ß_{16}$

Although the above example is limited to model 1 and considers only natives and two ethnicities, the conceptual framework still holds when we add the remaining 8 ethnic groups and the set of human capital variables for model 2.

The overall results provide very strong support for the triple effect hypothesis and clearly point to the existence of highly significant wage differentials for immigrant women. Individually, the gender effect is strong and constant across groups, but the ethnic and interaction effects are interestingly diverse. Some ethnicities face positive effects, others face negative effects, and still others have statistically insignificant effects. For the control variables though, most signs and magnitudes are as expected, and have high significance levels. Most variables with unexpected signs are not significant. Potential work experience was dropped from the analysis because it was highly correlated to age at the time of immigration, years spent in the United States, and education. Other unpredicted results for control variables are explained in the notes at the end of appendix D.

Using the combined coefficients described above, model 1 finds that superficially, native females in the U.S.A. earn 42% less than native males. However, the human

capital controls employed in model 2 actually add to that differential, resulting in hourly wages for native females to be 44.4% less than that of native males, *ceteris paribus* (refer to table 4). Part of the reason behind the large value of this differential could be the inclusion of unemployed women. Thus, the disadvantage includes not just the difference in earnings, but also the difference in ability to work for pay. As mentioned earlier, women are often restricted in their career choices by familial and cultural ties. To truly understand the implications of this discrepancy, consider the following: if the average man born in the U.S. were to have a nominal income of $30,000 per year, then the average native woman would earn a nominal income of $17,400 per year. If however, after controlling for human capital, a man earns $30,000, then an equally educated and experienced native woman would earn only $16,680, which is even less. Thus, there is seemingly a large and obvious differential between genders, but accounting for human capital proves that even that difference is understated. In other words, women appear to earn less as is, but the results found after considering their human capital levels imply that even the already low average is not a sufficient indicator of the actual disadvantage faced by women. Note that this differential is added into the disadvantage faced by every woman in the U.S.A, regardless of nativity. Significantly, these results are for the year 2000. The popular belief that gender based earnings differences are a thing of the past is therefore, unsubstantiated. The "gender effect" clearly exists, even today.

The ethnicity variables provide interesting results. In model 1, most immigrant females suffer a noteworthy disadvantage against native females, with MEX women facing the worst differential of negative 75.4% (using combined gender, ethnic and interaction coefficients). However, women from AFRICA face no disadvantage, and women from PHIL actually earn 32.9% more than native women. Model 2 though,

presents a markedly different picture (refer to table 4). Even after controlling for human capital, most female immigrants continue to earn less than U.S. native females, but women from INDOCH face no disadvantage, and women from CHINA, PHIL, AFRICA and UKCAN have positive wage advantages. Thus, at least parts of the negative wage differentials are explained away by human capital variables in most cases. In fact, including human capital controls reverses the sign of the differential for CHINA, INDOCH and UKCAN. However, several important gaps remain even in model 2, which implies that something beyond the considered human capital variables is affecting wage rates. These significant differentials for immigrant females versus native females range from a negative 37.96% for female immigrants from MIDEAS to a positive 26.7% for women born in PHIL. In other words, if a U.S. born female were to earn $30,000 per year, then a MIDEAS born woman with equal human capital would earn only $18,612 per year, whereas a PHIL woman in the same situation would receive a considerably different wage of $38,010 per year. Clearly then, the "ethnicity effect" is valid, and future research should focus on determining the source of this effect.

Now we turn our focus to the variables that aim at studying the effect of interactions between gender and ethnicity. Superficially, the interactions are mostly negative, with only two positive and one insignificant coefficient. Human capital controls explain away some amount of the differential in most cases. For instance, the interaction effect for INDIA women decreases from a negative 67.2% in model 1 to a negative 50.6% in model 2. However, most interactions stay negative and significant. PHIL, AFRICA and CARIBB women are the only ones with positive interactions, and KOREA, CHINA and INDOCH are the only insignificant interactions. Interestingly, the interaction for AFRICA is the only insignificant variable in model 1, but it is significant

for model 2. Therefore, even though model 1 shows that being both female and an AFRICA immigrant does not affect the disadvantage faced by that group, AFRICA women actually reduce their disadvantage by 7.97% because of the interaction. Similarly, Korean, Chinese and Indochinese women seem to face additional disadvantages as a result of belonging to both a female group and an immigrant group, but those disadvantages can actually be attributed to differences in human capital levels. However, the remaining eleven groups face large interaction based differentials that are not qualified by human capital. Clearly then, the "interaction effect" does play an important role in determining wages in several cases.

