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Economic Assimilation of Chinese Immigrants in the United States:

Is There Wage Convergence with Natives?

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Illinois Wesleyan University Economics Honor's Research Project

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Abstract

Asian Americans are often referred to as the “model minority” due to perceptions of their high income and educational attainment; yet relatively little is known about their economic assimilation experience. The purpose of this study is to determine economic assimilation of Chinese immigrants over time. This research follows a cohort of Chinese immigrants from 1994 to 2011 and compares their earnings performance with natives that have similar educational attainment. Multiple regression analysis is used to analyze data from the Current Population Survey. Results show that, although the cohort of Chinese immigrants initially has earnings substantially lower than the natives, it is only about 10 years before they reach income parity. By 2011, Chinese immigrants’ earnings exceed natives’ earnings by about 4 percent. The study concludes that despite the language and adjustment challenges, Chinese immigrants do show rapid economic assimilation in the United States.

Introduction

Asian Americans have a long history in the United States, and are often referred to as the “model minority” in America for their high educational attainment and high achievement. Nonetheless, past research has found that there still seems to be a wage gap between Asian Americans and natives. For example, one study finds that Asian immigrants’ earnings are about 75% of native-born white Americans’ earnings (Min, 2006). Mass media reports also show that Asian American men are paid up to 29% less than equally qualified white males (Debusmann, Jr., 2010). While existing literature suggests that immigrants who can adapt well and are relatively successful in their new jobs can make a significant contribution to economic growth (Borjas, 2009), the income level of Chinese immigrants depends on various factors.

Although Asian Americans are perceived as the “model minority” due to their high education attainment and high income, relatively little is known about Chinese immigrants’ economic assimilation experience. The number of Chinese immigrants in the U.S. has increased significantly over the years. According to the U.S. Census Bureau, there are 3.8 million Asians of Chinese descent in the U.S. in 2009, making it the largest Asian group in the country (2009 American Community Survey, 2009). The continuously increasing number of Chinese immigrants in the U.S. raises a number of important research questions. What determines Chinese immigrants’ performance in the U.S. labor market? Is there an income gap between Chinese immigrants and natives? Moreover, is there assimilation and upward mobility for Chinese immigrants today?

The purpose of this study is to determine economic assimilation of Chinese immigrants over time. By looking for income disparity between the immigrants and the natives, my research follows a cohort over time to investigate the impact of assimilation on the level of earnings for

Chinese immigrants in the United States. This paper uses Census data and multiple regression techniques to examine income determinants for Chinese immigrants relative to natives by applying theories of assimilation and human capital. The research focuses on income differences between a cohort of Chinese immigrants and natives that are followed from 1994 through 2011. The study aims to re-examine the conclusions reached from past studies and explore the impact of economic assimilation that affect the living situations of Chinese immigrants who reside in the U.S.

Theory and Literature Review

Assimilation

Assimilation theory describes the process that immigrants use to adapt and become acculturated to the host country. It is defined by William Clark as a way of understanding the social dynamics of American society, a learning process that occurs spontaneously in the course of interaction between majority and minority groups (Clark, 2003).

Waters and Jeménez state that today's immigrants are largely assimilating into the American society along four dimensions: socioeconomic status, spatial concentration, language assimilation, and intermarriage. After migration takes place, immigrants find themselves in a foreign and sometimes hostile environment. A learning process about the host country's cultural, political and economic characteristics takes place, and the immigrant begins to "assimilate." In general, immigrants and their descendants become more similar to natives over time by improving their language skills and acquiring local human capital. They may also become more similar to natives in their legal status by obtaining long-term residency and work permits, or by marrying natives and becoming naturalized citizens (Schaeffer, 2006). In theory, assimilation

along these four dimensions should help immigrants close the earnings gap with natives as the number of years in the U.S. increases.

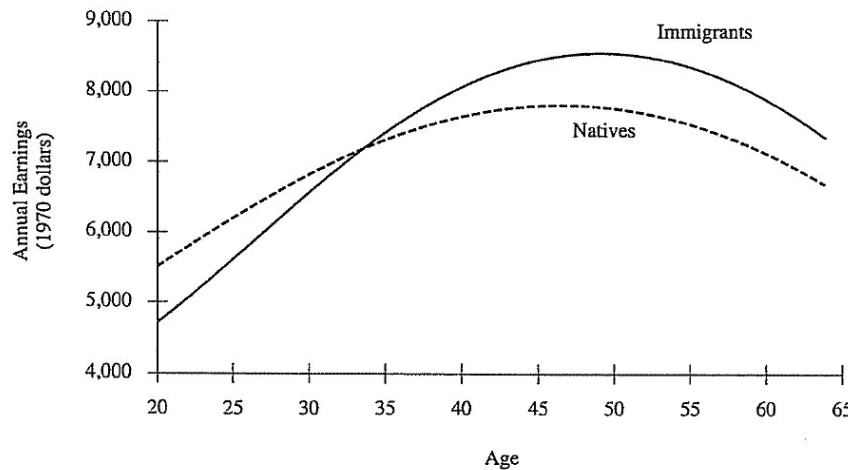
Assimilation occurs spontaneously in the interaction between natives and immigrants and therefore is an ongoing process that takes time to occur. For example, Beenstock, Chiswick and Paltiel (2010) suggest that duration in the destination plays an important role in the economic adjustment of immigrants in the host country. By testing the immigrant assimilation hypothesis with longitudinal data, they further claim that long-duration immigrants experience a steeper increase in earnings.

Besides length of stay in the host country, researchers have long emphasized the importance of education on an immigrant's income level. Studies of Asian Americans' income show that education helps immigrants to become acculturated and subsequently to assimilate (Barringer, Takeuchi, & Xenos, 1990). For example, research shows that sharp differences exist in time use between immigrants and natives, and that an increasing amount of time spent on education helps immigrants to become assimilated to the host country (Vigdor, 2008).

Age earnings profile

Age earnings profiles are often used by researchers to examine earnings progressions of immigrants and natives and are widely used to describe an individual's earnings over the course of one's work life. Chiswick's early studies (1978) use cross-section data to sketch out the age-earnings profiles of immigrants and natives. Figure 1 uses data from the 1970 census and shows the age-earnings profiles of immigrant and native men in the cross section.

