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THE WAGES OF SKILLED TEMPORARY MIGRANTS: EFFECTS OF JOB PORTABILITY AND STUDENT STATUS

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by

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More highly skilled "temporary" migrants are admitted yearly to the USA than skilled permanent immigrants. This phenomenon is relatively new and there is little empirical research with credible data that establishes the relative earnings or impact of skilled temporary workers. We use the NSF's National Survey of College Gradates which asks visa questions and follows up the college-educated population enumerated in the 2000 Census. We frame the competing expecations on temporary worker earnings: prevailing wage equality, lower reservation wages, segmented markets, visa-job portability, and visa pathways. The findings indicate that visa-job portability and visa pathways (student to worker) significantly reduce the earnings of temporary foreign workers relative to U.S. college-educated natives. Further, tests of the impacts of temporary workers appear to indicate that they adversely impact wages and unemployment. While large scale temporary programs may have certain benefits, they have not been well managed to date.

The United States admits an alphabet soup of international migrants who are authorized to work for periods of "temporary" stay. A surprisingly large proportion of these workers may continue on to adjust their temporary status to that of a legal permanent resident (LPR), a.k.a., green carder. But the traditional concern about immigrant wage assimilation should be moot in the case of the temporary worker. For while immigrants often earn less than natives with similar skills upon admission, successful assimilation dictates that they earn at least as much as natives after gaining experience. Temporary workers, on the other hand, are required by law to earn a wage that is at least as much as that which prevails in a given occupation right from the outset of their working career.

The reason for this legal requirement is to avoid displacing native workers who might be undercut by lower-wage migrant workers, as well as to manage the labor market in a proactive way that encourages appropriate adjustments. For example, if employers can readily access less-expensive foreign labor, they can avoid investing in attractive pay packages, technology, or labor-saving business strategies. And if migrants earn lower wages than natives and substantially retard wage growth in specific occupations, then domestic students might choose alternative occupations with higher wages. This later effect could mean that today's short-term labor shortage becomes reinforced and long term.

The literature addressing temporary (H-1B) visas has primarily focused on two things: the increasing demand for foreign workers in S&E occupations by the end of the 1990s and the impact of the growing inflow of skilled labor for American workers. The existence of an actual labor shortage in S&E occupations has been contentious and many raised concerns that it has only been product of employers lobbying for the increase of H-1B visas in order to have access to cheap but well trained labor. This in turn raised concerns about adverse wage effects. From an early stage on there have been many doubts regarding the H-1B program's intent and its functional efficiency (Papademetriou and Yale-Loehr, 1996; OECD, 2001). Critics claim that employers pay H-1B workers less than required, which systematically increases competition for native workers.

Yet, the majority of studies aim at exploring the H-1B issue from the perspective of native Americans and only few directly address the labor market conditions of the H-1B holders. The latter is the intent of this paper and the literature review will therefore primarily focus on what has been found on H-1B earnings in comparison to U.S. Americans. We analyze here data on temporary workers and their earnings relative to natives. Alas, immigration policy is a little too complex, and available data a little too incomplete, to permit a comprehensive analysis of short-term versus long-term outcomes. But we will examine wage differentials for highly skilled workers with a unique and powerful set of data that permit us to evaluate whether or not temporary workers earn less than similar natives for at least one point in time. The value of this analysis is precisely that it sheds light on how admission policy manages or generates wage differentials, which in turn permits us to more confidently speculate about how policy might better address long-term, global competitiveness.

THE TEMPORARY WORKING VISAS

We are primarily interested in and most research, our data and conclusions, refer to the so-called "H-1B" temporary visa for "specialty workers" who are professionals with a baccalaureate or higher degree. The visa permits a three-year stay that is renewable for another three years and permits a change of employers upon issuances of the new visa. The H-1B currently has a numerical limit of 65,000 visas with an additional 20,000 visas set aside for foreign graduates of U.S. colleges. The employer must first file a labor condition application (LCA) to the Department of Labor and attest that they will pay a prevailing wage and comply with conditions intended to protect U.S. workers from undue competition.[1]

Additionally, our data includes a number of "L" visaholders or "intracompany transferees" who are employed by a multinational company and do not require labor market testing and attestations/certifications are not required.[2] The visa dates from 1970 and requires that the alien has been employed continuously for one year by a firm or corporation or other entity to render services to their employer in the capacity of a manager, executive, or position of specialized knowledge. The duration of stay permitted varies from between five and seven years and is limited to the initial employer.