This section presents the results of the above analysis which compares the wages of female immigrants from a certain place of origin to the wages of native females, native males, and male immigrants from the same place of origin. Table 4 allows for easy interpretation of those results by presenting the combined effects of gender, ethnicity and gender and ethnic interaction.

Table 4 – Effects in Percent Wages of Being a Female Immigrant in the U.S.

	COMPARISONS		
ETHNIC GROUP	Female Immigrant vs. Female Native	Female Immigrant vs. Male Immigrant From the Same Country	Female Immigrant vs. Male Native (Triple Effect)
Mex	-17.6% (ß3 + ß17)	-80.4% (ß2 + ß17)	-62.0% (ß2 + ß3 + ß17)
Japan	-29.4% (ß4 + ß18)	-95.3% (ß2 + ß18)	-73.8% (ß2 + ß4 + ß18)
Korea	-36.9% (ß5 + ß19)	-51.7% (ß2 + ß19)	-81.3% (ß2 + ß5 + ß19)
China	0.9% (ß6 + ß20)	-48.4% (ß2 + ß20)	-43.5% (ß2 + ß6 + ß20)
Cename	-6.9% (ß7 + ß21)	-67.6% (ß2 + ß21)	-51.3% (ß2 + ß7 + ß21)
Phil	26.7% (ß8 + ß22)	-31.1% (ß2 + ß22)	-17.7% (ß2 + ß8 + ß22)
Europe	-8.3% (ß9 + ß23)	-59.7% (ß2 + ß23)	-52.7% (ß2 + ß9 + ß23)
Mideas	-38.0% (ß10 + ß24)	-73.3% (ß2 + ß24)	-82.4% (ß2 + ß10 + ß24)
Africa	0.0% (ß11 + ß25)	-36.4% (ß2 + ß25)	-44.4% (ß2 + ß11 + ß25)
Caribb	-1.1% (ß12 + ß26)	-40.5% (ß2 + ß26)	-45.5% (ß2 + ß12 + ß26)
Souame	-10.8% (ß13 + ß27)	-57.3% (ß2 + ß27)	-55.2% (ß2 + ß13 + ß27)
Indoch	6.6% (ß14 + ß28)	-40.4% (ß2 + ß28)	-37.8% (ß2 + ß14 + ß28)
Ukcan	-4.7% (ß15 + ß29)	-72.3% (ß2 + ß29)	-49.1% (ß2 + ß15 + ß29)
India	-34.6% (ß16 + ß30)	-95.0% (ß2 + ß30)	-79.0% (ß2 + ß16 + ß30)

NOTES:
1\ Data is taken from model 2

The table makes it clear that, even after controlling for human capital, all immigrant females suffer a negative effect as compared to male natives (refer to column 3). Note that this effect is the summation of the gender, ethnic and interaction effects. The consequent reduction in their wages is measured by adding the coefficients as explained earlier in this section. So, a typical MIDEAS female immigrant earns 38% less than what the average native U.S. female earns. But, if the U.S. native is male, the female MEX immigrant earns 82% less than what the U.S. male does. However, although the overall wage differential faced by immigrant women versus native men is universally negative as

hypothesized, the three effects that combine to create it are varied. The "gender effect" causes all women to suffer from a 44.4% deduction in wage, but the "ethnic effect" and the "interaction effect" is positive for some groups, insignificant for others, and negative for the rest. The ethnic variation is logical because different countries provide dissimilar backgrounds, experiences and cultural expectations that are likely to affect performance levels in different ways. The deviations in interactions are also reasonable because diverse countries and cultures have varying attitudes towards women getting involved in the work force. Some women may be suppressed more than others. Further study of these variations could result in some interesting findings though.

All the differentials mentioned above include the effects of both income differences and unemployment/labor force non-involvement rates. An interesting question to pursue would be the extent to which unemployment/labor force non-involvement contributes to the disparities. Theoretically, there is an important relationship between gender, ethnicity and labor force status. The following table verifies that work status varies greatly across groups.

