How Widespread Is the Use of the H-1B Visa for Reducing Labor Costs?

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Abstract

Current "conventional wisdom" in Washington holds that use of the H-1B work visa for cheap labor is limited to Indian-owned "bodyshops." However, it is shown here that it is commonplace among mainstream U.S. firms as well, and that it is fully legal, involving use of large legal loopholes . Accordingly, reform legislation focusing on the Indian companies would not solve the core problems with H-1B and employer-sponsored green cards.

1 Introduction

After years of supporting the industry's contention that wage abuse of the H-1B work visa is limited to violation of the laws by a few rogue employers, some key members of Congress are beginning to understand that underpayment of the foreign workers is commonplace. Much more importantly, they are beginning to understand that such abuse is actually in full compliance with the law. Consider these comments by Rep. Zoe Lofgren, one of the major supporters of the visa (Thibodeau, 2011):

> U.S. Rep. Zoe Lofgren, a Democrat whose Congressional district includes Silicon Valley, framed the wage issue at the hearing, sharing the response to her request for some wage numbers from the U.S. Department of Labor.
>
> Lofgren said that the average wage for computer systems analysts in her district is $92,000, but the U.S. government prevailing wage rate for H-1B workers in the same job currently stands at $52,000, or $40,000 less.
>
> "Small wonder there's a problem here," said Lofgren. "We can't have people coming in an undercutting the American educated workforce."

Over the years, Lofgren has been the most active legislator on the H-1B issue, authoring a number of bills on the topic. Her leadership role may thus be taken as signifying an increasing recognition in Congress that the problems with H-1B are mainly statutory, rather than due to inadequate enforcement by the executive branch.

Yet the legislators incorrectly view the abuse as being limited mainly to the so-called "bodyshops," which rent out H-1B programmers to U.S. firms. (Following the lead of (GAO, 2011), I will refer to these as "IT staffing firms.") Senator Charles Schumer in particular has taken this point of view, and since the IT staffing firms tend to be Indian companies, he was accused of scapegoating by the Indian government

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(Cha, 2010). Close inspection of Lofgren's 2011 reform bill reveals that it is constructed largely from the Schumer view, i.e. that the mainstream U.S. firms are legitimate users of H-1B while the Indian IT staffing firms are the abusers, and that accordingly the bill targets those firms.[1]

However, **it will be shown in this paper that the Indian government's concern was indeed warranted.** Schumer's claims about the Indian firms were incorrect. Mainstream U.S. firms use H-1B as a source of cheap labor just as much as the Indian firms do. The American firms typically hire H-1B workers of a higher level of education and quality than do the IT staffing companies, but the American firms are still using H-1B to save on labor costs relative to the domestic labor market. It shouldn't matter that the U.S. firms are underpaying foreign workers with U.S. Master's degrees while the IBs are underpaying foreign workers with Indian Bachelor's degrees. The bottom line remains that American workers with U.S. Master's degrees have having their wages and job opportunities undercut by the H-1B program.

It will be shown here that the H-1B underpayment problem stems from loopholes in the law, rather than violation of the law. This key point makes the widespread nature of the abuse easier to comprehend. No one would be surprised to hear that mainstream U.S. firms take full advantage of loopholes in the tax code, so it should be easier to grasp the fact that this occurs with loopholes in H-1B law as well.

The implications of this for H-1B reform are major. Since the abuse is far more broad-based than just Indian IT staffing firms, Lofgren's bill is not only unfair but would not address the root problems of H-1B.

The organization of the paper are as follows.

- Section 2 will discuss the core issues which enable employers to legally use H-1B to reduce labor costs.
- Section 3 will then show that the underpayment of H-1Bs is commonplace in mainstream U.S. firms, rather than being limited largely to the IT staffing firms.
- Section 4 will briefly mention general problems with H-1B wage studies, and point the interested reader to detailed analyses.
- Finally, Section 5 will discuss pathways to meaningful reform.

2 Legal Means of Labor Cost Reduction Via the H-1B Program

Employers who favor aliens have an arsenal of legal means to reject all U.S. workers who apply—Joel Stewart, prominent immigration attorney, referring to green card law

H-1B and employer-sponsored green card law is riddled with loopholes.

