

# Do Foreign IT Workers Affect the Wages and Employment of the Natives?

*Research-in-Progress*

**Gang Peng**

Williamson College of Business Administration  
Youngstown State University  
One University Plaza  
Youngstown, OH 44555  
gpeng@ysu.edu

## **Abstract**

*In today's knowledge-based economy and fast growing world, it is the countries with workforces that are creative, adaptable, and skillful that will gain competitive advantage; therefore countries worldwide are designing and implementing policies to attract "the best and brightest" talents that are essential to their success. Highly skilled immigrants or foreign workers have made significant contributions to the U.S. At the same time, it has been noted that highly skilled immigrants can crowd out native workers, lower their wages, and influence their career choices. This research in progress focuses on one prominent category of skilled foreign workers, the information technology (IT) workers, and examine whether foreign IT workers have affected the wages, employment, and career choices of the native IT workers. We present some preliminary findings obtained from a large scale U.S. national survey. The results of this study can potentially bear important theoretical and practical implications.*

**Keywords:** Information technology, immigrants, foreign IT workers, wages, employment

## **Introduction**

Immigration has been an important and also highly debated issue in many industrialized countries. In the U.S., immigration can be based on family ties as well as skill qualifications. Over time, the country composition of immigrants to the U.S. has changed dramatically. In the 1950s, over half of all immigrants were from Europe, while after the 1990s the majority of immigrants came from developing countries in regions such as Asia and Latin America. Overall, immigrants to the U.S. were less educated, and many of the adult immigrants did not possess a high school diploma (Friedberg 2001). In the early days, since most of the immigrants were less educated, foreign workers or immigrants were primarily used as cheap labors for doing many jobs natives would not like to do, such as agriculture and construction (Orrenius et al. 2007). As such, the impact of foreign workers was not deeply felt and the issue did not arouse much debate. However, in recent decades, due to the acceleration of the knowledge economy and the fast pace of technological advancement, more skilled immigrants are coming into the U. S., and they can potentially crowd out the "white-collar" workers, and correspondingly the impact of immigrants on native workers has taken center stage of the debate. In this research in progress, we examine the impact of one prominent category of highly skilled immigrants: the IT immigrants or foreign IT workers. It is well known that the

U.S. has been hiring foreign IT workers through H1B visas for long to offset the disputable shortage of IT workers in the country.

Examining the impact of foreign IT workers on the natives' wages, employment, and career choices are of great practical and policy implications. First, it is possible that foreign IT workers and native IT workers play different roles at workplaces due to their skill sets, global perspectives and experiences, language proficiency, and therefore they may be complementary to each other. Employment of foreign IT workers may increase the job opportunities for native IT workers or workers in related fields. If this is true, the picture of hiring skilled foreign workers will be much rosier than what has been painted. Second, if foreign IT workers are paid higher, then we cannot conclude that foreign IT workers are driving down the wages for native workers, and thus undercutting the job market. Alternatively if foreign workers are indeed paid lower than the natives, then there is a need for the government to revise the visa and work policy to increase the employment of the natives. Third, investigating the issues can deepen our understanding about the employment and compensation issues for IT workers, and contribute to literature in this field (Ang et al. 2002; Levina et al. 2007; Mithas et al. 2010; Tambe et al. 2012). Despite the importance of the topics, limited attention has been paid onto it in the information systems literature, and many issues are still open to debate given the contradictory findings in current literature. Therefore, further investigation of the issues is imperative.

## **Theories and Hypotheses**

Highly skilled foreign workers are different from other types of immigrants, and they play a critical role in today's knowledge-based economy. It has been observed that science and technology have been and will continue to be the engine of the U.S. economy, and countries that succeed in the 21st century will be those with citizens who are creative, adaptable, and skillful. Highly skilled foreign workers are not simply cheap labors; rather they are highly educated, carry significant human capital, and are considered as "the best and brightest" that many countries are trying to attract so that they can win the global race for talents (Shachar 2006). It has been estimated that although immigrants represented 16% of the U.S. workforce with a bachelor's degree or above, they accounted for 24% of patent applications from the U.S. and they started 25% of high-tech companies in the U.S. (Wadhwa et al. 2007). Others have found that immigrants were about 30% more likely to start a new business than the natives (Fairlie 2008), and surpassed natives by a large margin for innovative outcomes (Hunt 2011). Individuals making exceptional contributions to science and technology in the U.S., including the Nobel laureates, were disproportionately foreign born (Shachar 2006; Stephan et al. 2001).