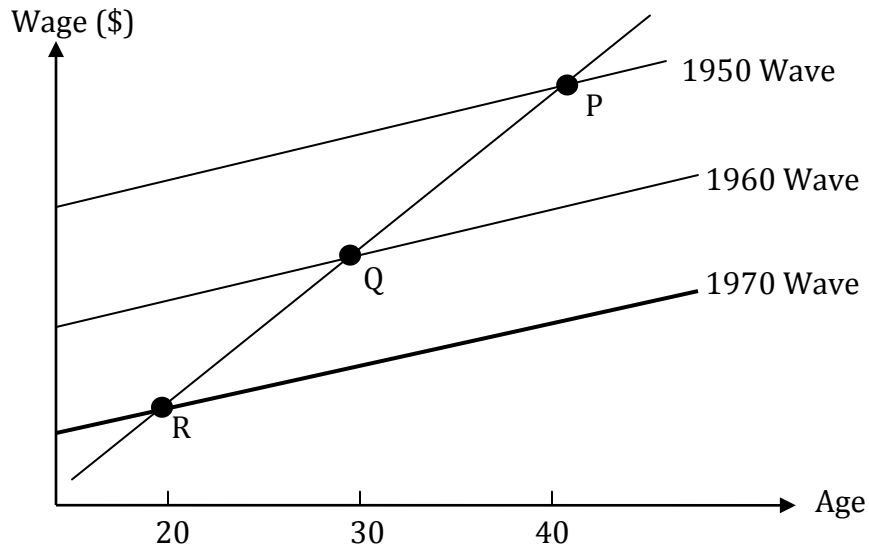
Figure 1: Age-Earnings Profiles of Immigrant and Native Men in the Cross Section (Borjas, 2009)



In Figure 1, Chiswick uses cross sectional data and thus displays a snapshot of the population at a point in time. Observations of the age-earnings profile suggest that immigrants' earnings are initially lower than the native level, and the immigrant curve is steeper than the natives'. Gradually, immigrants reach the same level of income as natives while eventually earning more than natives. Therefore, based on Chiswick's 1978 study using cross-section data, the age-earnings profiles of immigrant and native men show that upward mobility is an important aspect of the immigrant experience (as cited in Borjas, 2009). These studies also show that immigrant wages converge toward and then exceed native wages.

While Figure 1 may seem plausible, critiques point out that such findings are based solely on one year's cross sectional data and thus could be misleading. Because Figure 1 displays a snapshot of the population at a point in time, it disregards the question of when the immigrant migrated to the host country. Borjas (2009), for example, suggests that different cohorts, defined by year of arrival in the United States, may be significantly different from each other because of productivity differences. Figure 2 illustrates the cohort bias issue that Borjas suggests.

Figure 2: Illustration of Cohort Effects and the Age-Earnings Profile (Borjas, 2009)



Based on this reasoning, Borjas (2009) suggests a hypothetical scenario in Figure 2 where there are three separate waves of immigrants. These waves of immigrants have distinct productivities but all immigrate to the U.S. at the age of 20. As shown in Figure 2, the typical age-earnings profile for each wave of immigrants is displayed in the graph. Now assume that we obtain the 1970 census data and plot the earnings for immigrants as line RQP. Notice that the 1970 census data reports the wage of 1970-wave immigrants when they are 20 years old (point R); the wage of 1960-wave immigrants when they are 30 years old (point Q); and the wage of 1950-wave immigrants when they are 40 years old (point P) (Borjas, 2009). When points R, Q and P are connected, we get the 1970 cross section estimate of the age earnings profile of immigrants. It shows much more rapid earnings growth than actually occurred according to the three parallel actual age-earnings profiles of the three cohorts. In short, the upward rising line RQP shows that one year's cross section is not a good approximation of actual cohort earnings over time. In fact, without considering such cohort bias, the age-earnings profile based solely on one year of cross section data can erroneously imply assimilation for immigrants (Borjas, 2009).

Since the use of cross section data can create bias in the estimation of actual cohort performance, Thornton, Rodgers, and Brookshire (1997) suggest that great caution should be exercised in making interpretations about individuals' earnings over time based on cross section data. The importance of actually following specific cohorts over time and not using a single cross section to estimate a cohort's earnings profile has also been noted in other studies (Fukuda, 2008).

There are several reasons to expect cohorts who immigrate to the U.S. in different years to have different earnings performance. As explained above, Borjas argues that differences exist in cohort qualities such as productivity and skill level. Others suggest additional reasons for cohort bias such as the inflation rate and productivity growth in the economy (Thornton, Rodgers, & Brookshire, 1997).

Human Capital

Borjas defines human capital as the unique set of abilities and acquired skills that each of us brings into the labor market (Borjas, 2005). Human capital theory even more directly asserts the enhancing impact of education on the living situation of minorities (Barringer, Takeuchi, & Xenos, 1990). Human capital theory suggests that success in school and high levels of formal education increase the prospects for better paying, higher status, and more satisfying employment (Barringer, Takeuchi, & Xenos, 1990).

Based on the assimilation theory and human capital theory, my research attempts to explore income determinants for Chinese immigrants and answer the question of how much influence assimilation has on income level after controlling for human capital factors. Specifically, this research adopts a cohort approach by using repeated cross section data over multiple years. By following a group of Chinese immigrants over time to eliminate cohort biases that are present in

cross section data, this paper examines whether assimilation, measured by length of stay in the host country, helps to close the income gap between Chinese immigrants and natives after controlling for other known variables to affect income level.

I hypothesize that:

- (1) Human capital factors have a significant influence on Chinese immigrant earnings.
- (2) The more assimilated Chinese immigrants are, the closer the income parity with natives, controlling for other factors that are known to affect income. Specifically, the longer Chinese immigrants stay in the U.S., the closer their income parity with natives, controlling for other factors that are known to affect income.

Data

All data in this research paper comes from the IPUMS CPS (Current Population Survey) database. IPUMS-CPS is an integrated set of data covering 50 years (1962-2011) of the March Current Population Survey (CPS). It is a monthly U.S. household survey conducted jointly by the U.S. Census Bureau and the Bureau of Labor Statistics (IPUMS-CPS, 2011). Data used in this research comes from the CPS database administered every March from 1994 to 2011. Due to the availability of data in the IPUMS CPS, this research follows two cohorts:

- 1) Chinese born individuals who immigrated to the U.S. prior to 1994, work more than 35 hours per week, and were at least 25 and not over 45 years old during the 1994 survey year.
- 2) Native born individuals who work more than 35 hours per week and were at least 25 and not over 45 years old during the 1994 survey year.