There are (at least) two ways that employers save money via the H-1B program:

- *Type I savings:* This involves paying H-1Bs less than comparable U.S. citizens and permanent residents.[2]
- *Type II savings:* This type of reduction of labor costs is incurred by hiring younger H-1Bs in lieu of older Americans, that is Americans over age 35.

Both types of savings will be discussed.

[1] See my analysis of the bill, at `http://heather.cs.ucdavis.edu/Archive/LofgrenIDEAAct.txt`.

[2] I will simly use the term *Americans* to refer to this group.

2.1 Core Issue: Legal Definition of Prevailing Wage

Employers are required to pay H-1B workers the *prevailing wage* for the given occupation at the given experience level, in the given geographical region. (This requirement also applies to the employers sponsoring foreign workers for green cards, a point that will come in later.) However, as Lofgren discovered, the problem is that the legally defined prevailing wage is typically well below the true market wage. This creates a huge loophole in the law.

In assessing how widespread use of H-1B for reducing labor costs is among U.S. employers—and in formulating meaningful reform—it is important to first understand the nature of the loopholes.

2.2 How the Loopholes Work

The problems in the legal definition of prevailing wage arise from the following:

- The statute[3] defines prevailing wage in terms of the *job*, not in terms of the *worker*.
- The statute, in dealing with broad occupational categories, does not take into account specific technical skill sets that command a premium in the open labor market.

Suppose for example the foreign worker has a Master's degree. In most cases, a Master's would not be an absolute requirement for the job, so the prevailing wage is then defined at the Bachelor's level. As a result, the employer can hire a Master's-level worker for a Bachelor's price. The same is true for years of experience, and so on.

It is worth noting that even Angelo Paparelli, a very prominent immigration lawyer and pro-H-1B political activist, stated during the question-and-answer session at a recent academic conference on immigration, "I agree with you that the prevailing wage is below the market wage..."[4]

2.3 How Much Is the Prevailing Wage Undervalued?

In the previous section, it was shown, in qualitative terms, that the legal definition of prevailing wage leads to values typically less than the true market wage. The obvious followup question is, *how much* is the prevailing wage undervalued?

In this section I will approach this question from the point of view of the second flaw cited above in the definition of prevailing wage: The official prevailing wage definition does not take into account specialized skills that command a wage premium in the open (i.e. non-H-1B) market.

The skills issue is key, because the industry claims that the reason H-1Bs are hired instead of Americans is that the Americans lack certain "hot" skill sets. See for example Intel's testimony to the U.S. Senate (Duffy, 2003):

> Intel's...guideline requires that, prior to extending an offer to an individual requiring temporary worker sponsorship, a business group must demonstrate that there is a shortage of U.S. workers with the skills required for the particular job...[Intel's H-1B population] is comprised of individuals possessing unique and difficult to find skills...

As mentioned, government prevailing wage levels do not factor in skill sets. In using the Department of Labor's Online Wage Library to determine prevailing wage, the employer supplies only the job title, the

[3] This is 8 USC 1182(n)(1)(A); see 8 USC 1182(a)(5)(A) for the green card case.

[4] The Changing Face of America: Going Beyond the Rhetoric on Immigration, UC Berkeley, November 15, 2010. Paparelli then spoke on the "actual wage," discussed below.

geographic region and optionally an industry. The prevailing wage values for the four official levels of experience are then supplied, and the employer has his prevailing wage for the job in question. Nowhere in the process is the employer asked about skill sets, and indeed the statute would preclude such considerations.

So, we can get a lower bound on the degree to which prevailing wage is undervalued by looking at industry surveys. Here's a comparison of mean salaries among programmers who use various computer languages, from Dice.com (Hoffler, 2011):

language	mean wage
JDBC	$97,000
Perl	$94,000
Python	$90,000
C#	$86,000
Visual Basic	$78,000

These numbers should not be viewed as exact, for a number of reasons, but it is clear that there is considerable variation. This is true not only for programming languages, but also for factors such as type of application (e.g. mobile computing), field of application (e.g. health care), and so on.