However, possible negative impacts for hiring skilled immigrants, such as foreign IT workers, have also been raised. One of the issues of much debate is whether foreign IT workers and the native IT workers are paid at the same level, and it bears important policy implications. Regarding this, two opposing views exist. Some argue that the U.S. is not short of skilled IT workers and foreign IT workers are not necessarily "the best and the brightest"; rather, U.S. employers prefer foreign IT workers because they are paid lower than the natives and thus hiring foreign IT workers can help cut costs and increase profits (Matloff 2004; Matloff 2013). Employers can potentially take advantage of foreign workers because it is difficult for them to change jobs, particularly if they are sponsored for permanent residents or green cards. However, the evidence supporting this argument is primarily from industry anecdotes or interviews, no evidence from large scale empirical studies has been provided. Other researchers have found that foreign IT workers are actually paid higher than the natives (Mithas et al. 2010), and the wage premium can potentially arise from characteristics possessed by foreign IT workers and valued by the U.S. employers, such as skills and expertise, flexible and extended work hours, global view and experience. Hunt (2011) also found that immigrants who entered the U.S. on a student visa have a substantial advantage over natives in wages, patenting, and publishing. To investigate this dilemma, we propose the following two opposing hypotheses:

H1A: *Foreign IT workers are paid higher than native IT workers.*

H1B: *Foreign IT workers are paid less than native IT workers.*

It has been purported that inflow of foreign workers increases the supply of workforce and thus where there are more foreign workers, the wages of the native workers are lower (Borjas 2005). In other words, foreign workers are driving down the wages of the natives. However, opposite argument also seems

appealing. Skilled immigrants can bring in tremendous opportunities, particularly through innovation and new business creation, which in turn can benefit the natives. For example, Peri et al. (2013) found that foreign STEM (science, technology, engineering, and mathematics) workers in a city were associated with significant increases in wages of natives of college degrees, and high-skilled immigrants could engender greater native inflows and house price hikes due to agglomeration economy and education environments. In addition, foreign workers and native workers are not perfect substitutes, and they could be complementary to each other, and their skill sets, experience, and perspectives may allow them to make unique contributions respectively. More importantly, we believe that during the past two decades or so, there is indeed a shortage of IT workers in the U.S.—the supply of IT labor falls short of the demand at the prevailing wage. Therefore, where there is a higher inflow of foreign IT workers, there is a potential IT worker shortage, which can push up the wages for both the foreign and the native IT workers. Therefore, we test the following two opposing hypotheses:

*H2A: Native IT workers are paid higher where there are higher percentage of foreign IT workers.*

*H2B: Native IT workers are paid less where there are higher percentage of foreign IT workers.*

A third issue frequently debated is how the skilled foreign workers have affected the employment of native workers. Some argue that, with the inflow of skilled foreign workers, the natives can be crowded out of their fields, or foreign workers tend to specialize in occupations requiring quantitative and analytical skills while the natives specialize in those requiring interactive and communication skills (Peri et al. 2011). For example, Borjas et al. (2013) found that native mathematicians shifted to fields where former Soviet Union mathematicians are less active after they migrated into the U.S. Following this logic, since IT jobs are typically quantitative and analytical, native IT workers may leave IT jobs in response to the inflow of foreign IT workers. Moreover, it has been observed that IT jobs have become less attractive in recent years (Choudhury et al. 2010), plus foreign IT workers are paid lower and can drive down the wages of the natives (Matloff 2004; Matloff 2013), and therefore we can expect that the natives opt out of the IT fields where there are more foreign IT workers:

*H3: Native IT workers are more likely to opt out of IT jobs where there are higher percentage of foreign IT workers.*

## **Research Methods**

In this research in progress, we plan to investigate the above issues using a government sponsored U.S. national data source: the Current Population Surveys.

The Current Population Survey (CPS) is a monthly survey of about 50,000 to 60,000 households conducted by the Bureau of Labor Statistics. The survey has been conducted for more than 70 years, and it is the primary source of information on labor force characteristics of the U.S. population. A national probability sample is used to select households for CPS. A given household is interviewed for four consecutive months, not interviewed for eight months, and then interviewed for another four consecutive months, after which it permanently leaves the sample (Kostanich et al. 2002).

The CPS surveys include monthly basic surveys as well as supplementary surveys on various topics. The basic monthly surveys provide direct measurement of income, employment, wages, and working hours, etc., and the supplementary surveys are used to gather in-depth information on specific aspects of the labor force, such as job tenure, occupation mobility, and computer and Internet use. CPS surveys have been used in many prior studies for IT workforce related issues (Levina et al. 2007; Tambe et al. 2012).

