

Article history: Received 25 June 2015; accepted 27 March 2016

Earnings disadvantage of immigrants: are we comparing apples to apples?

Fahad Gill^Y

Abstract

The substantial increase in the proportion of immigrants in the US population has attracted considerable research interest in their labor market outcomes, in particular, their relative wages. Most studies in this area, however, do not account for the fact that immigrants have unobservable characteristics that are different from those of natives and that are related to their decision to migrate to a new country. These characteristics, if not controlled for, may result in inaccurate estimates of the earnings disadvantage associated with immigrant status. This study attempts to account for unobservable characteristics associated with migration by comparing immigrants with native migrants. The results suggest that previous studies that used all natives as a comparison group may have provided a lower bound of the wage disadvantage faced by immigrants.

Keywords: Immigrants; relative earnings; unobservable characteristics; internal migration

Introduction

Immigrants form a large segment of the US labor force and their performance in the labor market has important implications for the US economy. An understanding of the wage disadvantage of immigrants relative to natives is a vital step towards any policy intervention that attempts to address it. However, it is difficult to draw meaningful comparisons between the earnings of immigrants and natives if they have a different set of unobservable characteristics. Immigrants are highly motivated and positively self-selected individuals who incur substantial emotional and financial cost when they decide to migrate to a new country (Feliciano, 2005; Chiquiar and Hanson, 2005). They leave their comfort zone and opt for an uncertain but possibly better future in a place where they may have to unlearn their way of life and learn new ways to be successful. Their emotional and financial investment and risk taking behavior provides evidence of a forward looking mindset, which aspires for a better life for them and their children. These positive unobservable

^Y Fahad Gill, College of Business, Humanities and Social Sciences, West Virginia University (Tech.), 405 Fayette Pike, Montgomery, WV 25136, United States. Email: fahad.gill@mtsu.edu.



characteristics are likely to be strongly correlated with earnings and the decision to migrate.

Recent studies that have compared earnings of immigrants with natives report the earnings disadvantage of immigrants to be between 15 to 30 percent depending on use of sample and controls (Card, 2005; Borjas, 2006; Borjas and Friedberg, 2009). However, these and previous studies¹ use comparison groups consisting of all natives, the majority of which may have never left the county or state they were born in and may, therefore, lack some of the positive unobservable characteristics that migrants have. If migration is associated with positive unobservable characteristics, and those unobservable characteristics are correlated with earnings, then the regression estimates are likely to suffer from omitted variable bias. Hence, previous estimates may have provided a lower bound of the earnings disadvantage associated with immigrant status.

To account for unobservable characteristics associated with migration, I use a sample that includes only individuals who have migrated, either within the country or from outside the country. Hence, I propose a control group in the form of native migrants, i.e. people who have moved to a different state than their state of birth. This sample selection increases the chance to have a sample population with more similar unobservable characteristics, at least the ones associated with migration, between control and treatment group.

Some of the previous studies, such as Hu (2000) and Lubotsky (2007), have used longitudinal data sets to study the earnings assimilation of immigrants over time. These studies have used the panel data to address various sources of biases, including sample selection bias in cross-sectional data that is caused by emigration. However, it is important to note that assimilation over time and the level of earnings disadvantage in a given period of time are two different measures. This article attempts to address the problem of omitted unobservable characteristics for the latter measure.

Data

I use American Community Survey (ACS) data from the Integrated Public Use Microdata Series (IPUMS) for the years 2001-2007.² I restrict the sample to men between the ages of 18 and 64 who have worked for a wage or salary in the past year. An immigrant is defined as a person who is residing in the US but was not born in the US and a native migrant is defined as a person who is living in a state other than his state of birth. The unobservable characteristics of international migrants and native migrants are likely to be more similar than international migrants and all natives.

¹ Such as the studies by Chiswick (1978), Borjas (1985, 1995) and Funkhouser and Trejo (1995).

² From the year 2008 onwards the 'number of weeks worked' by a respondent are reported by intervals. Hence, hourly wage calculation for year 2008 onwards is not comparable to the hourly wage calculation for the years before 2008. For this reason, the sample is restricted to the year 2007 and before.