My research follows the native and Chinese cohorts by studying the behavior of their earnings during survey years 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010 and 2011. The Chinese and the native earnings are compared at each point in time by analyzing CPS data from the corresponding survey year.

Table 1 shows the CPS data selected and the corresponding sample size. The native group has a large sample size in each sample year and therefore is assumed to be representative of the entire population. The adequate sample size for the Chinese immigrants group allows the study to make inferences about the entire population. Note that both of the cohorts age with the passage of time from 25-45 years in 1994 to 42-62 years in 2011.

Table 1: Summary of Sample Sizes for Each Selected Survey Year

Survey Year	Age	Number of Observations	
		Natives	Chinese Immigrants
1994	25-45	30,915	197
1996	27-47	26,481	165
1998	29-49	26,470	195
2000	31-51	26,859	159
2002	33-53	44,248	262
2004	35-55	40,748	258
2006	37-57	38,096	275
2008	39-59	36,225	270
2010	41-61	32,428	214
2011	42-62	30,193	227

Dependent variable

The variable *Wage and Salary Income* indicates each respondent's total pre-tax wage and salary income—that is, money received as an employee—for the previous calendar year. *RealWage* indicates each respondent's real wage level after being adjusted for inflation, and is expressed in terms of a 2011 price level. *LnRealWage* is used to measure level of income after being adjusted for inflation. The natural log of wage is commonly used as a dependent variable

in wage equations and has the convenient characteristic that the regression coefficients estimate the percentage change in income for a one unit of change for a given variable.

To see the CPI data used in real wage adjustments, please refer to Appendix 1.

Independent variables

Education Attainment is used to measure an individual's level of education based on the assimilation and human capital theory. This variable is recoded into a set of dummy variables:

- *HighSchoolDiploma*
- *SomeCollege*
- *Bachelors*
- *Masters*
- *Professionals*
- *Doctors*

The reference group for the education dummy variables is respondents who have not earned a high school diploma.

Age gives each person's age at last birthday. *Age* approximates life experience and is a very rough proxy for work experience.

Usual Hours Worked Per Week (last year) is used to measure the individual's work experience. It reports the number of hours per week that respondents usually worked if they worked during the previous calendar year. Individuals either reported hours worked at a job or business at any time during the previous year or acknowledged doing "any temporary, part-time, or seasonal work even for a few days" during the previous year (IPUMS-CPS, 2011).

Sex gives each person's gender. It is measured as a dummy variable *Male* in the empirical model. The dummy variable is equal to 1 if the person is a male and 0 if the person is a female.

Marital Status gives each person's current marital status, including whether the spouse was currently living in the same household. The variable is recoded as a dummy variable *Married* that includes those that live together or live separately, with the reference group of individuals that are not currently married.

NChild gives the number of own children (of any age or marital status) residing with each respondent. It includes stepchildren and adopted children as well as biological children.

NChlt5 gives the number of own children age 4 and under residing with each respondent. It includes stepchildren and adopted children as well as biological children.

All variables and their detailed definitions are shown in Table 2.

Table 2: Variables, Descriptions and Expected Signs

Variable	Description	Expected Sign
Dependent		
LnRealWage	Natural log of real wage and salary income	
Independent		
<i>Education attainment</i>		
HighSchoolDiploma	0 = High school (no diploma) or under 1 = High school diploma or equivalent	Positive
SomeCollege	0 = no college 1 = some college (including associate's degree)	
Bachelors	0 = No Bachelor's degree 1 = Bachelor's degree	
Masters	0 = No Master's degree 1 = Master's degree	
Professionals	0 = No Professional School degree 1 = Professional School degree	
Doctors	0 = No Doctorate degree 1 = Doctorate degree	
Age	A person's age at last birthday	Positive
Uhrswork	Usual hours worked per week (last year)	Positive
<i>Sex</i>		
Male	0 = Female 1 = Male	Unknown
<i>Marital Status</i>		
Married	0 = Not married 1 = Married	Unknown
NChild	Number of own children in household	Unknown
NChlt5	Number of own children under age 5 in household	Unknown

Empirical Model

The empirical model of this study contains the following parts:

1. Descriptive statistics;
2. OLS regression analysis;

3. Simulation of real income level for the cohort of Chinese immigrants and natives and comparison of results over time

First, descriptive statistics are obtained for each selected survey year to compare variables of Chinese immigrants to natives.

Second, Ordinary Least Squares (OLS) regressions are run for each selected survey year to examine whether each income determinant has a significant impact on the level of income for Chinese immigrants and natives. These regressions are later used to determine the extent that Chinese immigrant wages and salaries have assimilated to the native levels after controlling for human capital related determinants of earnings.

The regression model is as follows:

$$\begin{aligned} \text{LnRealWage} = & \beta_0 + \beta_1(\text{HighSchoolDiploma}) + \beta_2(\text{SomeCollege}) + \beta_3(\text{Bachelors}) + \\ & \beta_4(\text{Masters}) + \beta_5(\text{Professionals}) + \beta_6(\text{Doctors}) + \beta_7(\text{Age}) + \beta_8(\text{Uhrswork}) + \\ & \beta_9(\text{Male}) + \beta_{10}(\text{Married}) + \beta_{11}(\text{NChild}) + \beta_{12}(\text{NChilt5}) \dots \dots \dots (1) \end{aligned}$$

Next, the simulation analysis examines whether wage convergence takes place between Chinese immigrants and natives with the following steps:

Step 1: Run the LnRealWage equation regression specified in the above equation (Equation 1) for the native population for 1994.

Step 2: Compute the mean values for each of the Equation 1 variables for the Chinese respondents in our sample for 1994.

Step 3: Plug the Chinese mean values into the native equation estimated in Step 1 to estimate what Chinese earnings would have been in 1994 if the Chinese pay was determined by the native earnings function.

Step 4: Compare the estimated 1994 wage of Chinese immigrants to the actual 1994 wage of natives. If the estimated Chinese earnings are equal to or greater than the actual native earnings, we can conclude that “assimilation” has occurred.

Step 5: Repeat the above steps for each of the remaining nine selected survey years from 1996 to 2011.

The five-step model outlined above is used in the next section to compare actual Chinese LnRealWage to estimated native LnRealWage . The estimated native LnRealWage shows natives’ LnRealWage if they had identical Chinese human capital endowments. The changes in the difference between actual LnRealWage for Chinese immigrants and estimated LnRealWage for natives suggest whether there is wage convergence and economic assimilation over time. If the actual Chinese LnRealWage is less than the estimated native LnRealWage , then Chinese immigrants have not yet reached income parity with natives that have identical measurable human capital endowments, which implies that economic assimilation has not yet occurred. On the other hand, if the actual Chinese LnRealWage is equal to or greater than the estimated native LnRealWage , then Chinese immigrants have reached income parity with natives that have identical human capital endowments, which implies that economic assimilation has occurred.