To investigate H1A, H1B, H2A and H2B, we make use of the CPS basic monthly surveys covering nearly two decades from 1994-2014, spaced for every two years. We extract immigration related data such as country of birth and citizenship for all correspondents, as well as data on employment status, work industry, job code, gender, age, education, wage, and work hours, etc. We obtain monthly data and then aggregate them into annual data. The IT workers in these surveys—the sample used for this study—are identified by their job codes specified by the U.S. Census Bureau, as shown in Table 1. From these surveys, we can identify the IT workers, native or foreign, as well as their wages. These data are ideal for investigating the wage level of foreign IT workers compared with the natives.

Table 1. IT Worker Job Codes

1994-2002	<ul style="list-style-type: none"> <li>• Computer systems analysts and scientist</li> <li>• Computer programmer</li> </ul>	2012-2014	<ul style="list-style-type: none"> <li>• Computer and information research scientists</li> <li>• Computer systems analysts</li> <li>• Information security analysts</li> <li>• Computer programmers</li> <li>• Software developers, applications and systems software Web developers</li> <li>• Computer support specialists</li> <li>• Database administrators</li> <li>• Network and computer systems administrators</li> <li>• Computer network architects</li> <li>• Computer occupations, all other</li> </ul>
2004-2010	<ul style="list-style-type: none"> <li>• Computer scientists and systems analysts</li> <li>• Computer programmers</li> <li>• Computer software engineers</li> <li>• Computer support specialists</li> <li>• Database administrators</li> <li>• Network and computer systems administrators</li> <li>• Network systems and data communications analysts</li> </ul>		

For H1A and H1B, the dependent variable is the log hourly wage for IT workers. The key independent variable is a binary variable indicating whether an IT worker is foreign or native. To this purpose, we use two variables: *foreign* and *non-citizen*. Variable definitions for this part of the analysis are provided in Table 2.

Table 2. Variable Definitions

Variables	Definitions
Dependent	
Ln(wage)	Log hourly wage for an IT worker
Independent	
Foreign	Binary variable for a foreign born employee. It equals 1 if an IT worker was born outside of the U.S. territory and 0 otherwise.
Non-citizen	Binary variable for non-citizen IT workers. It equals 1 if the worker was not an U.S. citizen and 0 otherwise.
Education	Years of education for an IT worker
Gender	Binary variable for the gender of an IT worker. It equals 1 for male and 0 otherwise.
Marriage	Binary variable for the married status of an IT worker
Union member	Binary variable for the union status of an IT worker
Fulltime worker	Binary variable for the work status of an IT worker
Job	Binary variables for the specific IT jobs that an IT worker holds
Industry	Binary variables for the specific major industry in which an IT worker works
State	Binary variables for the U.S. state in which an IT worker lives

*Note:* for variables *job*, *industry* and *state*, there is a binary variable for each possible value.

Since individuals in the CPS surveys that are beyond 15 months apart cannot be matched, we cannot construct panel data in our study (Madrian et al. 2000). Therefore, to test H1A and H1B, we estimate the following ordinary least squares (OLS) model:

$$\ln(\text{Wage}) = \alpha \cdot \text{Status} + X' \beta + \varepsilon \tag{1}$$

Variable *Status* refers to either *Foreign* or *Non-citizen*. The sample include both foreign and native IT workers in the survey years.

To test H2A and H2B, whether a higher percentage of foreign IT workers has suppressed or increased the wage of the natives, we estimate the following OLS model:

$$\ln(\text{Wage}) = \gamma \cdot \text{MSA\_Percent} + X' \theta + \varepsilon \tag{2}$$

The variables are the same as in Equation (1), except variable *status* is now replaced by *MSA\_percent*, the percentage of foreign IT workers in the metropolitan statistical area (MSA) in which a native IT worker works. Here the sample are only the native IT workers in the survey years.

To examine H3, whether the inflow of foreign IT workers has crowded out native IT workers, we make use of CPS January 2004, 2006, 2008, and 2010 supplementary surveys. We use these years since the

occupation codes are consistent during the period as shown in Table 1. The surveys ask workers directly for their job codes in the survey months as well as a year ago. We first identify all the native IT workers in January 2003, 2005, 2007, and 2009 respectively, thus the sample for this part of the analysis, and then estimate the probability for them to cease to be IT workers one year later in January 2004, 2006, 2008, and 2010, given the foreign IT workers percentages, which are measured at national and state levels in addition to MSA level. The variable definitions for this part of the analysis are shown in Table 3.