As a note of caution, however, the approach of using native migrants as a comparison group is not immune from problems. An obvious concern is that the inter-state migration involves a far lower level of investment and risk-taking as compared to the one made by cross-country migrants. Another problem is that, although I am able to control for the years an immigrant has been in the US by including the census year and cohort dummy variables, I am not able to control for the time a native migrant has been at his destination state because of data limitations. Despite these limitations, the suggested approach can still be argued to control for migration related unobservable characteristics, to some degree, in estimating the wage disadvantage of immigrants.

Table 1: Differences across migrant statuses

| | Full Sample | All Natives | Native Migrants | Immigrants |
|--------------------|--------------------|--------------------|--------------------|--------------------|
| Age | 41.52 (11.76) | 41.82 (11.83) | 43.12 (11.51) | 39.82 (11.22) |
| Wage Earnings (\$) | 48,900 (48,916) | 49,846 (50,024) | 58,225 (59,181) | 43,517 (48,951) |
| Hourly Wage (\$) | 25.48 (284.30) | 25.88 (305.97) | 29.64 (460.26) | 23.19 (89.63) |
| <i>Education</i> | | | | |
| Primary or Less | 1.10% | 0.31% | 0.23% | 5.28% |
| <High School | 10.96% | 8.50% | 6.36% | 24.94% |
| High School | 30.84% | 32.25% | 24.46% | 22.82% |
| Some College | 20.16% | 21.52% | 21.55% | 12.39% |
| Associates' Degree | 7.29% | 7.70% | 7.56% | 4.93% |
| Bachelor's Degree | 18.97% | 19.51% | 24.25% | 15.90% |
| Advanced Degree | 10.73% | 10.20% | 15.56% | 13.75% |
| Observations | 2,689,739 | 2,287,708 | 873,325 | 402,031 |

Notes: The table shows the means of age, wage earnings and hourly wage, and proportions of individuals in various education groups. Standard deviations are in parentheses. Wages are top coded in ACS. Respondents who earn less than \$2 an hour are dropped to account for outliers at the bottom of the wage distribution. All wage figures are converted into 2005 dollars. Seven dummy variables for various education levels are created to allow for non-linear returns to different levels of education.

Table 1 presents the descriptive statistics. The full sample has over 2.6 million observations. This includes 873,325 native migrants and 402,031 immigrants. Table 1 shows that the average wage earnings of native migrants are \$8,379 more than that of all natives and \$14,708 more than that of immigrants. Table 1 also shows that native migrants have a marked hourly wage advantage over all natives and also over immigrants.

The percentage of individuals with less than high school education is lowest for native migrants. This group also has the highest proportion of individuals with bachelor and advanced degrees. The immigrants in the sample have the

highest proportion of individuals with less than high school education but also a higher proportion of people with advanced degrees than natives. The differences between the educational attainment of immigrants and native migrants are large at the lower end of the education spectrum, which may make one question the idea that native migrants are a better comparison group than all natives for the purpose of estimating the effect of nativity status on earnings. But the key point is that educational attainment is an observable characteristic and can be controlled for in an empirical model. Unobservable characteristics, by contrast, are harder to account for and, hence, the use of migrants as a comparison group, although not perfect, still provides insight into the importance of controlling for migration related unobservable characteristics in estimating the wage disadvantage of immigrants.

Empirical evidence

In this section, I estimate the wage disadvantage of immigrants using the common controls that have been used in the literature. To highlight the differences caused by trying to absorb unobservable characteristics, I use two samples, one including all natives and immigrants, and one including only migrants (native and foreign). Using two different samples, I estimate variants of the following specification:

$$\ln(\text{wage}_{it}) = \tau + \alpha I_{it} + \beta' DCohort_{it} + \gamma' Deduc_{it} + \delta' x_{it} + \theta' DState_{it} + \rho' stateURate_{it} + vPart_{it} + \eta_t + e_{it}$$

where subscript i refers to an individual and t to a Census year. In the above equation, *wage* denotes real hourly wage/salary income. The dummy variable I is one if an individual is an immigrant. $DCohort$ is a vector of 14 dummy variables. The 14 arrival-cohort dummy variables for the immigrants identify 5-year intervals, starting with years 1936-1940.³

$Deduc$ is a vector of seven dummy variables that account for various levels of education. Vector x accounts for age, age squared, and race. $Part$ is a dummy variable that equals one if an individual works part-time (less than 17.5 hours) and 0 otherwise. Vector $Dstate$ consists of 51 dummy variables, including one for District of Columbia, that identify the state of residence of individual i at time t . The vector $stateURate$ controls for the unemployment rate of the state that individual i is residing in at time t .⁴ Census year dummy variables are identified by η . The key coefficient of interest is α , which represents the wage disadvantage associated with being an immigrant.

