



# THE H-1B VISA CAP: SKILLED IMMIGRANTS' CONTRIBUTION TO INNOVATION AND TECHNOLOGY

Shanice Buys, SIP Advisor: Sining Wang  
Economics Department, Kalamazoo College

## ABSTRACT

For some years now, there has been a push to increase the *H-1B visa cap* – the number of H-1B visas awarded by the U.S. government each fiscal year, currently standing at 65,000. This study aimed to quantify the effect of the H-1B cap on patenting activity among skilled immigrants to the U.S. Results showed that the H-1B cap did not have a significant effect on the number of patents awarded to non-residents of the United States.

## INTRODUCTION

The rise in the prominence of the H-1B visa in the United States has been accompanied by both support and opposition to the H-1B workers' programme. Advocates argue that increased skilled immigration will also increase the rate of innovation and technology formation, thus helping the U.S. to maintain its comparative advantage in high tech industries. Opponents to an increase in the H-1B cap, on the other hand, contend that there is sufficient skilled labour in the U.S. to satisfy the existing demand for employment, and cite increasing abuse of the H-1B workers' programme as grounds to maintain current levels of skilled immigration.

## MATERIALS AND METHODS

Innovation was measured in terms of patenting activity. Four different regression analyses were performed using the following model specifications:

- Regression 1: Number of patents =  $\beta_0 + \beta_1 H-1BCap + \epsilon$
- Regression 2: Number of patents =  $\beta_0 + \beta_1 VisasIssued + \epsilon$
- Regression 3: Number of patents =  $\beta_0 + \beta_1 Bachelor's + \beta_2 Master's + \beta_3 Doctorate + \epsilon$
- Regression 4: Number of patents =  $\beta_0 + \beta_1 H-1BCap + \beta_2 VisasIssued + \beta_3 Bachelor's + \beta_4 Master's + \beta_5 Doctorate + \beta_6 STEM + \epsilon$

The variables are as follows:

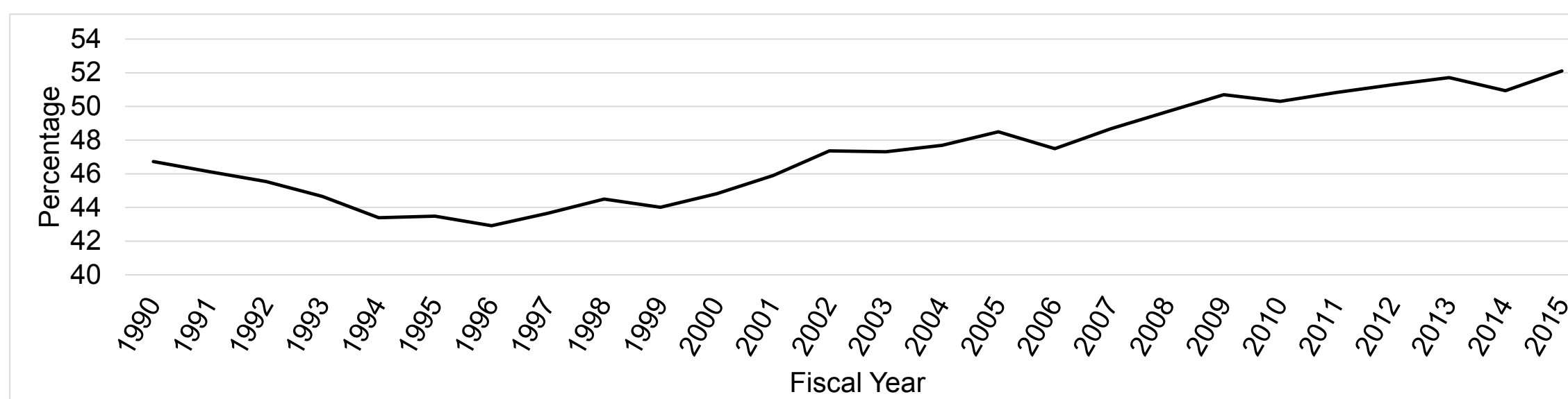
1. *H-1B cap* – official H-1B cap each fiscal year
2. *Visas issued* – total H-1B visas issued for initial employment
3. *Bachelor's, Master's and Doctorate* - visas issued to individuals whose highest level of educational attainment was a bachelor's, master's or doctoral degree respectively
4. *STEM* – H-1B visas issued to STEM workers

## RESULTS

The regression analyses yielded the following results:

1. Levels of innovation are not closely related to the numerical value of the H-1B cap. Rather, they are tied to the actual number of H-1B visas issued each fiscal year. This latter number is often at least 55,000 greater than the former.
2. The share of patents issued by the United States to residents of foreign countries is also closely tied to the share of successful H-1B applicants employed in STEM fields and occupations.
3. The number of visas awarded to individuals with a bachelor's degree and / or a master's degree had a greater impact on patenting activity than the number of visas awarded to individuals with a doctoral degree.
4. The number of visas issued to foreigners in STEM fields or occupations significantly influences the number of patents issued to residents of foreign countries.