Table 5 – Percent of Females Unemployed and/or out of the Labor Force

Country Group	Percent of Females Unemployed and/or out of the Labor Force
Mex	30.9%
Japan	25.0%
Korea	25.8%
China	18.6%
Cename	20.4%
Phil	8.3%
Europe	18.2%
Mideas	30.6%
Africa	16.1%
Caribb	20.6%
Souame	18.4%
Indoch	20.5%
Ukcan	14.2%
India	30.1%
U.S.	13.0%
National Average for females in the U.S.	19.2%
National Average for males in the U.S.	5.9%
Pearson Chi-Square	2325.934***

NOTES:
1\ *** Significant at the .01 level

The Chi-Square statistic proves that the ethnic groups have significantly different unemployment/labor force non-involvement rates. Notice that Filipina women have the lowest percentage. Going back to table 4, we see that Filipina women also face the lowest differential (-17.7%) with respect to native men. On the other hand, Mexican, Japanese, Korean, Middle Eastern and Indian women have the five highest unemployment/labor force non-involvement rates. These same groups also face the five worst differentials as compared to native men. Such patterns point towards an interesting relationship between unemployment/labor force non-involvement rates and wage important source of disparities between groups.

Overall, the results were significant and supportive of the hypothesis. Gender, ethnicity, and interactions between the two clearly make significant contributions to the existence of wage differentials. However, their contributions vary notably from country to country. More detailed exploration of the reasons behind these variations and inequalities will undoubtedly aid our understanding of disparities in earnings.

V. Conclusion

This paper aimed at analyzing the existence of wage gaps between natives and immigrants, paying special attention to ethnicity and gender. The results support the hypothesis that immigrant females face a negative triple effect compared to U.S. natives. Negative gender effects are consistent and present for immigrant women, but ethnic and interaction effects vary from country to country. Among the latter effects, some are negative as expected, others are surprisingly positive, and still others are insignificant.

The results suggest that the U.S. government needs to improve its current policies on providing support to immigrants and females. First, the general disadvantage faced by immigrants and females needs to be addressed. Immigrants and women constitute an increasing share of the U.S. workforce and unequal opportunities and wages may deter them from future participation. Society would thus lose valuable resources (Blau, Ferber and Winkler, 2002). Therefore, government intervention aimed at assuring equal treatment for all individuals in the labor force is justified.

Second, policies oriented towards the idea that all ethnicities have homogenous experiences in the U.S. labor market are clearly misdirected. Ethnic heterogeneity and inter-ethnic differences seem to be the norm, and so employment practices should be

based on those principles instead. The need to move away from the melting pot analogy and towards the tossed salad concept is obvious.

The fact that differentials exist even after controlling for human capital may provide support for social views that discrimination on the basis of gender and ethnicity is still present. Although discrimination is illegal on paper, it may still be practiced. However, the pay gaps could also have resulted from qualitative differences in human capital that could not be measured in this paper. Future research on the subject is needed to provide a more comprehensive understanding of the situation.

Other avenues for future research include studying the contribution of labor force participation and unemployment to the differentials. AS mentioned earlier, such research could help to explain part of the surprisingly large gaps.

A final suggestion for future research would be to study why some females in certain countries do better than their male counterparts whereas others from different countries do not. Developing more insights into these topics may provide the tools needed to create policies that ensure equal rights to all workers.

In general, the experiences of female immigrants are under-studied. The above suggestions provide some directions for increases in this area of immigration theory, but there are several other approaches to be considered as well. Exploring those approaches would undoubtedly result in important contributions to the field of labor economics.

