

Senator Charles E. Grassley

Questions for the Record

Questions for Ron Hira, Ph.D.

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1. During the hearing, your analysis of the STEM labor market shortages differed greatly with that of Brad Smith's. Could you elaborate on your points and analysis?

In his written statement Mr. Smith argues that full-employment occurs with an unemployment rate of 5%. He explains that workers with college degrees currently have an unemployment rate of 4.4%, which is below 5%, and therefore concludes that there's a shortage of workers with college degrees.

Mr. Smith is using a rule of thumb, a 5% unemployment rate, for the national economy and applying it to a specific set of workers (those with college degrees). **The fundamental question, to test Mr. Smith's theory, is whether a 4.4% unemployment rate reflects a shortage for college graduates?**

Based on the unemployment data for the past twenty years, the answer is no. The unemployment rate for college graduates when the economy is at full-employment is approximately 2.2%, or half what it is currently. According to the Bureau of Labor Statistics, the average annual unemployment rate for college graduates from 1992 to 2010 is 2.6% (this includes all recessions and recoveries during that period). In fact, prior to 2009, when the Great Recession had its full jobs impact, the highest unemployment rate for college graduates was 3.2% in 1992 (during the recession of the early 1990s). And it was less than 1.8% for three years, from 1998-2000, during the booming economy of the late 1990s. Typically, the national unemployment rate is slightly more than twice the unemployment rates for college graduates, whether the country is in recession or in recovery.

Table 1 below shows the average annual unemployment rates from 1992-2010 for bachelor's degree college graduates 25 years old and over and the national unemployment rate.

TABLE 1 Bachelor's Degree Holders (25 Years and Older) and National Unemployment Rates Annual Average for 1992-2010 Source: BLS		
Year	Bachelors Degree Unemployment Rate	National Unemployment Rate
1992	3.2%	7.5%
1993	2.9%	6.9%
1994	2.6%	6.1%
1995	2.4%	5.6%
1996	2.2%	5.4%
1997	2.0%	4.9%
1998	1.8%	4.5%
1999	1.8%	4.2%
2000	1.7%	4.0%
2001	2.3%	4.7%
2002	2.9%	5.8%
2003	3.1%	6.0%
2004	2.7%	5.5%
2005	2.3%	5.1%
2006	2.0%	4.6%
2007	2.0%	4.6%
2008	2.6%	5.8%
2009	4.6%	9.3%
2010	4.7%	9.6%

In 2006 and 2007, when the economy was doing well, the national unemployment rates were 4.6%, whereas rates for college graduates were 2.0%. Based on this data I conclude that full-employment for college graduates is approximately 2.2%, or about half of what it is currently. In sum, college graduates are facing a jobs recession – there are too many skilled workers chasing too few jobs.

We can conduct a similar analysis for computer and mathematical occupations, a field that Mr. Smith argues where there's a shortage of workers. The unemployment rates for those fields are also much higher than we would expect at full employment.

TABLE 2 Computer & Mathematical Occupations Unemployment Rates Annual Average for 2000-2010 Source: BLS	
Year	Computer & Mathematical Occupations Unemployment Rate
2000	2.2%
2001	3.6%
2002	4.9%
2003	5.5%
2004	4.2%
2005	2.9%
2006	2.4%
2007	2.1%
2008	2.6%
2009	5.2%
2010	5.2%

Table 2, above, shows that the unemployment rates for computer and mathematical occupations, the largest of all STEM occupations, had unemployment rates of 5.2% in 2009 and 2010, which are more than twice the levels at full-employment. In 2010, the 5.2% unemployment rate for computer and mathematical occupations exceeded those for college graduates, which was 4.7% (see Table 1). So, just like college graduates, computer scientists and software engineers are also experiencing a jobs recession – too many skilled workers are chasing too few jobs.

Many other STEM occupations exhibit a similar pattern. For example, electrical and electronics engineers had an unemployment rate of 5.4% in 2010, and Medical scientists had a rate of 4.1%. The U.S. does not currently face a broad-based shortage of STEM workers. Instead there are too few jobs for those skilled workers.