Finally, we also are interested in temporary training visas, namely the foreign student "F" and the cultural exchange visitor "J" visas. These are intended to promote both formal education and learning by experience; and both permit limited work authorization for periods of between one and three years. Foreign "F" students may work on campus and after graduation work authorization (practical training) is restricted to one year of off-campus work. Work may also be authorized if a student faces financial hardship and students from certain countries may on occasion be granted blanket work authorization due to economic crises in their home countries. The number of such workers is essentially unknown.

The temporary visas that we consider do not prohibit transferring between visas. About one fifth of H-1B workers were previously F foreign students. About half or more of all H-1Bs adjust to permanent status and perhaps as many as half of those F foreign students who become permanent residents first transition through the H-1B visa. Indeed, there are few legally and/or practically impede adjustment to permanent status for large proportions of temporary visaholders. However, it is likely that very few L intercompany transferees have immediately prior F student status and, similarly, it is likely that fewer adjust to permanent status than the other working visas.

RESEARCH AND THEORY ON TEMPORARY WORKERS' WAGES

There are at least five different theories or expectations about the wages of temporary workers relative to natives. While it is often argued that temporary workers earn no less and even more than natives, critics argue that temporary workers earn less. However, the expectation of lower earnings is partly predicated on the failure of legal

[1] TN professional workers are citizens of Canada or Mexico and the category was created by the North American Free Trade Agreement (TN refers to "Trade NAFTA"). Their status is somewhat analogous to H 1 workers; however, the TN category remains separate, distinct, and the number of TNs is in addition to other working visas issued to Canada or Mexico.

[2] An L-1 visa is for managers who are not included in the data we analyze here. The L-2 visa includes skilled intra-company transferees who may be in some of the same occupations as H-1Bs. Yet, there are no data on the employment of L-2s.

stipulations on prevailing wages. If we accept the not too surprising possibility that the law does not guarantee equal earnings, the literature still offers several reasons for expecting wage differentials but fails to favor one reason over the other.

Reservation wage. Temporary workers may earn less than comparable domestic workers simply because they are willing to work for lower wages. First, it is commonly assumed that foreign workers generally have a lower reservation wage because their stay-at-home earnings are a fraction of U.S. wages. Additionally, temporary workers may accept lower wages as part of a strategy to secure U.S. employment, which relies on employer sponsorship, as part of a longer-term strategy of adjusting to permanent residency. Thus, some critics of temporary programs claim they are effectively "indentured" employment.

However, the evidence that H-1Bs or other temporary workers earn less than domestic workers is somewhat uncertain, depending on the sources of data and the nature of the comparisons.[3] Labor force surveys do not capture information on detailed migrant status, but analyzes of those surveys using proxies for H-1Bs find no earnings differences *ceteris paribus* between them and native workers (Lowell and Taylor 2000; Reichl 2006). Analyzes of nominal earnings differentials using administrative data either find that H-1Bs earn less than other workers, or that their earnings are little different (Miano 2005; Kirkegaard 2005). We return more to the administrative data below.

Furthermore, there are conflicting survey results on H-1B earnings. A report by the Government Accounting Office (GAO) studied 145 H-1B beneficiaries in several S&E occupations, as well as contacting some employers. That survey found that younger H-1B workers earn more, while older H-1Bs tend to earn equal or less than their domestic counterparts (GAO, 2003).

Prevailing Wages. Some observers argue that legal or practical considerations make it next to impossible that foreign workers in the mainstream temporary programs would earn less than comparable natives. For example, the H-1B visa is issued only to employers who attest that they will pay a market wage like that of domestic workers.

> Under section 212(n)(1) of the Immigration and Nationality Act, an employer hiring an individual in H-1B status must pay at least "the actual wage level paid by the employer to all other individuals with similar experience and qualifications for the specific employment in question" or "the prevailing wage level for the occupational classification in the area of employment, whichever is greater…" (Anderson 2006: 9).

This legal stipulation leads many to believe that H-1B workers earn no less than domestic workers (Anderson 2003, 2006). At the same time, the law stipulates that L visaholders have at least one-year of prior corporate employment, even though it sets no wage minimum. It is reasonable to expect that the L intra-company workers are part of a labor market that is internal to multinational corporations and to argue that they earn no less than comparable corporate or domestic workers. However, no claims of wage equity

[3] In fact, practically no research exists that systematically examines the earnings of foreign students or intra-company transferees. There are no administrative data on their employment, no field work or special-purpose surveys, and no one has thought through ways of using general purpose surveys. The data used here are able to address this lack of information.

are advanced on behalf of foreign students, for whom there are no legal stipulations on earnings, but then this is a schooling and not a mainstream work program.