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Appendix A – Total Money Earnings of Year-Round Full-Time Workers by Sex and World Region of Birth: March 2002

SEX AND MONEY EARNINGS (Numbers in thousands 1/ 2/)	NATIVE		FOREIGN BORN		WORLD REGION OF BIRTH							
					EUROPE		ASIA		LATIN AMERICA		OTHER AREAS	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
TOTAL with earnings 3/	85,835	100.0	14,516	100.0	1,781	100.0	3,882	100.0	7,667	100.0	1,186	100.0
$1 to $2,499 or less	744	0.9	127	0.9	27	1.5	24	0.6	62	0.8	14	1.2
$2,500 to $4,999	310	0.4	62	0.4	7	0.4	7	0.2	45	0.6	3	0.2
$5,000 to $9,999	1,777	2.1	488	3.4	28	1.6	81	2.1	349	4.5	30	2.5
$10,000 to $14,999	4,798	5.6	1,732	11.9	82	4.6	235	6.1	1,319	17.2	95	8.0
$15,000 to $19,999	7,293	8.5	2,103	14.5	121	6.8	348	9.0	1,511	19.7	124	10.4
$20,000 to $24,999	9,260	10.8	2,025	13.9	192	10.8	387	10.0	1,279	16.7	167	14.0
$25,000 to $34,999	18,226	21.2	2,706	18.6	346	19.5	696	17.9	1,459	19.0	204	17.2
$35,000 to $49,999	18,701	21.8	2,184	15.0	333	18.7	713	18.4	934	12.2	205	17.3
$50,000 to $74,999	14,551	17.0	1,697	11.7	322	18.1	732	18.9	465	6.1	178	15.0
$75,000 and over	10,175	11.9	1,394	9.6	324	18.2	660	17.0	244	3.2	166	14.0
MALES with earnings 3/	49,422	100.0	9,290	100.0	1,082	100.0	2,278	100.0	5,178	100.0	752	100.0
$1 to $2,499 or less	430	0.9	71	0.8	9	0.8	13	0.6	39	0.7	11	1.4
$2,500 to $4,999	133	0.3	28	0.3	7	0.6	2	0.1	18	0.4	1	0.2
$5,000 to $9,999	769	1.6	226	2.4	12	1.1	36	1.6	166	3.2	12	1.5
$10,000 to $14,999	2,002	4.1	983	10.6	49	4.5	104	4.6	780	15.1	49	6.5
$15,000 to $19,999	2,980	6.0	1,262	13.6	37	3.5	172	7.5	991	19.1	62	8.3
$20,000 to $24,999	4,231	8.6	1,266	13.6	87	8.1	176	7.7	910	17.6	93	12.3
$25,000 to $34,999	9,467	19.2	1,720	18.5	186	17.2	372	16.4	1,035	20.0	126	16.8
$35,000 to $49,999	11,150	22.6	1,417	15.3	190	17.6	406	17.8	689	13.3	132	17.6
$50,000 to $74,999	10,117	20.5	1,175	12.6	232	21.5	452	19.8	359	6.9	132	17.5
$75,000 and over	8,144	16.5	1,142	12.3	271	25.0	546	24.0	191	3.7	134	17.8
FEMALES with earnings 3/	36,413	100.0	5,227	100.0	699	100.0	1,605	100.0	2,489	100.0	434	100.0
$1 to $2,499 or less	314	0.9	56	1.1	18	2.6	11	0.7	23	0.9	4	0.8
$2,500 to $4,999	177	0.5	34	0.6	-	-	6	0.4	27	1.1	1	0.3
$5,000 to $9,999	1,008	2.8	262	5.0	16	2.2	45	2.8	183	7.3	18	4.2
$10,000 to $14,999	2,796	7.7	749	14.3	32	4.6	131	8.2	539	21.7	46	10.6
$15,000 to $19,999	4,313	11.8	841	16.1	83	11.9	176	11.0	520	20.9	62	14.2
$20,000 to $24,999	5,028	13.8	759	14.5	104	14.9	212	13.2	369	14.8	74	17.0
$25,000 to $34,999	8,759	24.1	985	18.9	160	22.9	323	20.1	424	17.0	78	17.9
$35,000 to $49,999	7,552	20.7	766	14.7	142	20.4	307	19.1	245	9.8	72	16.7
$50,000 to $74,999	4,434	12.2	523	10.0	89	12.8	280	17.4	107	4.3	46	10.7
$75,000 and over	2,032	5.6	252	4.8	53	7.6	114	7.1	52	2.1	33	7.5

Notes:

1/ The majority of those born in 'Latin America' are from Mexico. Those born in 'Other Areas' are from Africa, Oceania, Bermuda and Canada.

2/ Age 15 years and over.

3/ Earnings for previous calendar year.

SOURCE: U.S. Census Bureau, Current Population Survey, March 2002

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