Table 3. Variable Definitions

Variables	Definitions
Dependent:	
Non_IT	Binary variable for not being an IT worker in the survey years; It equals 1 if an IT worker ceases to be an IT worker and 0 otherwise.
Independent:	
US_percent	The percentage of foreign IT workers in the U.S.
State_percent	The percentage of foreign IT workers in the state in which the IT worker works
MSA_percent	The percentage of foreign IT workers in the metropolitan statistical area (MSA) in which the IT worker works
Age	The age of the IT worker
Gender	Binary variable for the gender of an employee. It equals 1 for male and 0 otherwise.
Education	Education in years for an employee
Race	Binary variable for the race of an employee; 1 for white and 0 otherwise
Year	Calendar year from 2004

Since the dependent variable, *Non\_IT* is binary, we estimate a logit model:

$$P(\text{Non\_IT} = 1) = G(\eta \cdot \text{Percent} + X'\Psi + \varepsilon) \quad (3)$$

where  $P$  stands for probability and  $G$  is the logistic function. *Percent* is measured by *US\_percent*, *State\_percent*, and *MSA\_percent*.

## Preliminary Results

The first set of OLS estimation results for H1A and H1B are obtained with all independent variables in Table 2, excluding 50 state dummy variables for 51 states, as shown in Table 4. The results reveal that in year 2000 foreign IT workers seem to have earned a wage premium compared with the natives, but this premium disappeared afterward until year 2008, as evidenced by the positive and significant coefficient on variable *foreign* in year 2000, 2008, and afterwards. It is worthwhile to note that year 2000 precedes the “dot com bust” when there was a high demand for IT workers.

Table 4. Estimated Coefficients for Equation (1)

Ln(Wage)	1994	1996	1998	2000	2002	2004
Foreign	0.032 (0.024)	0.021 (0.020)	0.026 (0.024)	0.041** (0.020)	0.025 (0.019)	0.008 (0.018)
Non-citizen	-0.002 (0.035)	0.016 (0.028)	0.017 (0.032)	0.032 (0.025)	0.016 (0.024)	-0.045* (0.024)
N	2,001	2,626	2,307	2,745	2,925	3,666
Ln(Wage)	2006	2008	2010	2012	2014	
Foreign	0.024 (0.018)	0.053*** (0.016)	0.060*** (0.017)	0.033** (0.016)	0.044*** (0.016)	
Non-citizen	-0.015 (0.024)	-0.056*** (0.021)	0.022 (0.021)	0.016 (0.021)	0.023 (0.021)	
N	3,116	4,209	4,041	4,253	4,518	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ . 50 state dummies are excluded. For brevity, all other independent variables are omitted.

Next, we add the dummy variables for 50 states, and the results change dramatically, as shown in Table 5. The results do not support any wage premium for foreign born or non-citizen IT workers, nor the argument that foreign IT workers are used as cheap labors.

Table 5. Estimated Coefficients for Equation (1)

Ln(Wage)	1994	1996	1998	2000	2002	2004
Foreign	-0.014 (0.024)	-0.012 (0.020)	0.001 (0.021)	0.009 (0.021)	-0.006 (0.020)	-0.015 (0.019)
Non-citizen	-0.038 (0.034)	-0.006 (0.028)	-0.023 (0.028)	0.005 (0.025)	0.016 (0.024)	-0.061** (0.024)
N	2,001	2,626	2,307	2,745	2,925	3,666
Ln(Wage)	2006	2008	2010	2012	2014	
Foreign	-0.008 (0.019)	0.026 (0.016)	0.028 (0.017)	-0.004 (0.016)	0.017 (0.016)	
Non-citizen	-0.037 (0.025)	-0.038 (0.021)	0.003 (0.022)	-0.011 (0.021)	0.006 (0.021)	
N	3,116	4,209	4,041	4,253	4,518	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ . State dummy variables are included.

One of the potential problem with Equation (1) is that variable *Status* (foreign or non-citizen) may be endogenous and the results may be biased. To take care of the issue, we use *mother's country of birth*, extracted from CPS surveys, as the instrument variable (IV)—it is correlated with *Status* but at the same time it is unlikely to be correlated with employees' wages. The Durbin-Wu-Hausman test on the results in Table 5 with this IV indicates that *Status* is not endogenous ( $p > 0.1$  in all years).