The process of determining an H-1B's prevailing wages begins at the Department of Labor (DOL). An employer who wants to hire a worker on an H-1B visa has to file a Labor Condition Application (LCA) with the DOL and attest that they will meet certain conditions, including providing a prevailing wage for the prospective job. After the DOL approves the LCA employers may seek workers to fill the job. The employer then files a petition with the U.S. Department of Homeland Security (DHS) which, in turn, approves the foreign worker(s) before the Department of State issues the actual H-1B visa for admission. The State Department visa data include no employment information, while Labor's LCA data captures information prior to actual employment, and the DHS' petition data more closely captures information at the point of employment.[4]

But the LCA data reflect the legally required prevailing wage and they appear to show low wages for H-1Bs. Miano (2005) studies the wages claimed by employers in LCAs and compares them to wage data from the Bureau of Labor Statistics' Occupational Employment Statistics (OES). He finds that the LCA prevailing wages are 85 percent of the median U.S. wage for the same occupation and state. For example, LCA wages for H-1B workers in computer occupations were $13,000 less than for all workers in the same state. An earlier study confirms such wage differentials ranging between 10 and 30 percent (Papademetriou and Yale-Loehr, 1996). Miano (2005) criticizes the prevailing wage provisions which appear to leave room for abuse and wage discrimination, at least based on a comparison of LCA and OES data.[5]

Segmented labor markets. A study by the Congress' General Accounting Office (GAO, 2000) raised concern about a pattern and practice of H-1B exploitation as wage and labor violations were prevalent enough to indicate that some of the demand for H-1Bs has little to do with shortages and more to do with some employers' appetite for cheap foreign labor. Most recently, Kirkegaard (2005) analyzes the petition data as well as special data on the major H-1B employers released by the Immigration and Naturalization Service (INS) and compares H-1B compensation with the prevailing wage.[6] He explicitly includes the fact that paying only 95% of the prevailing wage does

[4] However, petitions data also overestimate somewhat the numbers of H-1Bs because of employer-based exemptions and multiple petitions for individuals (DHS, 2003). Further, not all approved petitions are taken up or used by migrants. In the case of State visa data, the consular offices abroad issue the visa and the workers must then enter the U.S. and/or if visas are reissued the visa data may double count individuals. Individuals who receive their visa in the U.S., on the other hand, do not require visa issuance. The DHS also collects information on "admissions" which counts every time any foreigner enters or leaves the U.S. Neither the State visa nor the DHS admission data are very helpful to us as they include no information about employment.

[5] Using OES data as a reference point may be flawed. Anderson (2006: 11) points to the fact that the OES "salary estimates include compensation, particularly bonuses, that employers are prohibited from including on the Labor Condition Application filed with the Department of Labor." So the LCA wages do not include fringe benefits which are included in the OES data. At the same time, OES salary estimates do not isolate new hires, or even just domestic workers, but are for all workers in U.S. firms.

[6] The legislation requires that all H-1Bs are paid at least the prevailing wage. Employers hiring H-1B workers must submit to the Department of Labor proof that the employer(i) is offering and will offer during the period of authorized employment to aliens and to other individuals employed in the occupational classification and in the area of employment wages that are at least—(I) the actual wage level for the occupational classification at the place of employment, or (II) the prevailing wage level for the occupational classification in the area of employment, whichever is greater, determined as of the time of

not constitute a violation of the prevailing wage law.[7] He concludes that there are two kinds of employers: the first includes employers that he calls "outsourcing-type IT services providers" who seek a competitive labor cost advantage in employing H-1B visa recipients which in turn frequently results in a 5 percent legal undercutting of the U.S. prevailing wage. The second group of employers hires H-1B workers to indeed bring in highly sought after skills and experience and they pay them well above what is required for visa eligibility (2005:23). He further finds that the main employers are large U.S. corporate names in the IT industry and Indian IT service companies with the latter often being the type one kind of employer.

Besides research using the main official data sources there are some studies based on evidence from self-conducted surveys. The DOL commissioned qualitative field research in California and Texas. The former was lead by Smith (1999) the latter by Hagan and Collom (1999). All carried out interviews with employers - especially in IT - , immigration attorneys, skilled workers, workers professional associations and federal regulators. Regarding wages both studies found that most immigrants were paid a lower wage than the prevailing. Especially, bodyshops and IT consulting firms were more likely to exploit H-1B workers and keep them in low pay jobs. They said that the greater pool of skilled workers increased the competition among the workers and point at the conflict that if paid below the prevailing wage, H-1Bs become "IT braceros" hurting Americans, but if paid more it would boost "high tech maquiladoras" – hence increase off-shoring (Smith, 1999: 146).