Results

Descriptive statistics

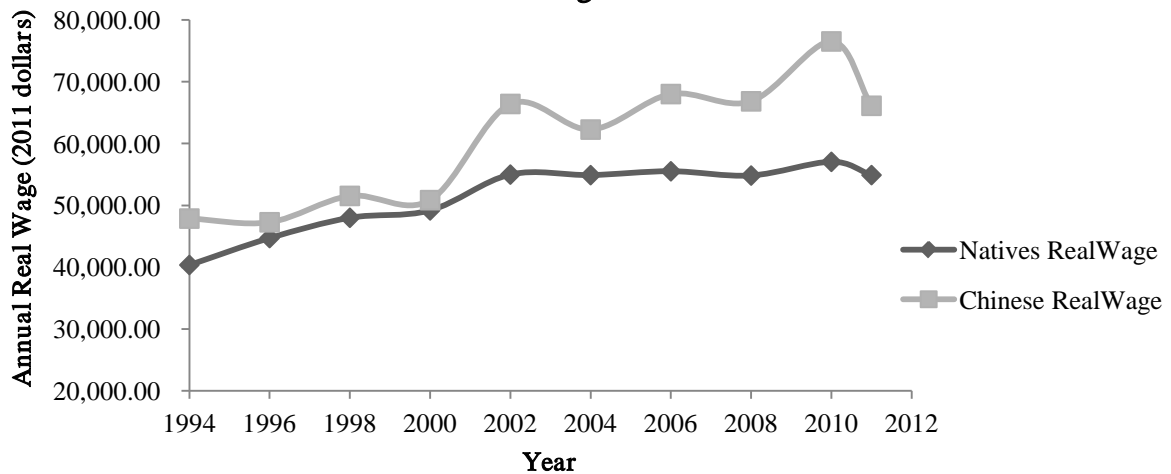
Complete descriptive results of the mean and standard deviation for natives and Chinese immigrants are shown in Appendix 2 and Appendix 3. Table 3 shows an excerpt of descriptive results that reflect the real wage and salary income of natives and Chinese immigrants. These results are adjusted to 2011 dollars.

Table 3: Descriptive Results of Wages and Salaries for Natives and Chinese Immigrants

Survey Year	RealWage		LnRealWage	
	Natives	Chinese Immigrants	Natives	Chinese Immigrants
1994	40,364.48	47,873.73	10.4101	10.4610
1996	44,720.96	47,276.55	10.4758	10.4883
1998	48,004.94	51,541.12	10.5503	10.5644
2000	49,196.30	50,855.74	10.5967	10.6628
2002	54,993.33	66,422.29	10.6754	10.7953
2004	54,903.88	62,277.27	10.6826	10.7898
2006	55,527.01	68,024.01	10.6871	10.9003
2008	54,835.37	66,846.80	10.6887	10.8595
2010	57,053.33	76,538.25	10.6971	10.9098
2011	54,910.82	66,125.06	10.6894	10.8851

A comparison of the means for wage and salary income suggests that Chinese immigrants earn more than natives on average. Based on descriptive results, Figure 3 shows real wage and salary income for natives and Chinese immigrants. Chinese immigrants earn slightly more than natives before 2000; after 2000, however, the gap between the income level of Chinese immigrants and that of the natives widens, with Chinese immigrants making \$11,214.24 more than natives in 2011.

Figure 3: Comparison of Real Wage between Natives and Chinese Immigrants



One possible reason that Chinese earnings consistently exceed native earnings in Figure 3 is that Chinese immigrants could have higher levels of human capital because they have higher levels of formal education. Appendix 2 and Appendix 3 show that this is indeed the case: Chinese immigrants are more likely to have college degrees at all levels, from bachelors degrees through PhD degrees. Because of differences in human capital between the Chinese and native cohorts, it is necessary to use regression techniques to control for these differences.

OLS regression analysis

Regression results from 1994 to 2011 for natives are shown in Table 4. Regression results for Chinese immigrants from 1994 to 2011 are included in Appendix 4.

Table 4: Regression Results for Natives (t-Statistic in Parentheses)

Natives	1994	1996	1998	2000	2002	2004	2006	2008	2010	2011
(Constant)	8.329*** (216.398)	8.534*** (204.011)	8.573*** (195.276)	8.702*** (197.358)	8.886*** (251.799)	8.953*** (228.445)	9.093*** (216.392)	9.125*** (208.690)	9.122*** (179.626)	9.154*** (175.635)
HighSchool Diploma	.441*** (24.191)	.384*** (20.219)	.372*** (18.690)	.399*** (20.409)	.343*** (21.998)	.360*** (20.955)	.355*** (19.645)	.313*** (16.752)	.364*** (16.678)	.300*** (13.254)
SomeCollege	.615*** (33.398)	.544*** (28.298)	.547*** (27.185)	.578*** (29.302)	.541*** (34.532)	.527*** (30.550)	.541*** (29.792)	.507*** (27.076)	.568*** (25.926)	.472*** (20.873)
Bachelors	.961*** (49.758)	.878*** (43.628)	.864*** (41.149)	.902*** (43.838)	.879*** (54.147)	.859*** (48.198)	.868*** (46.442)	.832*** (43.320)	.917*** (40.858)	.816*** (35.375)
Masters	1.089*** (44.690)	1.051*** (42.144)	1.017*** (39.486)	1.056*** (43.448)	1.022*** (54.345)	1.021*** (50.576)	1.060*** (50.119)	.978*** (45.848)	1.088*** (44.177)	.998*** (39.901)
Professionals	1.314*** (32.787)	1.316*** (33.243)	1.296*** (33.013)	1.337*** (33.946)	1.440*** (49.554)	1.441*** (46.331)	1.467*** (46.738)	1.335*** (41.475)	1.504*** (40.419)	1.385*** (36.781)
Doctors	1.125*** (22.356)	1.120*** (22.352)	1.155*** (23.692)	1.168*** (26.098)	1.182*** (35.845)	1.188*** (33.980)	1.212*** (33.997)	1.149*** (32.484)	1.322*** (35.024)	1.191*** (31.360)
Age	.021*** (26.495)	.015*** (18.079)	.013*** (15.846)	.010*** (12.289)	.007*** (11.332)	.005*** (7.673)	.002*** (3.037)	.002*** (2.393)	.001 (1.359)	.001 (1.015)
Usual hours worked per week (last yr)	.010*** (18.496)	.012*** (20.871)	.014*** (23.196)	.013*** (23.529)	.013*** (30.939)	.014*** (29.843)	.013*** (28.202)	.014*** (29.424)	.014*** (25.514)	.015*** (27.372)
Male	.320*** (35.735)	.344*** (36.423)	.352*** (36.776)	.358*** (39.090)	.360*** (51.637)	.327*** (43.816)	.356*** (45.895)	.328*** (42.171)	.282*** (32.516)	.288*** (32.982)
Married	.149*** (14.289)	.141*** (13.013)	.132*** (11.890)	.119*** (11.264)	.124*** (14.991)	.129*** (14.689)	.105*** (11.619)	.126*** (14.093)	.134*** (13.520)	.124*** (12.492)
Number of own children in household	-.024*** (-5.344)	-.006 (-1.448)	-.005 (-1.241)	.006 (1.399)	.014*** (4.429)	.019*** (5.565)	.028*** (7.875)	.025*** (6.553)	.025*** (5.984)	.033*** (7.570)
Number of own children under age 5 in hh	.043*** (4.834)	.024** (2.475)	.046*** (4.479)	.033*** (3.183)	.023*** (2.912)	.028*** (2.928)	-.006 (-.510)	.013 (1.010)	-.007 (-.425)	-.023 (-1.235)
Adjusted R Square	.223	.225	.225	.242	.263	.244	.250	.242	.231	.306
Sample size	29116	25214	24949	25263	41684	38257	35736	33914	30535	28381

