

## Creating a Market Driven Foreign Guest Worker Cap in Software Occupations

By Roy Lawson

May, 2006

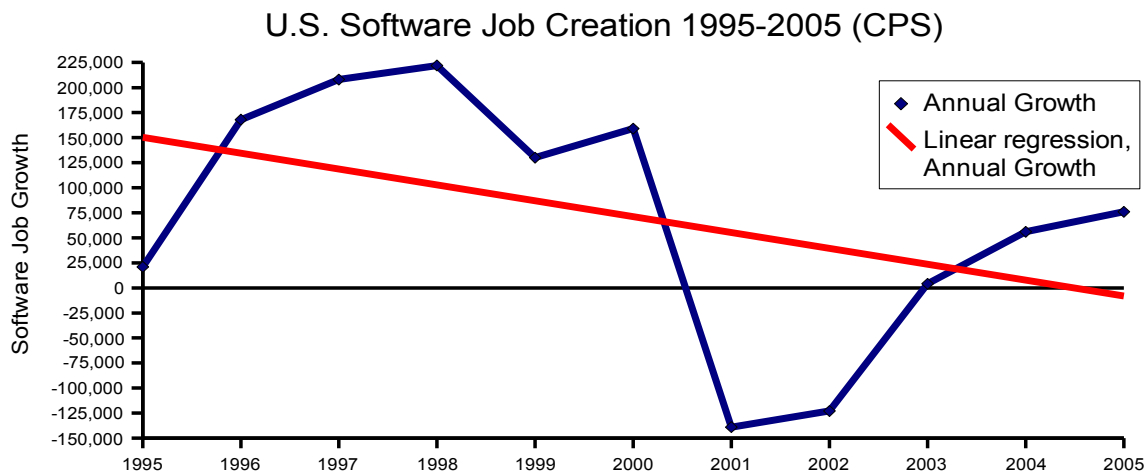
In February 2000 Gary Cohn and Walter Roche of the Baltimore Sun coined H-1b visa holders working for high tech staffing companies as "indentured servants".<sup>4</sup> There are problems with the H-1b visa that harm immigrant workers, American workers, and in some cases all workers. There are deficiencies in the law, inadequate enforcement, and some companies who choose to skirt the law entirely. These points aren't discussed in detail, however one must acknowledge that problems do exist which are outside the scope of this work.

Congress is currently debating a major increase of H-1b guest worker visas in high tech occupations. According to the USCIS, the majority of H-1b visa holders are concentrated in software related occupations.<sup>3</sup> Because of the disproportionate number of foreign workers in the software occupations, an arbitrary raise in the H-1b visa cap will harm American software professionals more than any other profession. American corporations have requested a market based visa cap that does not account for the labor conditions of American software professionals. This work aims to provide a market-based method of arriving at a total numerical cap for all foreign guest worker programs that accounts for labor conditions in software occupations.

A numerical cap for all foreign guest workers specific to software related occupations is needed to prevent the harm of American software professionals; such a cap should be based upon employment measurements collected by the Bureau of Labor Statistics (BLS). There are several measurements of employment originating from the BLS that may be useful in determining the labor market's ability to absorb foreign workers without displacing American workers.

Some industry groups claim a shortage of software workers and that foreign workers are required to meet a labor demand that American workers cannot fill. According to the BLS, current growth in software jobs is not keeping pace with the rapid growth experienced in the late 90's. Figure 1.0 depicts a downward trend in software job creation since the year 1995 when applying a linear regression model, contradicting claims that there is a general shortage of software professionals in the United States. Software jobs growth in 1998 is 292 percent higher than the same measurement in 2005.<sup>6-17</sup>