Besides these official data sources, the premier source of data for research on the American labor force in general is the Current Population Survey (CPS). It provides information on the nativity of high-skilled workers as well as on their employment, wages, overall numbers and other demographic characteristics. It is very useful for labor market analyses, but has the disadvantage that H-1Bs cannot directly be defined. Studies using this data base their analysis on proxies for the H-1B status such as 'immigrant, arrived in the last 5 years' in information technology. Research suggests that almost all of these workers are, indeed, H-1Bs (Lowell 2002). Two studies of the CPS which identifies workers in "contingent jobs" find that H-1B proxy workers are not paid less than comparable native workers – no matter if employed in the contingent or primary sector. But they are four times more likely to be found in contingent jobs which pay 40 percent less than core jobs in information technology (Reichl, 2006; Lowell and Taylor, 2000).

Visa portability between employers. Workers who are not free to change employers lack a crucial asset in securing increased wages. They cannot search for better paying jobs and their employer has no immediate incentive to pay a worker who may otherwise leave. The foreign H-1B visa permits a worker to change employers, but that portability is constrained on several counts.

The American Competitiveness in the 21st Century Act of 2000 ("AC-21") recognized this problem which affects both H-1B and permanent residency cases. One of the most important benefits AC-21 was the creation of H-1B visa "portability." As of

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filing the application, and (ii) will provide working conditions for such aliens that will not adversely affect the working conditions of workers similarly employed.

[7] That was true until the Spring of 2005 following the passage in 2004 of omnibus budget bill (H.R. 4818) which requires 100 percent of prevailing wage be paid to H-1Bs (see IEEE, "L-1 and H-1B Visa Provisions in the FY2005 Budget Bill," Public Policy, http://www.ieeeusa.org/policy/features/h-1b-update.asp).

autumn of 2000 the H-1B visa permits immediate portability between employers after the new employer has simply filed a petition, whereas previously sequential employment required the petition first be approved which takes months.

However, there are good reasons to suspect that the AC-21 fix does not completely address the inherent portability problems in the visa. First, the H-1B whose ultimate objective is to obtain a permanent residency visa typically relies on their current employer to sponsor them into permanent status. To date, that permanent visa has required upward of four years and more to acquire and that effectively limits portability.[8] Also, it is one thing to facilitate portability but another to make it a likely course of action. The visa itself is structured for three years followed by a three renewal of status for the maximum six years. And while quick portability between employers facilitiates mobility, unemployed H-1Bs take a chance because they are required to leave the country.[9]

So while sequential employment is permitted, a change in jobs puts the H-1B in a new, unknown employment relationship with some risk of unemployment, to say nothing of restarting the relationship clock on sponsorship for permanent residency. There may also be another subtle factor at play, e.g., if the foreign worker indeed has a lower reservation wage they may not bargain with their employer in the first place. And they may be risk adverse in a sense until they either learn to negotiate or gain the experience to negotiate. So it may be the employer (initial or new) who initiates a wage increase upon filing for the H-1B renewal as part of fairly common human resource practices.

Visa pathways. Over the course of the 1990s the number of temporary visas used increased notably and became a pathway for many that eventually led to a grant of permanent resident status. The volume and importance of these pathways has received remarkably little notice by policymakers and very little critical research.[10] Yet, these pathways obviously create the possibility of lowered inter-employer portability.

For example, in 2000, around 45 percent of *new* H-1B visas were approved for workers already present in the United States on another temporary visa and that increased to 60 percent in 2003 (CITATION). Over the course of the 1990s temporary foreign students (F visa) increasingly became temporary workers (H-1B visa) after completing their studies.[11] Many followed this path because there are more H-1B visas than permanent employment-based visas and they are awarded in a matter of weeks not years (Lowell, 2001a).[12] Doubtless, many foreign students, who are permitted one-year of post-

[8] At least half of H-1Bs adjust to permanent status and data on Ph.D. graduates suggest that the vast majority of highly skilled migrants "intend" to stay permanently (Lowell CITATION, NSF CITATION).
[9] There have been changes in regulations recently so that the former immediate requirement to leave if unemployed apparently now is suspended for a 60 day grace period to permit search for new employment.
[10] These pathways fundamentally alter the traditional "permanent on arrival" nature of past immigration. The lengthy visa-to-visa transitions delay the full integration process; temporary workers do not have the many rights awarded to permanent residents including the option of becoming naturalized citizens.
[11] Indeed, there were 31,000 H-1Bs awarded to foreign students in 2003. This figure is equivalent to about four-tenths of all of the previous year's graduating class of foreign MA and PhD holders; and about nine-tenths of foreign graduates in science and engineering (authors' calculations, see PETITIONS REPORT AND S&E INDICATORS, CITATION).
[12] The H-1B visa, along with the L visa, also permits "dual intent" which means that these so-called "temporary" visas can be issued to migrants "intending" to stay either temporarily or permanently in the U.S.. This makes the visa attractive for foreigners who would like to eventually become permanent

graduation employment as "practical training," transition to H-1B status through sponsorship with the same employer.