Note:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

t-Statistics are reported in parentheses.

In Table 4, almost all the coefficients are statistically significant for natives. In particular, all the educational variables are significant at the 1 percent level, and many demographic variables are significant at the 1 percent or 5 percent level. Compared to natives' regression results, there are also many coefficients that are statistically significant for Chinese immigrants. The

regression results consistently show that Chinese immigrants have statistically significant coefficients for the education variables but not as much with the demographic variables. The regression results meet the expectation that most of the coefficients have positive signs. The coefficients also support the human capital theory that education plays an enormous role in determining income regardless of whether an individual is a native or an immigrant. Moreover, the higher educational attainment one has, the higher the income level one is able to have.

Simulation of real income level for the cohort of Chinese immigrants and natives

As explained in the previous sections, the simulation examines wage convergence by tracing out earnings for Chinese immigrants and natives over time with a five-step model.

Step 1: Natives' regression results for Equation 1 are presented in Table 4. Based on the results in Table 4, the empirical model can be re-written for the year 1994 as:

$$\begin{aligned} \ln Real Wage = & 8.329 + .441(HighSchoolDiploma) + .615(SomeCollege) \\ & + .961(Bachelors) + 1.089(Masters) + 1.314(Professionals) \\ & + 1.125(Doctors) + .021(Age) + .010(Uhrswork) + .320(Male) \\ & + .149(Married) - .024(NChild) + .043(NChild5) \end{aligned}$$

Step 2: Chinese mean values for each of the Equation 1 variables in our sample are presented in Appendix 3.

Step 3: Chinese mean values are plugged into the native equation estimated in Step 1 to estimate what native earnings would have been if natives had Chinese human capital endowments. The results estimated for survey year 1994 are presented in Table 5. Column 2 of Table 5 shows the coefficients of the 1994 native earnings function. Column 3 shows the Chinese mean values in 1994. Native coefficients in column 2 are multiplied by the Chinese mean values in column 3 to get the product in column 4. The sum of these products in column 4

is the estimated LnRealWage for natives with Chinese human capital endowments. LnRealWage is then translated into Real Wage in dollar terms.

Table 5: Simulation of Survey Year 1994

	Native Model with Chinese Mean		
	Native Coefficients	Chinese Mean	Product
(Constant)	8.329		8.3287
HighSchoolDiploma	.441	.2081	0.0918
SomeCollege	.615	.1015	0.0625
Bachelors	.961	.2589	0.2487
Masters	1.089	.1929	0.2101
Professionals	1.314	.0305	0.0400
Doctors	1.125	.1117	0.1256
Age	.021	35.82	0.7659
Usual hours worked per week (last yr)	.010	42.90	0.4312
Male	.320	.5635	0.1800
Married	.149	.8122	0.1209
Number of own children in household	-.024	1.06	(0.0256)
Number of own children under age 5 in hh	.043	.36	0.0153
LnRealWage			10.5952
Real Wage			\$39,942.27

Step 4: The actual Chinese LnRealWage is compared to the estimated wage of natives given Chinese human capital endowments. If the actual Chinese earnings are equal to or greater than the native estimated earnings, we can conclude that assimilation has occurred. From Table 3, we know that the actual LnRealWage for Chinese is 10.4610, which is 0.13 less than the estimated result (10.5952) from Table 5. This means that in 1994, the cohort of Chinese immigrants has a lower income level than estimated for natives with Chinese human capital endowments; thus economic assimilation has not yet occurred at this point.

Step 5: The steps above are repeated for each of the remaining nine selected survey years from 1996 to 2011. Results are presented in Table 6, Figure 4, and Figure 5. These results are presented in dollar terms by taking the antilogs of the estimated LnRealWage results. To see the results in LnRealWage terms refer to Appendix 5.

Table 6: Actual Chinese Real Wage vs. Estimated Native Real Wage

Survey Year	Actual Chinese Real Wage	Estimated Native Real Wage	Actual minus Estimated	Percentage Difference
1994	34,924.86	39,942.27	-5,017.41	-12.56%
1996	35,891.70	41,830.78	-5,939.08	-14.20%
1998	38,731.62	43,570.65	-4,839.03	-11.11%
2000	42,735.86	45,848.41	-3,112.55	-6.79%
2002	48,790.86	51,577.34	-2,786.48	-5.40%
2004	48,522.29	51,005.46	-2,483.18	-4.87%
2006	54,193.70	49,683.88	4,509.82	9.08%
2008	52,028.47	51,204.82	823.66	1.61%
2010	54,712.05	52,187.65	2,524.40	4.84%
2011	53,373.78	51,480.48	1,893.30	3.68%

Table 6 compares actual Chinese real earnings to estimated native real earnings. As explained in the previous section, the estimated earnings show Chinese immigrants' real earnings when they are rewarded according to natives' reward structure. The changes in the difference of actual and estimated earnings reported in the last two columns indicate whether there is wage convergence and economic assimilation over time.