There are always very narrow fields and specializations that experience both cyclical and structural tightness in the labor markets, and education as well as immigration could play a role in alleviating that tightness, but the broad based claims by Mr. Smith are simply not supported by any data. I would also note that in spring 2009, Microsoft announced a layoff of 5,000 workers over the ensuing 18 months. This was a substantial share of its workforce and according to its most recent filings Microsoft's workforce in the U.S. still hasn't come back to its 2009 levels. Further, according to media reports, Microsoft's offer-acceptance rates are 93%, meaning that

93% of job applicants who were offered a position accepted it. A rate this high would indicate that Microsoft is experiencing little competition in attracting job candidates.

2. In 2008, Optional Practical Training (OPT) was extended from 12 to 29 months to fill what was then called a shortage in the STEM field. In your testimony you state there is in fact a surplus of STEM workers. In your opinion, is there still a need for the OPT extension?

There were two reasons given by DHS to extend the OPT duration from 12 to 29 months for STEM workers. Both of these are based on rationales that are no longer valid.

The first reason given was that the H-1B quota was being filled before foreign students, who were graduating from US universities, could qualify for an H-1B visa. The concern was that the existing duration of the OPT, 12 months, may not have been long enough for students to convert to an H-1B even in the following year's quota. For FY10 and FY11, the H-1B quota wasn't filled for at least eight months, and it's likely that it will be even longer this year for FY12. Therefore, the need to extend the OPT for the purposes of bridging students to an H-1B has disappeared.

The second reason given by DHS for extending the OPT duration to 29 months was that there was a shortage of STEM workers. The state of the current STEM labor market is markedly different from when the rule was initiated in April 2008. There are hundreds of thousands of unemployed American STEM workers who have the skills and capabilities to fill many of these OPT positions.

For those foreign students who wish to work in the US for extended periods of time, rather than simply obtain practical training, they should have their employers use the H-1B program. While the H-1B program has loopholes that allow employers to bring in cheaper workers, the OPT has even wider loopholes and little oversight and transparency. For example, unlike the H-1B there is no wage floor for the OPT. B. Lindsay Lowell, a research professor at Georgetown University, estimates that OPT workers are paid a mere 40% of equivalent US workers. And many of the major beneficiaries of the OPT STEM extension are obscure universities with dubious credentials. For example, students from the unaccredited University of Northern Virginia, which was recently raided by USCIS investigators, received 189 OPT STEM extensions, 14th on the

list of all universities. According to media reports USCIS has revoked University of Northern Virginia's ability to issue any new F-1 student visas for international students.

3. In Mr. Greifeld's opening statement, he quoted a study by the National Federation for American Policy stating that "for every H-1B worker requested, U.S. technology companies increase their overall employment by five workers." In your research and studies of the H-1B visa program and the economy, can you validate this statistic? Please elaborate.

I believe Mr. Greifeld is referring to, "H-1B Visas and Job Creation," a report released by the National Foundation (not Federation) for American Policy (NFAP) in March 2008. The study examined the global employment levels of a subsample of S&P 500 firms.

There are numerous weaknesses in the study's methodologies. I will highlight just a few of the major ones. By selecting the sample in the way he did, the study's author excludes the most of the top H-1B employers, thus skewing, or biasing, the results. As a result, the sample does not represent typical H-1B use. Further, the study compares H-1B applications, which are jobs located in America but held by foreign workers, against the worldwide employment levels of these firms. It did not compare H-1B employment levels against U.S.-based employment levels for these firms.

So, for example, a firm might apply for 100 H-1Bs and increase its headcount in India by 500, and the firm would meet the study's (and Mr. Greifeld's) claim. Given the rapid expansion of offshoring by major S&P 500 companies, like IBM, it should be no surprise that some of these numbers look very high.