What are the effects of this pathway on H-1B earnings? One might expect that foreign students who transition to H-1B visas have lower earnings than domestic workers. But there is little research on the question. Surely the fact that this particular pathway sometimes occurs in the academic sector suggests that workers will earn that sector's typically lower wage. Yet, both foreign students and H-1Bs may work as post-doctoral students where others have long argued that they keep wages low and deter natives from pursuing graduate education (North CITATION). Borjas (2006) argues that foreign students have lower reservation wages than domestic students and his research finds that a 10 percent increase in foreign students decreases wages in postdoctoral jobs by 3 to 4 percent.

At the least, foreign students in post-graduation practical training are almost certainly earning far less than other workers because they are, by definition, in an apprenticeship type position. Their visa also does not stipulate or have a regulatory component for ensuring they receive some prevailing wage. So it is reasonable to expect that the earnings of foreign students will be lower than average. And if portability is an issue, regardless of their employment in or outside of academics, it is reasonable to expect that they would have lower than average earnings as an H-1B visaholder.

Summary. From this review of literature it can be concluded that the relative earnings of H-1Bs are ambiguous. The main cause for such discontent seems to be the incomplete information in the data. Using the CPS it is hard to define an H-1B worker and official data gives no information what a particular worker is really paid when being in the job. Nevertheless, it becomes clear that crucial factors which shape the situation of H-1Bs can be identified. These may include portability and bargaining power or the opportunity to change the employer and whether a petition was filed for initial or continuing labor. Further, the way the visa was received–e.g. directly or via an F-1 visa – as well as the higher probability of being in contingent labor and the kind of employer seems to be important for H-1B earnings. These key issues, together with the use of more comprehensive data could resolve some of the contentious questions.

THE MODEL

The econometric model used to empirically analyze the questions on H-1B earnings is based on a Mincer wage equation with a few modifications (Mincer, 1974). The equation therefore defines human capital as the main influence factor of wages and additionally addresses specific features of non-immigrants. The original model is specified as follows:

$$\ln(w) = \beta_0 + \beta_1 \exp + \beta_2 \exp^2 + \beta_3 E + \beta_4 BP + \beta_5 D + \beta_6 ysm + \beta_7 LI + \beta_8 NIS + u$$

The dependent variable *w* is the natural logarithm of hourly wage. *Exp* stands for the work experience of the respective person. *E* is a vector for education dummies which includes a Bachelor degree as the base category, a Masters -, a Doctoral - and a

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residents, as opposed say to cultural exchange (J visas) issued to students and some workers who must return to the source country for at least two years after completing their study/work.

professional degree as well as the place of education which has been proved to be essential for immigrant earnings (Regets, 2001). Further, *BL* is a set of dummies controlling for the place of birth with U.S. natives as the base category. The vector *D* includes a set of demographic dummies such as the sex and marital status. *Ysm* accounts for the years since migration of the immigrant, it is considered as one of the essential variables in the literature of immigration and especially assimilation (Chiswick, 1978). The last two vectors deal with the immigrant or non-immigrant status. *LI* controls for legal immigrants and includes naturalized citizens and legal permanent residents (LPRs). *NIS* – non-immigrant status - is the vector of interest in most the analysis. Several modifications and distinctions regarding this temporary status will be made that allow addressing the different situations an H-1B worker is facing. These specifications will be explained in the following data and method section.

THE DATA

The data in this analysis comes from the National Survey of College Graduates (NSCG) in 2003. The NSCG is a follow up survey of the U.S. Census 2000 stemming from the initiative of the National Science Foundation (NSF). While all previous datasets being used for labor market analysis such as the CPS or the Decennial Census only tackle immigrants by asking for place of birth and year of immigration, the latest NSCG has more detailed visa status. The new information includes the overall visa status – naturalized, permanent or temporary migrant, as well as four different types of temporary visa which define working or training status as well as a dependent or other visa status. Further, the survey gives information on the entry visa of all immigrants and the year when LPR status was gained. Furthermore, the NSCG reports detailed information on education and only includes those individuals who at least hold a college degree.

