Quality Changes of Female Immigrants during 1970-2000

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I. Introduction

Compared to the other countries in the world, the U.S. has a relatively large fraction of immigrants. Moreover, the portion of immigrants in the U.S. population has dramatically increased in these decades. With the portion of immigrants increasing, the quality changes of immigrants are becoming more and more concerned because they may affect how much immigrants can contribute to the U.S. economy. They may also have implications for immigration policies, such as the criteria for rationing visas, the control of illegal immigrants, the enforcement of immigration laws, etc.

A lot of work has studied the quality changes of *male* immigrants. However, little has been done on *female* immigrants' quality changes, despite the fact that 42% of the immigrant workers are women in 1990[1]. Previous work examined female immigrants until the end of 1980s due to the data availability. With the 2000 Census available, my paper extends their work to the 1990s. Also, my paper goes beyond the preceding works by adjusting the regression specifications. I take into account the discontinuous work history of women and I correct women's self-selection into labor force.

Using the same data and methodology as those in Borjas (1985), my paper allows a comparison between the quality changes of female immigrants and those of the male immigrants as indicated in his work. This comparison contributes to the male/female differentials among immigrants, which is far less studied than among the native born.

How to measure quality of immigrants is an important issue in this area. This paper starts from examining two variables of immigrants' human capital that can be directly measured: education and language proficiency. Then the paper focuses on the immigrants' unobservable dimensions of quality by analyzing the immigrants' wages, controlling the human capital variables. Based on the assumption of perfectly competitive labor market, wage is equal to marginal productivity of labor. So I can use regression-adjusted wages to estimate unobservable productivities.

II. Observable Quality Changes

This paper uses the data from Census 1970, 1980, 1990 and 2000. I divide the sample

[1] Schoeni (1998)

into four groups: Whites, Blacks, Asians and Mexicans, so that I can examine the quality changes within each immigrant group to isolate the effect of changes in sending country composition. Census data provide two important human capital variables – educational attainment and English ability. These two variables greatly affect the immigrants' labor market outcomes so their changes over time are good indications of immigrants' quality changes.

To examine the quality changes of immigrants over time, I group the immigrants in each Census year into cohorts according to their arrival years. For example, immigrants who came to the U.S. during 1965-1969 are grouped as cohort 6569. The patterns of education and English ability across immigrant cohorts shed some light on the implications of various immigration policies. For example, Asian immigrants who arrived after 1965 had lower education level in average than those who arrived before 1965. This may reflect the fact that the Immigration and Naturalization Act of 1965 increased the number of Asian immigrants that were admitted into the U.S. based on family reunification. The increase in immigrants who came on the basis of kinship instead of skills would decrease the average skills of the immigrants. The data also show that the Mexican immigrants who came after 1985 had stronger English abilities in average than those who came before 1985. This could be due to the Immigration Reform and Control Act of 1986 (IRCA) that reduced the number of illegal immigrants.

III. Unobservable Quality Changes

The mean characteristics provide only information on the immigrants' observable quality changes. Using regression-adjusted wages allows us to examine the unobservable qualities. I applied the methodology from Borjas (1985) so that the results in this paper can be compared to his. The idea is to compare the predicted wages of two cohorts, everything else being equal. With the repeated cross sections, it is possible to compare two cohorts that have the same amount of experience in the U.S.

Suppose I want to examine the quality changes between cohort 6569 and cohort 7579. To make sure that these two cohorts have the same amount of experience in the U.S., I estimate cohort 6569's wage using Census 1970 and estimate cohort 7579's wage using Census 1980. Firstly, I run two cross-sectional regressions:

$$\ln w_{70} = X\beta_{70} + \alpha_{70,65}D_{65} + \alpha_{70,60}D_{60} + \alpha_{70,50}D_{50} + \alpha_{70,40}D_{40} + \varepsilon_{70,}$$
$$\ln w_{80} = X\beta_{80} + \alpha_{80,75}D_{75} + \alpha_{80,70}D_{70} + \alpha_{80,65}D_{65} + \alpha_{80,60}D_{60} + \alpha_{80,50}D_{50} + \alpha_{80,40}D_{40} + \varepsilon_{80,}$$

where the subscripts 70 and 80 indicate the Census year that the data come from. X is a vector of variables including education, experience, experience square, marital status, health, and residence area. The dummy variables D_k indicate arrival years. For

example, D_{65}=1 if an immigrant migrated during 1965-69.

Based on these two regressions, predicted wages can be calculated for each cohort. The regression-adjusted wages for cohort 6569 and cohort 7579 with less than five years U.S. experience are, respectively:

$$\hat{W}_{70,65} = \exp(\overline{X}\hat{\beta}_{70} + \hat{\alpha}_{70,65}),$$
$$\hat{W}_{80,75} = \exp(\overline{X}\hat{\beta}_{80} + \hat{\alpha}_{80,75}).$$

Note that, the same $\overline{X}$ is used in the calculation of both $\hat{W}_{70,65}$ and $\hat{W}_{80,75}$ to make sure that the differences between cohorts' wages are due to unobserved qualities, rather than observed factors included in X.

Taking the difference between $\hat{W}_{70,65}$ and $\hat{W}_{80,75}$ could generate a measure of quality difference between cohort 6569 and cohort 7579. However, this measurement would be biased downwards if the labor market conditions worsened between 1970 and 1980. Borjas used native workers as a control group to remove the effect of changes in overall labor market condition. Thus the across-cohort quality change between cohort 6569 and cohort 7579 is:

$$(\hat{W}_{70,65} - \hat{W}_{70,n}) - (\hat{W}_{80,75} - \hat{W}_{80,n}),$$

where n stands for native workers. Predicted wages of native workers can be obtained using the same $\overline{X}$ as above and the estimated coefficients from the regressions of native worker samples.

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My results show that the quality of female immigrants declined during 1970-1980, 1980-1990, and 1990-2000. The declines in 1990-2000 are smaller in magnitude than in the previous two decades. Compared to the results of male immigrants in Borjas's work, quality decline of female immigrants is much less obvious.

IV. Modified Specifications

Two questions arise when applying Borjas's methodology to female immigrants. One question is that using potential work experience (age-6-education) as a proxy for actual labor market experience is not very accurate for women who have discontinuous work history. I address this question by including number of children as an explanatory variable to proxy the amount of time women stay out of the labor force. Moreover, I distinguish the different effects of potential experience for married and single women by interacting the experience variables with the marital status variable. With these adjustments, the quality decline of female immigrants becomes smaller in magnitude.

The second question is that Borjas's method relies on working people only. Schoeni (1996) and Funkhouser & Trejo (1998) both showed that the probability of working changed across female immigrant cohorts. Then Borjas's method is comparing different pools of female immigrants because of the fact that women select into labor force endogenously, not randomly. I make two modifications to address this deficiency. The first one is to use the Heckman two-stage selection model to control for the self-selection process. The second adjustment is to follow the work of Blau and Beller (1992) and Baker et al (1995), calculating the cohort mean wage as a weighted average of predicted participants' wage and predicted non-participants' wage, with the weights capturing the change of participation rates over time. With these two amendments, I expect to see a smaller decline of female immigrants' quality than in the original model. This is because the working females have higher earnings potential than the nonworking females. The increase in labor force participation means the previously nonworking females now enter the working females sample and bring down the average wage of the sample. Making the above two adjustments removes this effect of labor force participation change.