**Figure 1.0 (Source: United States Bureau of Labor Statistics)** <sup>6-17</sup>

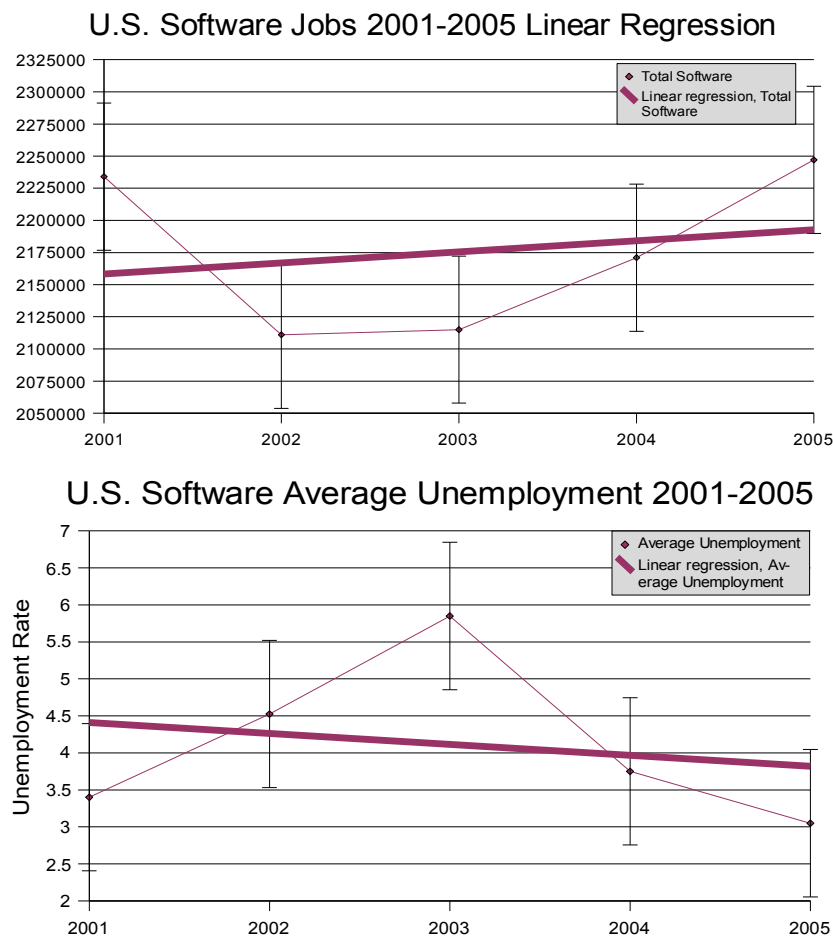


The Current Population Survey (CPS) measures both employment and unemployment at an occupational level. We are able to track job growth and unemployment in software occupations using this data since the mid 1990's; it should be noted that the CPS methodology is not perfect given methodology changes which may impact a time-series. However, the BLS has indicated that the CPS is the most reliable source of employment data at an occupational level. BLS data relating to employment are explained in detail on the BLS website.<sup>5</sup>

There are two rules in determining a numerical foreign worker cap that won't harm American software professionals. First and foremost, don't displace American workers. Second, stop the flow of foreign guest workers when the economy sours and Americans are unable to gain employment. Using these two rules, we can state that the cap must come from job creation. If the market is not creating jobs we could conclude there is a low demand for additional workers. We can also state with confidence that if unemployment rates are trending upward the market must be sour.

Figure 2.0 depicts growth in software jobs (a combination of four software-related job categories) from 2001 to 2005.<sup>6-17</sup> Data indicates growth in jobs since 2002 and a loss of over 100,000 jobs since 2000 during peak IT employment. The same regression model beginning the previous year depicted a decline in job growth, meaning the software job market reversed course in 2005. Unemployment data indicated the same favorable trend from 2001 to 2005 and is depicted in Figure 2.1.

**Figures 2.0 & 2.1 (Source: BLS Current Population Survey)<sup>6-17</sup>**



When calculating a numerical foreign worker cap, we must first determine if the job market is capable of absorbing the additional workers without harming the American labor market. A reasonable definition of a healthy job market would be one that trends upward using a linear regression model given five years of historical data, while unemployment trends downwards over the same period using the same model. Such trends are depicted in Figures 2.0 and 2.1.<sup>6-17</sup>

If it is determined that employment during the prior five years trended in a favorable direction historical growth can be used to calculate foreign worker numerical caps. One suitable formula would set the cap at a fixed percent of average job growth during the previous three years after accounting for unemployment. A baseline measure derived from three years of trailing data would produce a more stable cap, reducing the impact on both corporations and labor caused by outliers. A sample worksheet is depicted in Table 1.0.<sup>6-17</sup>