The following analysis is restricted to a sample of the full-time working population with an above zero hourly income and employed in S&E occupations. While there are different definitions on what is included in S&E occupations, we use the narrowest definition of so-called core S&E occupations (see table 3). S&Es are not only the group of particular interest in this paper; they also constitute the main group of occupations H-1Bs work in. It is therefore important to restrict the sample to H-1B relevant occupations in order to make the comparison of H-1B earnings to earnings of Natives as accurate as possible.[13] With these restrictions the sample includes 19,486 observations.

[13] With this restriction the analysis excludes H-1B workers in health occupations – another large group -, models and S&E occupations such as technicians and social scientists.

Table 3: Core S&E Occupations

	Frequency	Percent
Life and Physical Sciences		
Life Sciences	337459	10
Physical Sciences	232848	7
Engineers	1331943	41
Mathematicians and Information Technology		
Mathematicians	77617	3
Computer Scientists and Engineers	1070329	33
Computer System Analysts	385728	-
Computer Software Engineers	500764	-
Computer and Information Research Scientists	35189	-
Other Computer and IT Occupations	148648	-
Programmers	204136	6
Total	3254333	100

Source: NSCG 2003.

The descriptive measures for the set of variables used to assess the effect on the dependent variable 'hourly earnings' are summarized in table 4. Of all 23.4 percent who are foreign born 53 percent are naturalized citizens, 30 percent are on LPR status and 17 on a temporary status. Among the latter 83 hold a temporary work visa. The variable temporary work visa in the NSCG does not solely refer to the H-1B visa, but also includes the L visa. However, due to the sample restriction of only S&E occupations individuals on L-1 visas – mainly managers – are already excluded. Therefore, only the small fraction of L-2 visa holders – who look very similar to H-1Bs – are still part of the temporary worker category which represent the H-1B workers throughout the analysis.

There are several sets of variables constructed from the data that describe the mentioned factors which are likely to influence H-1B earnings. The first set of variables includes the basic temporary status – temporary workers and other temporary migrants on training, dependent or other visas. The next set addresses the issue of portability. Did H-1B change their employer during their stay? How did this help to improve their earnings? Apparently, 43 percent of the workers on a temporary work visa changed their job. The effect of this action will be measured by dividing the group of temporary workers by whether they changed employer or not.

Further, a set of variables analyzes how long a worker has been in his or her visa status. Thus, temporary workers are divided according to whether they have been three years or less or 4 years and longer in the H-1B status: 59 percent of temporary workers are 4 years or more in the U.S.

The next relevant set of variables describes the visa path of the temporary workers. The group is divided by entrance visa categories: 45 percent of temporary workers initially entered with a work visa and 48 percent came as students or other scholars. The remaining 7 percent entered in the dependents or other visa category. With regard to those who exited the H-1B status it is only possible to track those who adjusted to a permanent status. Within the LPRs 33 percent entered on a temporary work visa and 40 percent on a temporary training visa many of whom were also H-1Bs after graduation and before getting the green card.

The literature of H-1B workers emphasized that abuse of the H-1B status may be especially associated with certain employers and employment in contingent labor. However, this problem cannot be addressed empirically on the basis of the NSCG. There is very limited information on employers and no information that allows distinguishing between labor market segments. Therefore, we acknowledge the problem but do not investigate it in the following analysis. Again, all relevant descriptive features of variables used in the following regressions are summarized in table 4.

RESULTS

In all regressions sets of dummies for temporary and also permanent status, U.S. workers form the base category. Table 5 in the appendix shows the full set of coefficients from this regression. According to these estimates temporary workers earn 4.93 percent less than native workers. Other temporary workers earn even 41.65 percent less.

Looking at the final specification of the model as shown in table 5, it can be seen that certain variables are excluded from the model. Naturalized citizens and permanent residents other than those who entered on a temporary work visa are insignificant. So is 'years since migration' in this context. Based on a Wald test they are jointly insignificant and will therefore be excluded form all following regressions. The remaining permanent residents earn significantly more than natives (16.95 percent).

The same regression run for all occupations shows zero earning differentials for temporary workers. But the average hourly wage is also much lower (33 per hour). This confirms that it is important to restrict the sample to occupations that are relevant for H-1B workers in order to truly make a statement on wage differentials.