We believe the wage premium for foreign IT workers as shown in Table 4 has exaggerated the location effect. It is well possible that states paying higher wages also have higher percentages of foreign born or non-citizen IT workers. Indeed closer examination of data from year 2014 reveals that the states of Washington, California, and New Jersey have the highest hourly wages for IT workers (native as well as foreign), and they are also the top three states with the highest percentages of foreign IT workers. If the state dummies are not controlled for as did in Table 4, the higher wages in these states will be attributed to foreign workers in these states. In an extreme example, if all the foreign IT workers are located in California, where IT workers, foreign and native, are paid the same highest wage, and the natives in all other states are paid lower, then the average wage of foreign IT workers is sure to be higher than the average wage of the natives across the U.S. In sum, we do not find evidence for either H1A or H1B. Instead, our results suggest that foreign and native IT workers are paid quite at the same level.

The OLS estimation results for Equation (2) are shown in Table 6. It shows that higher percentages of foreign IT workers is positively associated with the wages of native IT workers—the coefficient on *MSA\_percent* is highly significant (except in year 1996) even after controlling for state dummies. Therefore our results support H2A rather than H2B.

Table 6. Estimated Coefficients for Equation (2)

Ln(Wage)	1994	1996	1998	2000	2002	2004
MSA_percent	0.256*** (0.094)	0.100 (0.091)	0.284*** (0.083)	0.227*** (0.078)	0.282*** (0.076)	0.160** (0.069)
N	1,727	1,593	1,891	2,221	2,330	3,024
Ln(Wage)	2006	2008	2010	2012	2014	
MSA_percent	0.271*** (0.072)	0.344*** (0.065)	0.452*** (0.070)	0.286*** (0.069)	0.334*** (0.063)	
N	2,455	3,301	3,199	3,317	3,491	

Notes: \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ . State dummy variables are included.

It is possible that *MSA\_percent* is endogenous in Equation (2). To take care of the issue, we use MSA mean of employee characteristics (education, gender, marriage, union member, fulltime worker) as IVs—these MSA characteristics are correlated with *MSA\_percent* but should not be correlated with wages, with individual characteristics already controlled for (Agarwal et al. 2009; Goolsbee et al. 2002). The Durbin-Wu-Hausman test shows that indeed *MSA\_percent* is endogenous; however, the IV estimates of *MSA\_percent* are even higher. In other words, the results in Table 6 are on the conservative side.

The estimation results for Equation (3) are shown in Table 7. Similarly, variable *percent* might be endogenous in Equation (3). As before, we use means of employee characteristics (age, gender, education, and race) at the U.S., state, and MSA levels as IVs in each model respectively. We estimate an instrumented probit model, and the Wald test of exogeneity cannot be rejected. In other words, there is not enough evidence to support that the estimates in Table 7 are biased. The results in Table 7 show that, contrary to what is expected, none of the three percentages of foreign IT workers are significant, although they show positive signs. Therefore H3, the claim that foreign IT workers have crowded out native IT workers, is not supported.

Table 7. Estimated Coefficients for Equation (3)

Independent Variables	Model 1	Model 2	Model 3
US_percent	19.056 (18.137)		
State_percent		1.640 (1.465)	
MSA_percent			1.332 (0.984)

Notes: N=4,797. \* $p < 0.1$ . Other independent variables are omitted.

## Discussions and Conclusions

In this research in progress, we investigate the impact of foreign IT workers on the wages, employment, and career choices of native IT workers using the CPS surveys. Our results suggest that foreign and native IT workers are paid pretty much at the same level. The lesson we have learnt is that there are big variations regarding where foreign IT workers work and thus where they are paid, and therefore, controlling for worker locations is important for accurately estimating the wage difference.

Our results do not support the popular view that the inflow of foreign IT workers has suppressed the wages of native IT workers. Actually our results support the opposite—where there is a higher percentage of foreign IT workers, the native IT workers are paid higher as well. This seems to resonate with the industry anecdotes that there has been an IT worker shortage in the U.S. during the past two decades—the shortage has increased the wage of the natives as well as that of the foreign IT workers, and the more severe the shortage—followed by a higher percentage of foreign IT workers—the higher the wage of the native workers. However, we do not believe higher percentages of foreign workers have caused higher wages for the natives; rather their positive association may have a deeper reason: they are both driven by a possible shortage of IT workers in the U.S. during the study period, and concurrently the foreign IT workers are paid pretty much at the same rate as the natives. Our results also run counter to the popular belief that foreign IT workers have crowded out the natives. Different measures of the impact of foreign IT workers show that this claimed crowding-out effect is almost negligible.