Results in Table 6 are graphed in Figure 4. Actual Chinese earnings are below the estimated native earnings level from 1994 to 2004 but are above the native line from 2006 to 2011. This result implies that income parity is not reached between Chinese immigrants and natives from 1994 to 2004 but is then reached and exceeded from 2006 to 2011. Thus, economic assimilation of Chinese immigrants to natives occurs sometime between 2004 and 2006. It can also be seen from the graph that both lines display an upward rising trend and they intersect between 2004 and 2006. Therefore, income level for the cohort of Chinese immigrants and natives rises over time.

Figure 4: Actual Chinese Real Wage vs. Estimated Native Real Wage

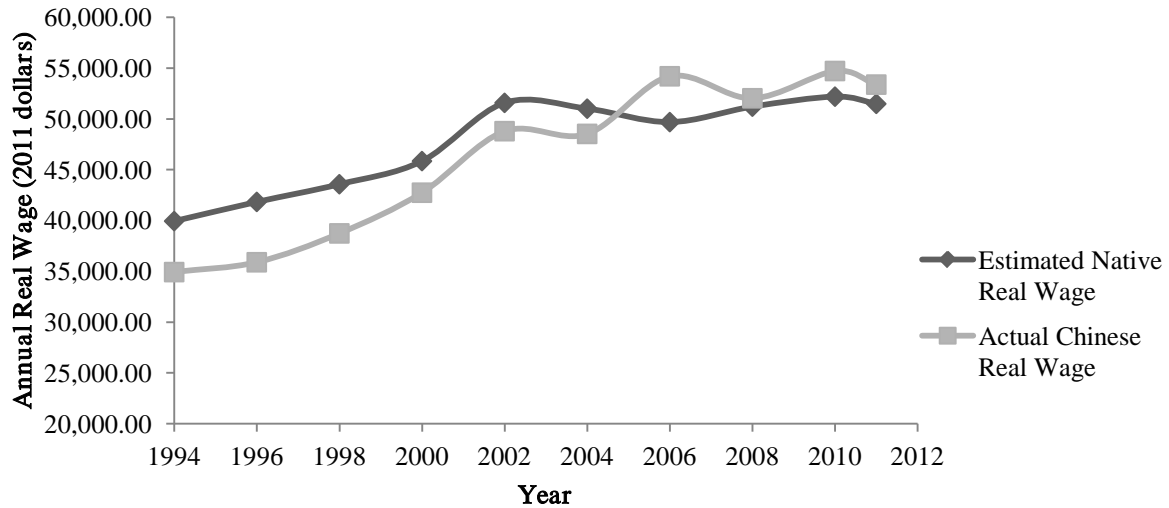
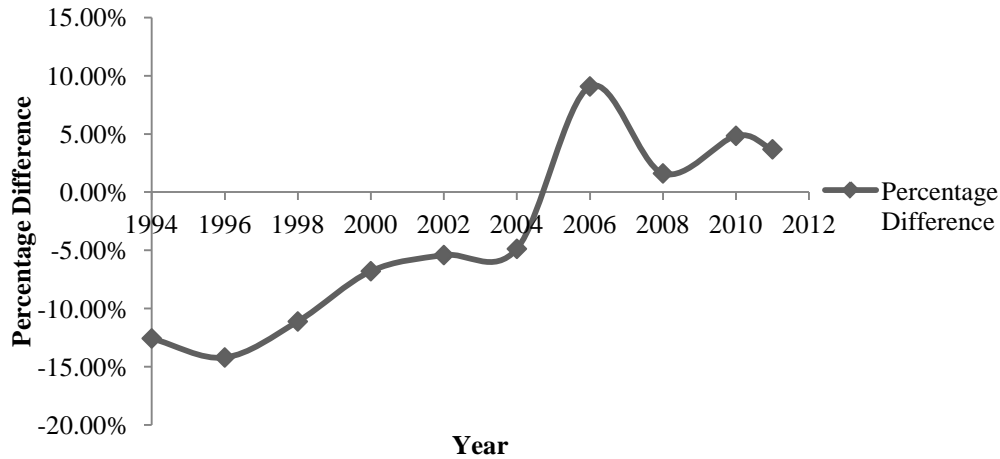


Figure 5 shows the percentage difference of actual Chinese earnings and estimated native earnings. It shows that the cohort of Chinese immigrants has an earnings disadvantage relative to natives of 12.56% in 1994; however, this disadvantage gradually disappears over time and eventually becomes an earnings advantage after 2004. In 2011, Chinese immigrant earnings exceed native earnings by 3.68%. The results support the original hypothesis that there is wage convergence between the cohort of 1994 Chinese immigrants and natives over time, and economic assimilation eventually takes place. Meanwhile, the gradually narrowing gap between the Chinese and native earnings supports my hypothesis that assimilation of Chinese immigrants would occur over time and that they would eventually reach earnings parity with natives.

Figure 5: Percentage Difference of Actual Chinese Real Wage vs. Estimated Native Real Wage



Conclusions

This research explores income determinants for 21st century Chinese immigrants and examines whether there is wage convergence and economic assimilation between Chinese immigrants and natives over time. By using repeated cross-section data in age-period cohort analysis, this research follows a cohort of Chinese immigrants who migrated before 1994 and a cohort of natives from 1994 through 2011. My hypothesis that human capital factors have a significant influence on a Chinese immigrant's income level is supported by my results. The most important finding of this study is that over time there is wage convergence and economic assimilation of Chinese immigrants towards natives, which is consistent with Chiswick's findings in the age-earnings profile.

Also, this study suggests that current immigration policies are attracting high-skilled Chinese immigrants to the U.S. Policies that encourage immigrants to acquire advanced college education should continue to be carried out. As they become increasingly assimilated over time,

long-term residency may also encourage high-skilled immigrants to stay in the United States and utilize the skills to contribute and stimulate the economy.

Because my research hypotheses are supported by the results, and the findings are consistent with the assimilation and human capital theories, this study has thus far suggested the existence of wage convergence and economic assimilation. Future research should be conducted to explore the extent to which each factor contributes to wage convergence. One possibility would be to decompose the difference in earnings and explore how much of the difference is due to differences in the mean values of the independent variables and how much of the difference in earnings is due to differences in returns as measured by coefficients.