Table 2 presents the estimation results of a number of model variants. Only the coefficient of the immigrant dummy variable is reported for each

³ Borjas (1985, 1995) and Lubotsky (2007) document significant variation in relative earnings of immigrants by cohort. Cohort dummy variables and dummy variables for 'years in the USA' are collinear and, hence, dummy variables for 'years in the USA' are not included in the model.

⁴ The unemployment data come from the Bureau of Labor Statistics (BLS, 2014).

specification. Panel A shows estimates using the full sample, while Panel B shows the estimation results for the sample that only includes native migrants and immigrants. As the model is specified in terms of the log of hourly wages, the coefficients of the immigrant dummy can be interpreted as approximately the percentage wage disadvantage of immigrants compared to natives. However, whenever the estimates are relatively large, this approximation is not very accurate. Hence, I present the size-adjusted transformed coefficients in Panel C.⁵

Table 2: The Relative Earnings of Immigrants

| | (1) | (2) | (3) |
|-------------------------------|-------------------|-------------------|-------------------|
| <i>Panel A: Full Sample</i> | | | |
| Immigrant Dummy | -0.412 (0.003) | -0.455 (0.003) | -0.215 (0.003) |
| R-Squared | 0.016 | 0.044 | 0.297 |
| Observation (000s) | 2690 | 2690 | 2690 |
| <i>Panel B: Only Migrants</i> | | | |
| Immigrant Dummy | -0.524 (0.003) | -0.57 (0.003) | -0.244 (0.003) |
| R-Squared | 0.045 | 0.076 | 0.319 |
| Observations (000s) | 1275 | 1275 | 1275 |
| <i>Panel C:</i> | | | |
| (1) Full Sample | -33.77% | -36.56% | -19.35% |
| (2) Only Migrants | -40.79% | -43.45% | -21.65% |
| (3) Full Sample (\$) | -17,207 | -18,627 | -9,858 |
| (4) Only Migrants (\$) | -22,688 | -24,169 | -12,044 |
| (5) Difference/Bias (\$) | 5,481 | 5,542 | 2,187 |
| <i>Controls</i> | | | |
| Census Year | X | X | X |
| Years of Immigration | X | X | X |
| State | | X | X |
| State Unemployment | | X | X |
| Part-Time Work Status | | | X |
| Age | | | X |
| Race | | | X |
| Education | | | X |

Notes: Dependent Variable: Log of Hourly Wages. Standard errors are in parentheses. All coefficients are significant at $p < .001$. Dollar values of the yearly wage disadvantage for a full time worker are calculated by multiplying the sample-specific means of hourly wages with 2,000 hours.

⁵ I utilize the standard transformation: $\exp(\text{coefficient}) - 1$.

The first row of Panel C shows the estimates of the percentage wage disadvantage of immigrants using the full sample; the second row shows the estimates of the percentage wage disadvantage of immigrants using the sample that only consists of migrants. I then use sample-specific means, along with the estimates of the percentage wage disadvantage to calculate the dollar value of the yearly wage disadvantages of a typical full time immigrant worker, for both samples. These are presented in the third and fourth rows of Panel C. The difference in the dollar values of the yearly wage disadvantage is shown in the fifth row of Panel C. This difference approximates the result of incorporating migration related unobservable characteristics on estimates the wage disadvantage associated with immigration status.

Column 1 of Table 2 reports the immigrants' wage disadvantage to be 33.77% when all natives are used as a control group and 40.79% when only native migrants are used as a control group. This 7.2 percentage point difference translates into a \$5,481 yearly wage disadvantage for a full-time immigrant worker. Column 2 adds state dummy variables and state unemployment rates to the specification. These controls increase the estimates of the wage disadvantage of immigrants for both samples. This suggests that immigrants tend to reside in states where wages are relatively high. The difference in the estimates of the dollar values of the wage disadvantage also increases by a small amount to \$5,542. Column 3 adds age, age squared, race, education and part-time status variables to the specification. Adding these variables reduces the wage disadvantage to 19.35% (\$9,858) for the full sample and to 21.65% (\$12,044) for the sample of migrants. This difference (\$2,187) suggests that using all natives as the control group, which includes many that have not migrated, may just be providing a lower bound of the estimate of the earnings disadvantage of immigrants.