Most importantly, the industry is typically looking for applicants with *multiple* hot skills. For instance, an ad for a position at Meebo, a Silicon Valley firm whose CEO has beeon outspoken in support of the H-1B program, lists (as of July 3, 2011) Python as a must, and lists as "pluses" the software tools Django, Doubleclick etc.

This and other data suggest that the hottest single skills are worth 15% or more. A 1998 Computerworld survey found individual hot skills commanding a premium as much as 24% (Computerworld, 1998). Combinations of multiple skills command an even larger a premium. It is clear, then, that for many workers their assigned prevailing wage is undervalued by 20% or more.[5]

2.4 A Note on Awareness of the Loopholes

To my knowledge, Lofgren's 2011 statement marked the first time anyone in Congress had publicly acknowledged that abuse of H-1B is legal, due to gaping loopholes in the law. However, there had been some prior awareness.

This had been known at least to Congress' research arm, the General Accountability Office, which noted it briefly back in 2003. In a report on an employer survey they had conducted, they wrote (GAO, 2003):

> Some employers said that they hired H-1B workers in part because these workers would often accept lower salaries than similarly qualified U.S. workers; however, these employers said they never paid H-1B workers less than the required wage.

In other words, the "required wage" was less than the market wage. This information from GAO, though, took the above form of a brief remark in passing, and apparently did not register with legislators.

However, many of them did become aware of the general point that H-1B and green card law is fraught with loopholes, when in 2007 the Programmers Guild widely circulated a set of YouTube videos made by a prominent immigration law firm. In those videos, the firm explains how to exploit various loopholes in green card law, including prevailing wage (Weier, 2007). The videos were reported by CNN, *BusinessWeek* and so on, and at least two Hill politicians, Senator Charles Grassley and Rep. Lamar Smith, spoke about them publicly (Berry, 2011).

[5]Some employers also claim that they hire H-1Bs because they are "the best and the brightest." I have shown elsewhere, e.g. in (Matloff, 2003), that this is generally not the case, but if it were the case, the employers would be paying an even larger premium than 20% for such talent. Again, the prevailing wage does not take talent into account, so we again see that the prevailing wage is well below the true market wage.

2.5 Second Basis of Legal Underpayment of H-1Bs: Avoidance of Hiring Older U.S. Workers

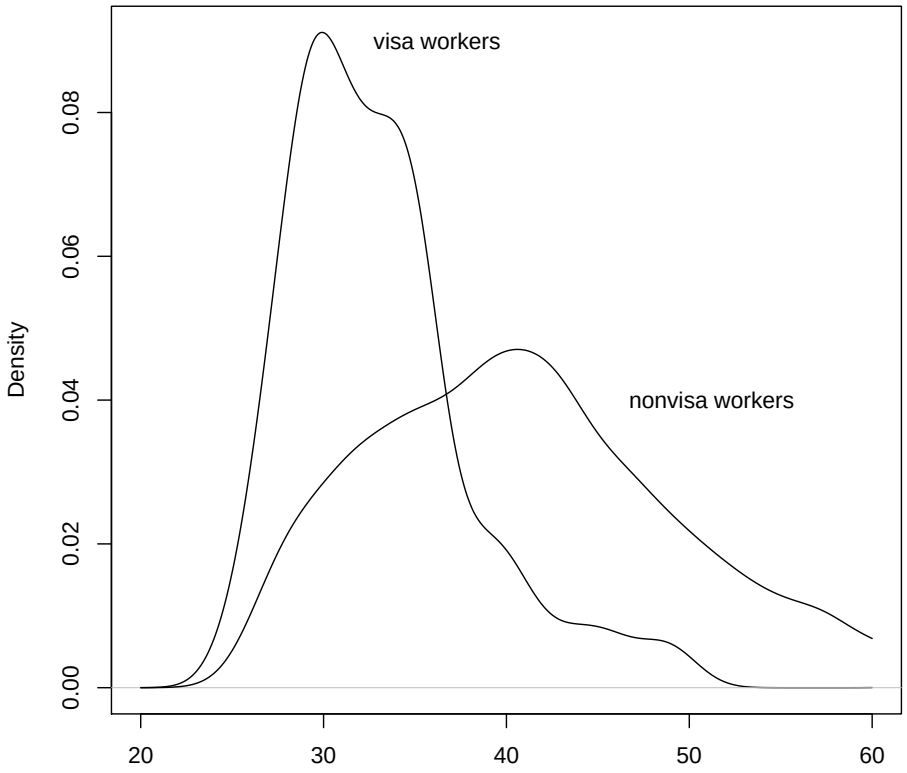
Discussions of underpayment of H-1Bs almost always focus on Type I salary savings, but the type of larger importance to employers is actually Type II: Hiring young H-1Bs in lieu of older (age 35+) Americans.