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Appendix 1: CPI Data Used For Each Survey Year

Survey Year	CPI
1994	148.20
1996	156.90
1998	163.00
2000	172.20
2002	179.90
2004	188.90
2006	201.60
2008	215.30
2010	218.06
2011	224.94

Appendix 2: Descriptive Results of Natives

Natives	1994		1996		1998		2000		2002	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Dependent Variable:										
Natives Wage and salary income	26593.95	19480.482	31193.88	30774.504	34786.34	35934.249	37661.78	33340.822	43982.15	47471.579
RealWage	40364.48	29567.612	44720.96	44119.733	48004.94	49589.043	49196.30	43551.981	54993.33	59356.362
LnWage	9.9929	.83267	10.1155	.81688	10.2282	.82336	10.3295	.80392	10.4520	.79431
LnRealWage	10.4101	.83267	10.4758	.81688	10.5503	.82336	10.5967	.80392	10.6754	.79431
Independent Variable:										
HighSchoolDiploma	.3419	.47434	.3401	.47375	.3372	.47275	.3326	.47116	.3256	.46861
SomeCollege	.3053	.46052	.2981	.45745	.3000	.45825	.3009	.45868	.3018	.45905
Bachelors	.2010	.40073	.2014	.40102	.2045	.40331	.2034	.40253	.2086	.40631
Masters	.0589	.23545	.0640	.24484	.0638	.24442	.0725	.25930	.0770	.26656
Professionals	.0166	.12762	.0178	.13231	.0194	.13786	.0178	.13221	.0192	.13718
Doctors	.0085	.09202	.0095	.09709	.0113	.10568	.0121	.10950	.0132	.11432
Age	35.07	5.872	37.07	5.865	39.02	5.883	41.02	5.907	42.68	5.726
Usual hours worked per week (last yr)	44.24	8.703	44.34	8.564	44.33	8.419	44.38	8.438	44.18	8.332
Male	.5751	.49434	.5719	.49482	.5716	.49486	.5663	.49560	.5683	.49532
Married	.6727	.46922	.6882	.46324	.6986	.45889	.6986	.45887	.7363	.44067
Number of own children in household	1.16	1.205	1.21	1.222	1.23	1.214	1.20	1.219	1.34	1.203
Number of own children under age 5 in hh	.29	.584	.25	.546	.22	.517	.18	.481	.18	.469

Appendix 2: Descriptive Results of Natives (cont.)

Natives	2004		2006		2008		2010		2011	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Dependent Variable:										
Natives Wage and salary income	46107.36	48551.519	49765.69	53830.652	52486.32	55065.931	55307.53	59337.582	54910.82	53239.876
RealWage	54903.88	57814.347	55527.01	60062.565	54835.37	57530.436	57053.33	61210.590	54910.82	53239.876
LnWage	10.5080	.80392	10.5775	.80882	10.6449	.79067	10.6660	.83517	10.6894	.81309
LnRealWage	10.6826	.80392	10.6871	.80882	10.6887	.79067	10.6971	.83517	10.6894	.81309
Independent Variable:										
HighSchoolDiploma	.3181	.46574	.3135	.46393	.3061	.46086	.3080	.46166	.2970	.45695
SomeCollege	.3025	.45933	.3045	.46021	.3008	.45861	.2987	.45771	.2966	.45675
Bachelors	.2107	.40782	.2132	.40957	.2174	.41248	.2176	.41261	.2245	.41723
Masters	.0840	.27740	.0843	.27778	.0921	.28916	.0955	.29391	.1026	.30345
Professionals	.0192	.13720	.0209	.14312	.0204	.14146	.0192	.13716	.0199	.13979
Doctors	.0139	.11693	.0140	.11735	.0150	.12151	.0179	.13276	.0181	.13326
Age	44.61	5.725	46.34	5.715	48.20	5.724	50.02	5.702	50.94	5.696
Usual hours worked per week (last yr)	44.08	8.296	44.27	8.435	44.07	8.374	43.82	8.295	43.93	8.308
Male	.5646	.49581	.5634	.49597	.5580	.49663	.5601	.49639	.5603	.49636
Married	.7373	.44010	.7351	.44128	.7252	.44640	.7238	.44711	.7206	.44871
Number of own children in household	1.27	1.193	1.20	1.181	1.10	1.152	1.02	1.140	.96	1.110
Number of own children under age 5 in hh	.13	.412	.10	.372	.07	.317	.05	.263	.04	.239

Appendix 3: Descriptive Results of Chinese Immigrants

Chinese	1994		1996		1998		2000		2002	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Dependent Variable:										
Chinese Wage and salary income	31541.38	23464.538	32976.45	35476.581	37348.80	39767.397	38932.15	32379.078	53122.71	56845.913
RealWage	47873.73	35614.640	47276.55	50860.846	51541.12	54878.764	50855.74	42295.688	66422.29	71077.614
LnWage	10.0437	1.00143	10.1280	.80236	10.2423	.89738	10.3956	.84983	10.5719	.94110
LnRealWage	10.4610	1.00143	10.4883	.80236	10.5644	.89738	10.6628	.84983	10.7953	.94110
Independent Variable:										
HighSchoolDiploma	.2081	.40700	.2121	.41005	.2154	.41215	.2327	.42389	.2061	.40528
SomeCollege	.1015	.30279	.1091	.31270	.1282	.33518	.1132	.31785	.1031	.30461
Bachelors	.2589	.43914	.2364	.42614	.2308	.42241	.2956	.45775	.2481	.43273
Masters	.1929	.39558	.2424	.42985	.2205	.41566	.1824	.38739	.2099	.40803
Professionals	.0305	.17228	.0121	.10976	.0359	.18651	.0126	.11180	.0344	.18248
Doctors	.1117	.31577	.0909	.28835	.0564	.23131	.0818	.27487	.1183	.32361
Age	35.82	5.619	38.30	5.846	39.65	5.672	41.88	5.595	42.72	5.490
Usual hours worked per week (last yr)	42.90	7.299	43.71	8.145	43.63	8.915	44.25	8.981	43.62	9.100
Male	.5635	.49722	.5152	.50129	.5487	.49890	.4906	.50149	.5573	.49766
Married	.8122	.39156	.8242	.38177	.7897	.40854	.8868	.31785	.8397	.36759
Number of own children in household	1.06	1.146	1.18	1.020	1.20	1.087	1.28	1.038	1.19	1.008
Number of own children under age 5 in hh	.36	.652	.27	.543	.32	.645	.24	.456	.23	.546

Appendix 3: Descriptive statistics results of Chinese Immigrants (cont.)