Conclusion

This article points out the fundamental differences in the unobservable characteristics of immigrants and natives, and calls into question the usefulness of comparing immigrants with all natives. Noting that migrants have significantly different unobservable characteristics than people who choose not to migrate, I propose native migrants as a control group for immigrants to estimate the wage disadvantage associated with immigration status. The empirical analysis shows that comparing immigrants with native migrants results in a higher estimate of the wage disadvantage of immigrants than the one estimated by comparing immigrants with all natives. The differences are substantial even after controlling for all common controls used in the literature. Hence, the article concludes that an approach that controls for unobservable characteristics associated with migration may result in a substantially higher estimate of the earnings disadvantage of immigrants in the US.

However, it is also noteworthy that the models estimated in this article do not control for many characteristics that vary substantially between immigrant and native migrants. Inclusion of such characteristics as the quality of education, suitability of an individual's human capital to the US labor market, and parental income and education may substantially reduce the estimates of the earnings disadvantage associated with immigration status.

References

- Borjas, J. G. (1985). Assimilation, changes in cohort quality, and the earnings of immigrants, *Journal of Labor Economics*, 3(4): 463-89.
- Borjas, J. G. (1995). Assimilation and changes in cohort quality revisited: what happened to immigrant earnings in the 1980s?, *Journal of Labor Economics*, 13: 201-45.
- Borjas, J. G. (2006). *Making it in America: Social mobility in the immigrant population* (No. w12088). National Bureau of Economic Research.
- Borjas, G. J., & Friedberg, R. M. (2009). *Recent trends in the earnings of new immigrants to the United States* (No. w15406). National Bureau of Economic Research.
- BLS (2014.) Local Area Unemployment Statistics Home Page. U.S. Bureau of Labor Statistics. Available at <http://www.bls.gov/lau> (accessed 19 May 2014).
- Card, D. (2005). Is the new immigration really so bad? *The Economic Journal*, 115(507): 300-323.
- Chiquiar, D., & Hanson, G. H. (2005). International migration, self-selection, and the distribution of wages: evidence from United States, *Journal of Political Economy*, 113(2): 239-81.
- Chiswick, B. R. (1978). The effect of Americanization on the earnings of foreign-born men, *Journal of Political Economy*, 86(5): 897-921.
- Duleep, H. and Regets. M. (2002). The elusive concept of immigrant quality: evidence from 1970-1990. IZA Discussion Paper No.631. Institute for the Study of Labor.
- Feliciano, C. (2005). Educational selectivity in U.S. immigration: how do immigrants compare to those left behind?, *Demography*, 42(1): 131-52.
- Funkhouser, E. and Trejo, S. J. (1995). The labor market skills of recent male immigrants: evidence from the Current Population Survey, *Industrial and Labor Relations Review*, 48(4): 792-811.
- Hu, W. Y. (2000). Immigrant earnings assimilation: estimates from longitudinal data, *American Economic Review*, 90(2): 368-372.
- Kao, G. (2004). Parental influences on the educational outcomes of immigrant youth, *International Migration Review*, 38 (2): 427-49.
- Keller, U. and Tillman, K. (2008). Post-secondary educational attainment of immigrant and native youth. *Social Force*, 87(1): 121-152.
- Lubotsky, D. (2007). Chutes or ladders? A longitudinal analysis of immigrant earnings, *Journal of Political Economy*, 115(5): 820-867.
- Nwosu, C., Batalova, J. and Auclair, G. (2014). Frequently requested statistics on immigrants and immigration in the United States. Available at: Migrationpolicy.org (accessed 28 April. 2014)

410 *Earnings disadvantage of immigrants: are we comparing apples to apples?*

Ruggles, S., Alexander, T., Genadek, K., Goeken, R., Schroeder, M. B., and Sobek, M. (2010). *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.