**Table 1.0: Suggested Sustainable Foreign Guest Worker Cap in Software Occupations<sup>6-17</sup>**

Year	*Total Software Employment	Annual Growth	Trailing 3 (Smoothed)	*Total Software Unemployment	*Total Software Unemployment Above 2% (Full) Employment	**Adjusted for Unemployment Above 2% (Full) Employment	*** Sustainable Guest Worker Cap In Software Occupations
1994	1,465,000	N/A	N/A	N/A	N/A	N/A	N/A
1995	1,486,000	21,000	N/A	28,000	-2,280	N/A	N/A
1996	1,654,000	168,000	N/A	23,000	-10,540	N/A	N/A
1997	1,862,000	208,000	132,333	24,000	-13,720	146,053	36,513
1998	2,084,000	222,000	199,333	29,000	-13,260	212,593	53,148
1999	2,214,000	130,000	186,667	41,000	-4,100	190,767	47,692
2000	2,373,000	159,000	170,333	50,000	1,540	168,793	42,198
2001	2,234,000	-139,000	50,000	85,000	38,620	11,380	2,845
2002	2,111,000	-123,000	-34,333	111,000	66,560	-100,893	0
2003	2,115,000	4,000	-86,000	125,000	80,200	-166,200	0
2004	2,171,000	56,000	-21,000	94,000	48,700	-69,700	0
2005	2,247,000	76,000	45,333	62,000	15,820	29,513	7,378

\* Software Employment and Unemployment is a combination of Computer Scientists, Systems Analysts, Computer Programmers, Computer Software Engineers, and Database Administrators.

\*\* Employers are rewarded when unemployment rates are below 2% for the purposes of this study.

Unemployment above 2% is adjusted for, providing relief to unemployed American workers.

\*\*\* A sustainable cap is a total for all foreign worker visa programs and applies toward new visas issued, not renewals.

It allows for new opportunities to be split 25/75 between foreign and American software professionals. Negative growth is changed to 0.

Using the example depicted in Table 1.0, we arrive at a cap of 7,378 for software occupations in 2005 given that the previous five years trended favorably when a linear regression model was applied. From years 2002 through 2004 the cap was reduced to zero given negative job growth and an unfavorable linear regression model. Under this model, guest workers already present are not required to exit the country during a sour job market. American workers are protected from high unemployment or job loss, while corporations are rewarded for keeping unemployment rates low. The steps for calculating a sustainable foreign guest worker cap are expressed in Table 2.0.

As employment conditions improve companies should have access to more foreign guest workers, however American workers should be protected if employment conditions reverse course. This sample model offers such protections for both labor and business.

**Table 2.0: Calculating the Sustainable Foreign Guest Worker Cap in Software Occupations**

1. Determine Total Software Employment (E)
2. Determine Annual Job Growth (A) = Current Year Employment (E) - Prior Year Employment (E-1/yr)
3. Smooth Job Growth (B) = Average 3 years of historical Annual Job Growth (A)
4. Determine Total Software Unemployment (U)
5. Determine Unemployment Exceeding 2% (U1) =  $U - ((U+E)*0.02)$
6. Adjust for Unemployment Exceeding 2% (A2) =  $B - U1$
7. Determine Sustainable Guest Worker Cap in Software Occupations (SCAP) =  $A2*0.25$

When comparing sustainable guest worker numbers with the actual number of guest workers approved, it is clear that the number of foreign guest workers entering the United States is too high and is in fact displacing American software professionals. Table 3.0 depicts the number of H-1b visas approved in software occupations from the years 2000 to 2003; the approval data originates from USCIS Reports on Characteristics of Specialty Occupations.<sup>1-3</sup> Complete historical data is not available for comparison, but in the case of each year depicted the number of H-1b visas approved exceeds what this work defines as sustainable. During the year 2001 a total of 139,000 software jobs were lost while the number of H-1b workers approved in software occupations was a staggering 110,713. This is a difference of 249,713 jobs.

In a single year, nearly one quarter of a million American software professionals either lost their jobs or were displaced to foreign guest workers on the H-1b visa. This scenario is exactly what must be prevented in the future by implementing a more sustainable market driven system. Guest worker visa programs should prevent the displacement of American workers by halting the flow of additional foreign workers when the labor market sours. In 2001, the current system failed American workers causing widespread hardship.