There is work that remains to be done for this research in progress. First, we also plan to study the career choices by native IT workers. While crowding-out indicates career changes, career choices suggest how individuals actively choose their career paths. The career choices of native college students majoring in IT are particularly relevant. Second, we use CPS surveys in this study. But CPS surveys have limitations for our purposes. For example, they are not designed for longitudinal analyses. We plan to identify and use other data sources to examine the issues of wage, employment, and career choices for IT worker.

## Reference

- Agarwal, R., Animesh, A., and Prasad, K. 2009. "Social interactions and the "digital divide": Explaining variations in Internet use," *Information Systems Research* (20:2) Jun, pp 277-294.
- Ang, S., Slaughter, S., and Ng, K. Y. 2002. "Human capital and institutional determinants of information technology compensation: Modeling multilevel and cross-level interactions," *Management Science* (48:11) Nov, pp 1427-1445.
- Borjas, G. J. 2005. "The labor-market impact of high-skill immigration," *American Economic Review* (95:2) May, pp 56-60.
- Borjas, G. J., and Doran, K. 2013. "Intellectual mobility: Native responses to supply shocks in the space of ideas," *Journal of Labor Economics* (Forthcoming).
- Choudhury, V., Lopes, A. B., and Arthur, D. 2010. "IT careers camp: An early intervention strategy to increase IS enrollments," *Information Systems Research* (21:1) Mar, pp 1-14.
- Fairlie, R. W. 2008. "Estimating the contribution of immigrant business owners to the U.S. economy," Small Business Administration, Office of Advocacy.
- Friedberg, R. M. 2001. "The impact of mass migration on the Israeli labor market," *Quarterly Journal of Economics* (116:4) Nov, pp 1373-1408.
- Goolsbee, A., and Klenow, P. J. 2002. "Evidence on learning and network externalities in the diffusion of home computers," *Journal of Law & Economics* (45:2) Oct, pp 317-343.
- Hunt, J. 2011. "Which immigrants are most innovative and entrepreneurial? Distinctions by entry visa," *Journal of Labor Economics* (29:3) Jul, pp 417-457.
- Kostanich, D. L., and Dippo, C. S. 2002. "Current Population Survey: Design and Methodology," <http://www.census.gov/prod/2002pubs/tp63rv.pdf>. Technical Paper 63RV.
- Levina, N., and Xin, M. D. 2007. "Comparing IT workers' compensation across country contexts: Demographic, human capital, and institutional factors," *Information Systems Research* (18:2) Jun, pp 193-210.
- Madrian, B. C., and Lefgren, L. J. 2000. "An approach to longitudinal matching current population survey (CPS) respondents," *Journal of Economic and Social Measurement* (26:1), pp 31-62.
- Matloff, N. 2004. "Globalization and the American IT worker," *Communications of the ACM* (47:11) Nov, pp 27-29.
- Matloff, N. 2013. "Immigration and the tech industry: As a labour shortage remedy, for innovation, or for cost saving?," *Migration Letters* (10:2), pp 211-228.
- Mithas, S., and Lucas, H. C. 2010. "Are foreign IT workers cheaper? US visa policies and compensation of information technology professionals," *Management Science* (56:5) May, pp 745-765.
- Orrenius, P. M., and Zavodny, M. 2007. "Does immigration affect wages? A look at occupation-level evidence," *Labour Economics* (14:5) Oct, pp 757-773.
- Peri, G., Shih, K., and Sparber, C. 2013. "STEM workers, H1B Visas and Productivity in US Cities," in *Working paper*.
- Peri, G., and Sparber, C. 2011. "Highly educated immigrants and native occupational choice," *Industrial Relations* (50:3) Jul, pp 385-411.
- Shachar, A. 2006. "The race for talent: Highly skilled migrants and competitive immigration regimes," *New York University Law Review* (81:1) Apr, pp 148-206.
- Stephan, P. E., and Levin, S. G. 2001. "Exceptional contributions to US science by the foreign-born and foreign-educated," *Population Research and Policy Review* (20:1-2) Apr, pp 59-79.
- Tambe, P., and Hitt, L. M. 2012. "The productivity of information technology investments: New evidence from IT labor data," *Information Systems Research* (23:3) Sep, pp 599-617.
- Wadhwa, V., Jasso, G., Rissing, B., Gereffi, G., and Freeman, R. 2007. "Intellectual Property, the Immigration Backlog, and a Reverse Brain-Drain," Kauffman Foundation Report.