To see the scale involved, consider here for example is a comparison of wage distributions among new computer graduates and all software engineers, as of 2005:[6]

group	25th percentile	median	90th percentile
new workers	$45,000	$50,664	$61,500
all workers	$65,070	$82,120	$120,410

Note too that it is not just a matter of wages. Health insurance costs rise at age 40, for instance.

The H-1B program provides employers with a major opportunity to leverage these differences, as the H-1Bs tend to be markedly younger. The following figure depicts the age distributions of H-1Bs in computer science (CS) and electrical engineering (EE), in the 2003 National Survey of College Graduates:



Clearly, then, the potential for labor cost reduction via H-1B is even greater for Type II than for Type I.

The industry lobbyists acknowledge that the H-1Bs tend to be younger, but claim that that is because only new graduates have the latest skills, which older workers could acquire only after undergoing training. Such a claim is immediately suspect, for a couple of reasons:

[6]The data for all workers are from the Bureau of Labor Statistics, Occupational Employment and Wages, May 2005, `http://www.bls.gov/oes/current/oes151032.htm`, last visited June 8, 2006. The data for new workers are from the National Association of Colleges and Employers survey.

- The young new graduates, after all, were taught those "latest" skills by middle-aged professors, who had learned them on their own, no training needed. A competent programmer can become productive in a team that uses a new programming language, for instance, in a matter of weeks, through self-instruction.
- There have been a number of instances in which U.S. firms laid off American tech workers, replacing them with foreign workers, and forcing the Americans to train their foreign replacements (Hira, 2007). Clearly it was the foreign workers that lacked the skill set, not the Americans.

In other words, the skills issue is merely a pretext to avoid hiring the older, i.e. more expensive workers. This issue is treated in detail in (Matloff, 2003), but will become concrete in the case study following.

2.6 Case Study

Ironically, an excellent illustration of the points made above was provided the the industry lobbyists themselves. A 1997 the Information Technology Association of America (ITAA) launched a campaign to convince Congress to increase the yearly H-1B cap. Congress did so in 1998, more than doubling the cap.

The ITAA report addresses the question of training existing programmers in new technologies, instead of resorting to hiring H-1Bs. The ITAA dismisses this on the grounds that the newly-enfranchised workers become flight risks:

> Training employees in IT would seem to be a win-win for both worker and employer. And often that is the case. However, extensive training creates other issues. "You take a $45,000 asset, spend some time and money training him, and suddenly he's turned into an $80,000 asset," says Mary Kay Cosmetics CIO Trey Bradley. That can lead to another problem. New graduates trained in cutting edge technologies become highly marketable individuals and, therefore, are attractive to other employers.

Clearly, the central problem is that Bradley didn't want to pay the $80,000. Equally clearly, the ITAA's message is that Bradley should hire an H-1B with the same skill set at much less than that salary. In other words, even the ITAA is admitting that *H-1B is fundamentally about cheap labor.*

The example also illustrates the earlier point that the fact that hot skills are not accounted for in prevailing wage can lead to the latter being well below the true market wage.

2.7 *De Facto* Indentured Servitude

It has been noted by all sides of the H-1B controversy—critics, supporters and H-1B visa holders—that the H-1Bs tend to be *de facto* indentured servants. If an H-1B is being sponsored for a green card, for instance, this worker is essentially immobile, as moving to another employer would mean starting the lengthy green card process from scratch.

As a result, H-1B worker activist groups have complained that, although their starting salaries are similar to those of comparable Americans, subsequently they get fewer and smaller raises than do their American peers (Konrad, 2001).