The next question asks about portability of H-1B visas by looking at whether a change in employer would affect the earnings of the respective worker. Thus, the temporary workers are split up according to this criterion. The results clearly confirm that H-1B workers are worse off because they cannot easily change their employer. H-1B workers who manage to change employer earn in fact equally to Americans, but those remaining in the same job earn 10.59 percent less. This result shows that H-1B workers are indeed paid less than Americans when they start working. Consequently, they initially have little bargaining power to set and subsequently increase their wage while they depend on their employer to pay for their visa. Only those managing to find another employer who wants to hire them experience an increase in earnings and no longer differ from Americans regarding their earnings (see table 6).

The next regression addresses the question on the effect of continuous versus initial employment on earnings. The results confirm the numbers of the petition data on this issue and in relation to the earnings of American workers. Wages of workers whose H-1B visa is filed for continuous employment no longer differ from American wages. On the other hand workers in their first period of H-1B status experience a wage reduction of 11.52 percent. This shows that employer dependency decreases after the worker has filed for the visa extension. The results of the previous two regressions are summarized in table 6.

Table 6

	Coefficient
Temporary worker changing employer	-0.011406
	0.029357
Temporary worker staying with the same employer	-0.100675**
	0.033049
R-Squared	0.096305
N	19486
In temporary work status for 4 years and more	-0.016953
	0.022678
In temporary work status 3 years or less	-0.122383**
	0.031464
R-Squared	0.096336
N	19486

Source: NSCG 2003.

The analysis of the visa paths of the temporary workers reveals more interesting features about their earnings. Temporary workers are distinguished according to the visa they with which they first entered the U.S. This split results in significant differences. Those who entered the U.S. on a temporary work visa earn significantly more than U.S. workers (13.81 percent). On the other hand temporary workers who came with a training visa earn 16.12 percent less than native workers (see table 7, column 1). This is a surprising result which needs further investigation.

Most H-1B workers who entered on a training visa gained U.S. education and often even a U.S. degree (72.8 percent) which according to previous studies yields wage returns equal to native Americans (Regets, 2001). Their counterparts who initially come on an H-1B visa are paid comparatively more. However, most of them do not have U.S. American education (88.7 percent) which somehow neutralizes the premium.

Why do students transferring to an H-1B visa earn less than natives then? The literature suggests that many H-1B workers are employed in postdoctoral positions after their graduation, earning less and even undercutting native wages (Borjas, 2006). This is reflected in NSCG data where 27.5 percent of former students are employed in an educational institution compared to only 6.2 percent of American workers and 2.3 percent of temporary workers entering on an H-1B visa.

However, when we further restrict the sample to only academic employment the regression analysis shows that in academia all temporary workers, in fact, earn as much as U.S. American workers (table 7, column 2). Restricting the sample to non-educational employers in turn reveals that this is the sector where former students earn comparatively less (table 7, column 3). Therefore, we conclude that graduates entering the U.S. labor market on an H-1B visa have a major wage disadvantage compared to U.S. natives unless they work in the academic sector where the wage-position relation is less flexible.

Table 7

	(1)	(2)	(3)
LPR Adjuster	0.171616**	0.097042	0.138979**
	0.023446	*0.213006*	*0.022640*
Temporary worker who entered on a temporary work visa	0.129383**	-0.257886	0.109008**
	0.033059	*0.139216*	*0.032440*
Temporary worker who entered on a temporary training visa	-0.175792**	-0.050185	-0.106872**
	0.031117	*0.067508*	*0.032046*
Temporary worker who entered on another temporary visa	-0.133453*	-0.225660	-0.081016
	0.062381	*0.168573*	*0.052448*
Other Temporary status	-0.535830**	-0.395240**	-0.084600
	0.059099	*0.070129*	*0.056207*
R-Squared	0.099289	0.331162	0.074770
N	19486	1404	18082

Source: NSCG 2003.

The analysis further reveals that former students are over represented in the group of temporary workers who are three years or less in the U.S. (88.2 percent within the group of first-term H-1Bs). Thus, they immensely contribute to the negative coefficient from the preceding regression. However, 27.3 percent of temporary workers having been in the U.S. for 4 years or longer are also former students, for this reason and because of the selectivity issue we cannot simply say that the short duration is the reason for their wage discrimination.

When splitting the temporary workers according to their length of stay in H-1B status and their entrance visa reveals that both groups of former students have significant and negative coefficients (minus 17.06 percent for the short-duration H-1Bs and minus 15.75 percent for the long-duration H-1Bs). Those temporary workers who had entered on a temporary work visa all have positive and significant coefficients.[14] Therefore, the disadvantaged position of former students cannot be explained by their number of years in H-1B status.