**Table 3.0 H-1b Actual Visas Approved in Software Occupations and Jobs at Risk<sup>1-3</sup>**

Year	Annual Software Jobs Growth	Initial H-1B Visas Approved in Software Occupations	Sustainable Guest Worker Cap In Software Occupations	American Software Jobs at Risk
2000	159,000	67,053	42,198	<b>24,855</b>
2001	-139,000	110,713	2,845	<b>107,868</b>
2002	-123,000	25,637	0	<b>25,637</b>
2003	4,000	28,879	0	<b>28,879</b>

The demand for new software workers is much lower than it was in the late nineties. In recent media reporting you will find that prominent business and political leaders claim a shortage of technology workers, however to date there is no mention in most media outlets that software occupational growth in 1998 was 292 percent higher than it was in 2005 or that from 2001 through 2002 there were 262,000 software jobs lost. There is little discourse on a sustainable guest worker program. That must change if the software profession is to remain a viable career choice in the United States.

If the supply of foreign labor is not reduced to sustainable levels the demand for American labor will go down and negatively impact American software professionals. A market based approach as detailed in this work addresses the legitimate concerns of both American workers and American business. This approach is based upon the concept of fundamental fairness; foreign guest workers are intended to fill

one-fourth of newly created jobs while at the same time not displacing American software professionals. In the event that American workers experience long-term job loss or or unemployment this system offers an additional safety-net driven by historical employment trends. Any future claimed shortages should be addressed by encouraging more students to pursue the computer sciences, not through foreign labor subsidies that discourage students from entering software related occupations.

### **Referenced Publications**

#### **USCIS Reports on Characteristics of Specialty Occupations**

- [1] <http://www.shusterman.com/pdf/h1b-402.pdf> (2000/2001)
- [2] <http://www.ilw.com/immigdaily/News/2003,0924-h1b.pdf> (2001-2002)
- [3] <http://www.uscis.gov/graphics/aboutus/repstudies/h1b/FY03H1BFnlCharRprt.pdf> (2002-2003)

#### **Indentured servants for high-tech trade Labor; Baltimore Sun 2000.**

- [4] <http://www.aifl.org/pubed/n022100a.htm>

#### **BLS Methodologies Explained:**

- [5] <http://www.bls.gov/emp/noeted/empnumb.htm>

#### **Unpublished data from the Bureau of Labor Statistics are available at the following links:**

- [6] 1994 CPS Employment by Occupation: <http://www.freedomcast.com/ITJobs/table31994.pdf>
- [7] 1995 CPS Employment by Occupation: <http://www.freedomcast.com/ITJobs/table31995.pdf>
- [8] 1996 CPS Employment by Occupation: <http://www.freedomcast.com/ITJobs/table31996.pdf>
- [9] 1997 CPS Employment by Occupation: <http://www.freedomcast.com/ITJobs/table31997.pdf>
- [10] 1998 CPS Employment by Occupation: <http://www.freedomcast.com/ITJobs/table31998.pdf>
- [11] 1999 CPS Employment by Occupation: <http://www.freedomcast.com/ITJobs/table31999.pdf>
- [12] 2000 CPS Employment by Occupation: [http://www.freedomcast.com/ITJobs/O&I03\\_R2000.pdf](http://www.freedomcast.com/ITJobs/O&I03_R2000.pdf)
- [13] 2001 CPS Employment by Occupation: [http://www.freedomcast.com/ITJobs/O&I03\\_R2001.pdf](http://www.freedomcast.com/ITJobs/O&I03_R2001.pdf)
- [14] 2002 CPS Employment by Occupation: [http://www.freedomcast.com/ITJobs/O&I03\\_R2002.pdf](http://www.freedomcast.com/ITJobs/O&I03_R2002.pdf)
- [15] 2003 CPS Employment by Occupation: [http://www.freedomcast.com/ITJobs/O&I03\\_R2003.pdf](http://www.freedomcast.com/ITJobs/O&I03_R2003.pdf)
- [16] 2004 CPS Employment by Occupation: [http://www.freedomcast.com/ITJobs/O&I03\\_R2004.pdf](http://www.freedomcast.com/ITJobs/O&I03_R2004.pdf)
- [17] 2005 CPS Employment by Occupation: [http://www.freedomcast.com/ITJobs/O&I03\\_R2005.pdf](http://www.freedomcast.com/ITJobs/O&I03_R2005.pdf)