Thus analyses based solely on starting salaries actually understate the degree of the underpayment problem.

2.8 The Actual Wage

Before leaving this topic of how loopholes in the statutes enable employers to use the H-1B program as cheap labor, an important technical point must be mentioned. The statutes define a second term besides *prevailing wage*, known as the *actual wage*. The employer must pay the higher of the two wage levels.

The actual wage is defined to be the average wage the employer pays to other "similar" workers in the same firm. At first, this would seem to deal with the issue that the prevailing wage is below the true market wage. However, further thought reveals that the actual wage is just as riddled with loopholes as is the prevailing wage.

First, the term *similar* clearly leaves the employer a lot of room in which to maneuver. Those who are earning higher salaries can be declared to be "dissimilar" in various ways. Even more importantly, if all or even most of the other workers are underpaid H-1Bs too, the employer would not have a problem with the actual wage.

3 Use of H-1B As Cheap Labor Is Mainstream

Armed with an understanding of prevailing wage, we may now turn to the central question addressed by this paper: How widespread is the use of H-1B for cheap labor? Is it limited primarily to the Indian IT staffing firms? The answer, in short, is that use of H-1B for cheap labor is thoroughly mainstream. The Schumer/Lofgren view that the chief abusers are the Indian IT staffing firms is incorrect.

In this section, I present several kinds of statistical evidence that the mainstream American firms are keenly aware of the loopholes and make aggressive use of them. The key point in each one is look at data in which very few of the foreign workers are in the IT staffing firms.

3.1 Regression Analysis

Below is a statistical regression analysis to study the issue. Here, in order to directly compare H-1Bs to Americans, I limited the analysis to those of age 29 or under. The professions are software engineers and electrical/electronic engineers, using the 2003 National Survey of College Graduates. This survey was used because it includes data on visa type. Altogether there were 796 workers in this group.

Some of the variables here are *indicator* variables, which take on only the values 1 and 0, indicating the presence or absence of a trait. My MS variable, for example, is 1 if the worker has a Master's degree (but not a PhD), 0 otherwise.

In order to assess the degree of underpayment, if any, in mainstream U.S. firms, I excluded all workers who first entered the country on a work visa; since the Indian IT staffing forms bring in their workers from abroad, this essentially eliminates such firms. Essentially, it leaves (a) the Americans[7] and (b) those foreign-born who first entered on a student visa.[8] I have an indicator variables for the student types of initial entry; note that an American would have the value 0 for this.

Finally, there is an indicator variable for whether the worker is in a high-cost-of-living region.

Here is the prediction equation:

$$mean\ salary = \beta_0 + \beta_1 \times age + \beta_2 \times MS + \beta_3 \times PhD + \beta_4 \times EnterStudentVisa + \beta_5 \times HiCOL$$

Here are the results:

[7] Including foreign-born people who immigrated through family and other nonemployment means.

[8] After a foreign student graduates and is hired by an American employer, he typically holds an H-1B or other work visa during the years while the green card is pending.

factor coefficient	beta ± marg. err.	significant?
const.	21164 ± 37881	no
age	1342 ± 1336	yes
MS	6855 ± 3922	yes
PhD	29715 ± 17493	yes
entered US on student visa	-7427 ± 5125	yes
highCOL	7153 ± 3067	yes

With age, degree and region held constant, the former student visa holders wages were on average $7153 less than those of comparable Americans. If the H-1Bs are indeed being hired because they possess skills that are rare among Americans, then the salary discrepancy is even greater than $7153.

Again, note that almost all workers in this group (former foreign students) are at the mainstream U.S. firms, not the IT staffing companies. Accordingly, we see that use of H-1B for cheap labor is indeed common in the mainstream.

3.2 The Pre-2005 "95% Rule"

There is at least one loophole for which there is direct evidence of usage by mainstream firms, as follows.

Before 2005, it was legal to pay 5% below prevailing wage. Consider the 2004 PERM data, which lists government records of employer-sponsored green cards,[9] In the 2004 data, for instance, we see records for Intel such as case number 06344806, in which an Electronics Design Engineer is being sponsored. The worker's actual pay is $80365, while Intel lists the prevailing wage at $84594; the former figure is exactly 95% of the latter. Case number 09536306, for an Electronic Engineer, has corresponding values of $60230 and $63400, again with the former being 95% of the latter.