Another part of the visa path of H-1B workers is the effect of their exit out of H-1B status. This is possible by tracking permanent residents by their entrance visa. As we know from before all permanent residents who entered with a visa different from the H-1B visa do not differ from natives. Only the so-called adjusters (from H-1B to permanent status) receive significant wage premiums. This means that those adjusting from a training visa to a permanent status – most likely via an H-1B status – are only equal to American workers once they obtained LPR status. LPRs that initially entered on an H-1B visa seem to have a wage advantage while being in H-1B status and subsequently when they manage to adjust to the permanent status experience an even higher earnings premium of 18.72 percent.

Summary. Temporary migrant workers who enter on a training visa are disadvantaged compared to American workers and can only catch up once they gain LPR status. In contrast temporary workers who initially come on the H-1B visa earn more that natives at all stages. This suggests that the common road of many foreign born to come to the U.S. as students, transfer to an H-1B and then maybe immigrate leaves them in a comparatively disadvantaged position. While those workers may not mind this

[14] For the short-duration H-1Bs in this category sample size is yet too small.

discrimination due to e.g. a lower reservation wage, U.S. workers may as their wages are undercut in these cases.

There has been much concern about the discrimination of Indian H-1B workers often employed in bodyshops. It is possible to include more specific dummies regarding the place of birth as well as interactions with temporary work status into the regression. The results, however, show no evidence that Indians receive significantly lower wages. Among all Asians they even do comparatively well.

Altogether, the results from all regressions show two major points about temporary workers. First, the data indeed reflects the issue of limited portability and bargaining power for H-1B workers. When initially employed they earn less and they can only improve their earnings by being able to extend the visa or change employers. Secondly, the visa path is crucial for H-1B earnings. Foreign workers entering on a training visa and accesses the U.S. labor market after graduation have lower wages compared to natives.

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Appendix

Table 4: Descriptive Statistics – N = 19486

	Mean	Std. Deviation
Hourly income	37,4435	51,2295
Years of experience	19,6256	9,6898
Education		
Bachelor	0,5601	0,4964
Master	0,3089	0,4621
Doctorate	0,1241	0,3298
Professional or other degree	0,0068	0,0823
Foreign degree	0,1170	0,3214
Years since Migration	5,1635	9,8938
Male	0,7875	0,4091
Married	0,7798	0,4144
Place of Birth		
Born in Central or South America or Caribbean	0,0227	0,1491
Born in Europe or North America	0,0687	0,2529
Born in Asia or Oceania	0,1971	0,3978
Born in Africa	0,0100	0,0995
Legal status of Foreign Born Population		
Naturalized	0,1712	0,3767
Legal Permanent Resident	0,0858	0,2800
Temporary Work Status	0,0343	0,1821
Temporary Training, Dependent or Other Status	0,0076	0,0868
Job mobility		
Temporary worker who changed job during her working time	0,0189	0,1363
Temporary worker who stayed with the same job	0,0153	0,1227
Time in H-1B Status		
Temporary worker who has bee in temporary work status for up to 3 years	0,0109	0,1040
Temporary worker who has been in temporary work status 4 years and longer	0,0233	0,1508
Visa path		
Temporary worker who entered on a temporary work visa	0,0143	0,1186
Temporary worker who entered on a temporary training visa	0,0175	0,1311
Temporary worker who entered on a temporary dependent or other visa	0,0025	0,0496
Permanent resident who entered on a temporary work visa	0,0262	0,1598
Permanent resident who entered on a temporary training, dependent or other visa	0,1509	0,3580

Source: NSCG 2003.

Table 5:

Variable	**Coefficient**	***Std. Error***
EXP	0.029024**	*0.001412*
EXP**2	-0.000486**	*3.15E-05*
Master	0.081058**	*0.007324*
PhD	0.086699**	*0.010948*
Professional degree	0.159931**	*0.048450*
Foreign Degree	-0.085307**	*0.015136*
European/N. American Born	0.066710**	*0.014707*
C./S. American/Caribbean Born	-0.036564	*0.023259*
African born	-0.047072	*0.036138*
Asian/Oceania Born	0.104442**	*0.010295*
Male	0.113900**	*0.008233*
Married	0.063534**	*0.007977*
LPR Adjuster	0.156602**	*0.023254*
Temporary worker	-0.050572 *	*0.023001*
Other Temporary status	-0.538764**	*0.058932*
Constant	2.950.839**	*0.016281*
N = 19486		
R-Squared = 0.095979		

Source: NSCG 2003.