Patents Granted to Residents of Foreign Countries as a Percentage of Total Patents Issued by the U.S.



Statistical Summary of Regression 3:

Number of Patents = $\beta_0 + \beta_1 Bachelor's + \beta_2 Master's + \beta_3 Doctorate$			
Adjusted R <sup>2</sup> = 0.068; N = 14			
Variable	Coefficient	Standard Error	t
Bachelor's	1.20*	0.19	6.35
Master's	0.91*	0.15	6.19
Doctorate	-0.74	0.5	-1.5

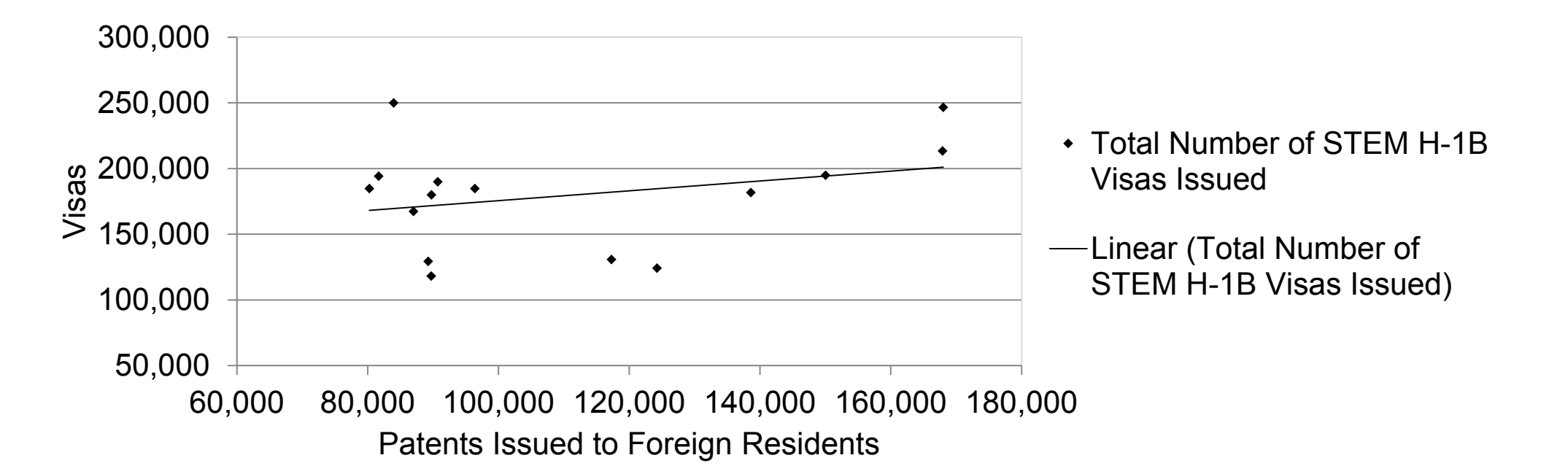
\*=significant at 5%

Statistical Summary of Regression 4:

Number of Patents = $\beta_0 + \beta_1 H-1BCap + \beta_2 VisasIssued + \beta_3 Bachelor's + \beta_4 Master's + \beta_5 Doctorate + \beta_6 STEM$			
Adjusted R <sup>2</sup> = 0.068; N = 14			
Variable	Coefficient	Standard error	t
H-1B Cap	0.27	0.17	0.15
Visas Issued	0.18	0.76	0.82
Bachelor's	-2.55*	1.08	0.05
Master's	0.17	0.72	0.82
Doctorate	0.32	1.10	0.78
STEM	1.58*	0.60	0.02

\*=significant at 5%

Total Number of H-1B Visas Issued to Individuals in STEM Occupations



## CONCLUSIONS/POLICY SUGGESTIONS

Results showed that the H-1B cap does not have a significant effect on the number of patents issued by the United States to residents of foreign countries. While this official limit may not have a significant effect on patenting activity, the true number of H-1B visas issued does positively influence the number of patents issued to foreigners.

I suggest that the U.S. change the H-1B process from a lottery system to one in which candidates are selected based on the needs of the employment sector. This will help the U.S. to:

- Maintain its comparative advantage in high tech and knowledge intensive industries; and
- Remain a strong competitor in global high tech industries in the face of the threat of increasingly knowledge-based economies like China

I offer that this can be done in two ways.

1. The U.S. could offer a higher share of H-1B visas to applicants employed in STEM fields or occupations. According to the trend observed, this is likely to increase patenting activity, thus allowing the U.S. to remain competitive in high tech industries and maintain its comparative advantage.
2. The U.S. could retain a larger share of non-citizen STEM graduates from U.S. higher education institutions, as the majority of the international student population graduates with a degree in a STEM field. Furthermore, the country has already invested economic and educational resources into this group, so it makes sense to harness the talent of this pool.

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