Chinese	2004		2006		2008		2010		2011	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Dependent Variable:										
Chinese Wage and salary income	52299.41	47049.805	60966.04	70594.065	63983.20	66886.756	74196.23	79421.828	66125.06	56148.275
RealWage	62277.27	56026.131	68024.01	78766.659	66846.80	69880.309	76538.25	81928.801	66125.06	56148.275
LnWage	10.6152	.82311	10.7908	.80169	10.8158	.83112	10.8788	.92739	10.8851	.79155
LnRealWage	10.7898	.82311	10.9003	.80169	10.8595	.83112	10.9098	.92739	10.8851	.79155
Independent Variable:										
HighSchoolDiploma	.2132	.41035	.1891	.39229	.1741	.37988	.2150	.41175	.2335	.42398
SomeCollege	.1434	.35117	.0982	.29810	.0889	.28511	.0841	.27821	.1101	.31375
Bachelors	.1899	.39300	.2291	.42101	.2148	.41146	.2523	.43537	.2026	.40286
Masters	.1899	.39300	.2145	.41126	.2556	.43698	.2477	.43267	.2159	.41233
Professionals	.0543	.22698	.0255	.15779	.0481	.21448	.0187	.13575	.0396	.19556
Doctors	.1085	.31165	.1091	.31232	.1148	.31939	.1121	.31629	.1322	.33941
Age	44.81	5.901	47.33	5.704	48.61	5.824	50.30	5.312	51.38	5.615
Usual hours worked per week (last yr)	43.83	8.745	43.44	7.233	42.81	7.587	43.16	8.083	43.31	7.836
Male	.5775	.49491	.5673	.49636	.5185	.50058	.5187	.50082	.5330	.50001
Married	.8527	.35508	.8400	.36727	.8630	.34453	.8318	.37494	.8282	.37805
Number of own children in household	1.32	.999	1.20	.958	1.17	.968	1.14	1.040	1.19	1.042
Number of own children under age 5 in hh	.24	.493	.12	.343	.07	.326	.07	.327	.04	.217

Appendix 4: Regression Results for Chinese Immigrants (t-Statistics in Parentheses)

Chinese	1994	1996	1998	2000	2002	2004	2006	2008	2010	2011
(Constant)	8.504*** (13.041)	9.029*** (17.414)	8.890*** (16.669)	10.470*** (14.034)	8.905*** (15.348)	9.958*** (21.447)	8.712*** (18.855)	10.198*** (19.831)	10.107*** (15.259)	10.412*** (16.829)
HighSchoolDiploma	1.232*** (4.923)	.191 (.925)	.495** (2.433)	.187 (.700)	.460** (2.044)	.445*** (2.850)	.268** (2.077)	.368** (2.233)	.357 (1.511)	.206 (1.081)
SomeCollege	1.409*** (4.872)	.384 (1.620)	.460* (1.944)	.412 (1.418)	.834*** (3.184)	.531*** (3.146)	.571*** (3.745)	.796*** (4.144)	.510* (1.893)	.443** (2.121)
Bachelors	1.696*** (7.023)	.575*** (2.863)	1.177*** (5.740)	.807*** (3.098)	.874*** (3.898)	1.170*** (7.356)	.922*** (7.327)	.918*** (5.669)	.887*** (3.905)	.797*** (4.155)
Masters	1.984*** (8.033)	1.138*** (5.619)	1.340*** (6.423)	1.013*** (3.569)	1.409*** (6.328)	1.462*** (9.139)	1.319*** (10.209)	1.394*** (8.939)	1.392*** (6.106)	.917*** (4.872)
Professionals	1.351*** (3.358)	1.823*** (3.573)	1.471*** (4.182)	.547 (.846)	1.812*** (4.814)	1.801*** (8.471)	1.979*** (7.999)	1.505*** (6.563)	1.790*** (3.942)	1.272*** (4.528)
Doctors	2.125*** (7.570)	1.044*** (4.136)	1.520*** (5.438)	.745** (2.278)	1.371*** (5.459)	1.340*** (7.458)	1.698*** (11.616)	1.166*** (6.430)	1.651*** (6.352)	1.336*** (6.608)
Age	-.002 (-.133)	.018 (1.409)	.021* (1.925)	-.015 (-1.004)	.012 (1.093)	-.005 (-.700)	.006 (.804)	-.009 (-1.102)	-.006 (-.547)	-.020 (-2.291)
Usual hours worked per week (last yr)	.006 (.711)	.007 (.939)	-.004 (-.528)	.002 (.212)	.010 (1.460)	.000 (.018)	.020*** (3.537)	.001 (.256)	.002 (.255)	.011* (1.925)
Male	.204 (1.528)	.163 (1.402)	.394*** (3.415)	.429*** (3.122)	.083 (.746)	.280*** (3.330)	.054 (.719)	.312*** (3.575)	.071 (.621)	.107 (1.190)
Married	.071 (.391)	-.401** (-2.392)	-.125 (-.761)	-.126 (-.567)	-.035 (-.222)	-.096 (-.752)	.374*** (3.525)	.035 (.270)	-.016 (-.097)	.303** (2.330)
Number of own children in household	.094 (1.243)	.073 (.989)	-.010 (-.152)	.037 (.494)	.003 (.045)	.047 (1.061)	-.088** (-2.048)	-.058 (-1.151)	.052 (.888)	.041 (.869)
Number of own children under age 5 in hh	-.099 (-.755)	.151 (1.324)	.089 (.859)	-.086 (-.444)	.120 (1.032)	.033 (.346)	-.104 (-.911)	-.105 (-.735)	.153 (.894)	-.433** (-2.169)
Adjusted R Square	.303	.306	.321	.172	.238	.427	.534	.365	.317	.385
Sample size	191	159	185	144	243	244	247	252	204	213

Note:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

t-Statistics are reported in parentheses.

Appendix 5: Actual Chinese LnRealWage vs. Estimated Native LnRealWage

Survey Year	Actual Chinese LnRealWage	Estimated Native LnRealWage
1994	10.4610	10.5952
1996	10.4883	10.6414
1998	10.5644	10.6821
2000	10.6628	10.7331
2002	10.7953	10.8508
2004	10.7898	10.8397
2006	10.9003	10.8134
2008	10.8595	10.8436
2010	10.9098	10.8626
2011	10.8851	10.8490