The 5% savings is not large and thus is not the point here. Instead, the point is that the mainstream firms such as Intel are indeed keenly aware of the loopholes. Here is some data on the big mainstream users that illustrates how widespread usage of that loophole was during 2001-2004 for software engineers and electrical engineers:

group	% of cases < prev wg
all se	33.1%
all ee	34.6%
Cisco	50.5%
Intel	25.0%
Microsoft	10.2%
Motorola	14.6%
Oracle	20.2%
Qualcomm	70.9%

To be sure, these firms also hired some foreign workers at well above the official prevailing wage. But again, the point is that the mainstream American firms are well aware of the loopholes, and do often make use of them.[10]

[9] See `http://www.flcdatacenter.com`. Note carefully that each record corresponds to an actual foreign worker, unlike the Labor Condition Application records.

[10] One should not make much of the interfirm variation here, e.g. assume that Intel is "worse" than Microsoft. Each firm has its own method of calculating prevailing wage, as the government gives employers the choice of using a private survey instead of the Online Wage Library.

3.3 PERM Data, Post-2004

Let's turn again to the PERM data, now post-2004. Again, these are records of employer applications for green cards. Since the IT staffing firms rarely sponsor their workers for green cards (Hira, 2007), the PERM data provide us with an opportunity to study foreign workers at mainstream U.S. firms.[11]

I analyzed the ratio, WR, between the wage paid and the employer's reported prevailing wage. By law (after 2004), WR must be at least 1.00. Here are the median values of WR for the years 2005-2010:

group	med. WR
SE	1.01
EE	1.00

In other words, 50% of the foreign workers were being paid exactly the prevailing wage. Since the prevailing wage is below the true market wage, and since the PERM workers are almost all in mainstream U.S. firms, it is clear that underpayment of H-1Bs is common in the mainstream.

The above analysis implies that *at least* 50% of the mainstream foreign workers are underpaid.

4 Pitfalls in H-1B Wage Studies

Wage studies in general are difficult, given the many different variables that should be considered. I would argue that H-1B wage studies are especially difficult; if a researcher lacks understanding of how the tech industry works and the subtleties of H-1B law, it is easy to draw misleading conclusions.

Needless to say, conclusions can be misleading regardless of whether they support or are critical of the H-1B program. Major errors can occur from using largely irrelevant data sets, from incorrect interpretation of job titles, and so on.

I will not discuss the details here, but will refer the interested reader to analyses I've made of two studies cited particularly often by the industry lobbyists; see `http://heather.cs.ucdavis.edu/Archive/Fed03.txt` and `http://heather.cs.ucdavis.edu/Archive/MithasLucasPublished.txt`. As an example of a seriously flawed study whose results are critical of H-1B, see `http://heather.cs.ucdavis.edu/Archive/WithdrawnStudy.txt`.

5 Meaningful Reform

The original intent of the H-1B's predecessor, the H-1 visa, had been to bring in "the best and the brightest" to the U.S., a goal I strongly support. The question, then, is how to reform the H-1B program to restore that original goal, and remove the incentives employers have to use the program as a source of cheap labor.

It has been demonstrated here that use of H-1B for cheap labor is not limited to the IT staffing firms. On the contrary, such abuse is common among U.S. mainstream firms.

Another very troubling aspect of the current system is that it enables employers to hire younger H-1Bs in lieu of older Americans.

Meaningful reform, then, must redefine prevailing wage. There should be just one prevailing wage for any occupation, not the four levels we have today (and not the three levels in the Lofgren bill[12]). This is especially important in terms of dealing with abuse involving age. The Durbin/Grassley bill would accomplish this, setting just one prevailing wage level per occupation. The level is defined to be the median wage in that occupation. Others have proposed setting this at the 75^{th} percentile.

[11] These workers typically are holding an H-1B visa, but it is not always so.

[12] For my analysis of the bill, see `http://heather.cs.ucdavis.edu/Archive/LofgrenIDEAAct.txt`.

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