Remarking on its dubious theory in a 2009 Wall Street Journal article, Harvard University economist Richard Freeman said the NFAP study, "...has all the scientific sense of cold fusion, ... though of course it could be we have discovered the perpetual employment expansion elixir." Based on my own research of the H-1B program I have concluded on balance that it does more harm than good to the American labor market and for American workers. On the positive side, some employers do indeed use the H-1B program to bring in truly specialized and rare skills, and these workers complement the American workforce. Further, some H-1B holders, who become

permanent residents, and later citizens, turn into entrepreneurs who create new technologies and jobs for American workers. However, the typical H-1B worker merely has ordinary skills, skills that are no better than American workers who are currently unemployed or underemployed. And the firms that get the most H-1Bs are using the program to facilitate the offshoring of American jobs and work. In the worst cases American workers are being forced to train their foreign replacements as a condition of severance and eligibility for unemployment insurance.

4. What impact would “stapling a green card” to every foreign student’s diploma have on our workforce and unemployment rate?

There are a number of proposals to staple a green card to a foreign student’s diploma. Some proposals have narrowly targeted only those foreign students who earn a Ph.D., while others have proposed a much more expansive benefit to include any advanced degree (MS, MA, and JD) and include non-STEM students such as MBAs. It’s important to note that a green card is very valuable economically and such proposals can have a significant impact on the workforce and higher-education.

The key issue is designing the criteria to select which type of graduate gets a green card and who doesn’t. Those criteria will significantly shape the impacts on our workforce and unemployment rate.

A selective set of criteria, such as limiting it to Ph.Ds.-only, is likely to have a small impact on the broader economy because the absolute number of Ph.Ds. is very small and universities don’t find producing Ph.D.s a lucrative business. It is unlikely that universities will find it lucrative enough to create large scale Ph.D. programs specifically tailored to paying foreign students. And foreign students will find the barrier to entry, earning a Ph.D., a fairly long and difficult and expensive proposition. A typical Ph.D. takes approximately five to seven years to complete. Further, most foreign students graduating with a Ph.D. already have a variety of immigration channels to stay permanently. Michael Finn from Oak Ridge Labs has found that the stay rates for foreign student Ph.D.s has remained at a very high level. In sum, the size of the market for foreign students studying a Ph.D. is likely to expand modestly. The untapped demand by foreign students is likely small and universities are unlikely to expand a fairly unattractive market. Of

course, some labor markets, such as faculty positions in universities, and post-doctoral researchers, may be affected more significantly.

More expansive criteria, such as including Masters degrees, is likely to induce a large influx of new foreign students and create a major new market for universities, which would create and expand degree programs that are specifically tailored to foreign students interested in staying permanently. Masters programs are very short in duration, as short as 12 months, and fairly inexpensive to run. Further, many foreign students will see this as a brief and inexpensive path towards a green card. Some universities will see this as an opportunity of selling landed status rather than as education.

Some have argued that one way to avoid diploma mills is to limit the list of approved universities to very selective criteria. This is unlikely to be effective because it misunderstands both the business models of universities and the political-economy in which they sit. I have yet to see a list of universities that would meet such a task.

5. What effects would you anticipate if the Congress allowed STEM graduates an exemption from numerical limits under employment based green cards?

While a green card exemption for STEM graduates might alleviate the employment-based green card backlog for some, it would create a clear signal to future markets that obtaining a green card is a matter of getting such a degree. Given the current labor markets, high unemployment levels for STEM workers, such a broad based exemption would distort the normal functioning of the U.S. labor and education markets.

Foreign student applications to, and enrollments in, such programs would increase significantly as many more foreign students would be induced to come to study here. This is likely to lead to a crowding out of American students from those programs. This will happen directly because of the limited number slots or indirectly by reducing the need for universities (and the government) to provide a financially attractive package to induce American students to enter such programs. The labor market is likely to have a surplus of such workers, reducing wages, increasing unemployment, and sending a signal to American workers and students to avoid STEM job markets.

To avoid such an outcome the policies should use a selective criteria and adopt an effective and efficient labor market test to ensure there's a real need for those specific workers. When those foreign students and workers have truly complementary skills, and there's a need for them in the American labor market, then they help both the country and American students and workers. Having a broad based exemption would induce the markets to supply foreign students and workers who substitute for, rather than complement, American STEM students and workers.