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IMMIGRATION POLICY:  
HIGHLY SKILLED WORKERS AND U.S. COMPETITIVENESS AND INNOVATION

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PARTICIPANTS:

PANEL II - HIGHLY SKILLED WORKERS, TECHNOLOGY, AND ENTREPRENEURSHIP

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## PROCEEDINGS

MR. FINNERAN: Okay, everybody. Please move to your seats. We're getting ready to introduce the second group of speakers.

Very good. I'm Kevin Finneran. I'm the editor of *Issues in Science and Technology* at the National Academy of Sciences, and I will be the moderator for the panel discussion for the second session and I will be introducing the speakers. And this time the panel is going to be sitting down below so that -- and then they'll all come up here at the end of the presentations.

We're going to start out with Jeanne Batalova, who is a policy analyst with the Migration Policy Institute. And rather than wasting time on backgrounds and so on, we're just going to jump right in.

MS. BATALOVA: Good morning, everyone. I'm Jeanne Batalova, and I'm from the Migration Policy Institute, a research organization that deals and studies in depth various aspects of migration and immigrant integration in the United States and other countries.

And it's really a great pleasure to be here to share the work that my colleagues at MPI have been involved in in the last few years.

I'm going to talk about something that the first panel didn't touch on, and that is what happens to immigrants once they've come to the United States. And they do have college education. And then they find themselves in the situation when their skills, knowledge, education is utilized properly. The phenomenon is called "brain-waste," and you'll hear a lot about it today.

So, how many of us run into an immigrant taxi driver who could write a complicated computer program with his eyes closed? Or perhaps overhead a medical interpreter who used to be a physician in her home country? Or hired a contract help who apparently has an engineering degree from abroad?

How many skilled immigrants in this country who find themselves either unemployed or employed in jobs for which they are substantially overqualified? Whose concern should it be when skilled immigrants in the United States, instead of becoming Goggle and Yahoo!-like entrepreneurs find that their skills, education and drives are underutilized in the labor market? What are the opportunities for

the public and private actors to address such brain-waste?

These are the questions that I'd like you to explore with me today.

In our efforts to quantify brain-waste, we have focused on college-educated immigrants, ages 24 and older, who were either unemployed or employed in jobs that require no more than moderate on-the-job training. So the examples would be construction laborers, file clerks, cab drives, nannies, parking lot attendants and so on and so forth.

Well, what we found was quite disturbing, in our opinion. There are more than 1.5 million college-educated immigrants who were unemployed or working in unskilled jobs as of 2009. Twenty-one percent of college-educated immigrants -- so one in five -- were working in unskilled jobs. And that's compared to 17 percent of the college-educated U.S. workers.

Another 22 percent of immigrants were in what we called "semi-skilled" jobs. So these are jobs that require long-term on-the-job training, perhaps an associate degree, but less than college education that the immigrants have. And examples would be carpenters, electricians, massage therapists.

We also found that -- well, the brain-waste is a reality. That's our conclusion.

What we also found is that some groups of immigrants are more prone to face brain-waste. We found that 43 percent of recently arrived Latin American immigrants, and recently arrived are those who came in the last 10 years, and 36 percent of African, foreign-educated immigrants were working in unskilled jobs.

Longer residence in the United States typically is associated with improved outcomes; however we found that almost -- a bit more than a third of Latin Americans who have been here for at least 10 years were still working in low end occupations.

The next slide is an analysis -- is based on our analysis of job quality of legal permanent residents. It's a survey -- the data are from the National Immigrant Survey that was conducted in 2003. And, unfortunately, that's the latest data that we have available.

So here we look at Green Card holders, and those who had obtained their degrees abroad. And we are able to track the job quality from the time they left the United States -- so their first job -- I'm sorry, their last job abroad, their first job in the U.S., and their current job.

And I'd like you to pay attention to three patterns. First of all, immigrants whose admission was based on employment visas saw little change job quality over time. For all other admission categories, there was a decline following the immigration, and subsequent rise in job quality. The decline was deeper for those who came as refugees or diversity immigrants -- the Green Card diversity lottery -- than for family immigrants, who often can count on relatives' assisting them in the integration process.

But also, let's look at the status adjusters versus new arrivals. Very quickly, status adjusters are immigrants who receive their Green Cards while they are in the United States after spending, typically, some time in the United States in a variety of temporary visas. And what's important is that status adjusters have better relative outcomes over time than their new-arrival counterparts -- in part, owing to greater exposure and experience in the U.S. labor market.

Adjusting to a new labor market is not an easy task, and many highly skilled immigrants experience a sharp drop in occupational status when they arrive.

What are main risk factors? We found that lacking English skills was one of the biggest barriers. And let me emphasize that we are not talking only about English vocabulary or proper grammar, but the ability to communicate effectively in the work environment that many newcomers lack.

Having just a foreign degree, our analysis shows that those with U.S. degrees are three times more likely to be in skilled jobs. U.S. experience -- that's what U.S. employers want, demand and really rely on in the assessment in whom to hire.

Those who entered on non-employment based visas, those whose country of origin or region of origin matters. Lacking U.S. professional and social networks is a huge barrier.

But there are also institutional factors that absolutely have to be addressed. Immigrants often face substantial difficulties in recognizing their foreign-owned credentials and work experiences. They lack, as I mentioned, professional networks, mentors and opportunities to learn how things are done in the field of study.

So -- I have, okay, four more minutes.

Just very quickly about other institutional barriers that we found in our research that has been again and again huge obstacles -- lack of state-specific and occupation-specific information about

steps that are needed to pursue former careers.

Gatekeepers -- and we have two major gatekeepers: professional associations that set rules state by state, often with protectionist instincts, as well as employers who often lack knowledge and cultural competencies in evaluating and hiring internationally-trained professionals. Shortage of quality programs that are available to newcomers that target work and language training, as well as job-search and interviewing skills.

So, given what we heard in the previous session, we already know that highly skilled immigration is important for innovation, competitiveness, creativity, academic excellence, expansion of knowledge, and so on and so forth. So I'm not going to talk about why brain-waste is an important issue to address -- even when the economic recovery is slow.

Instead, I'd like to share what we at MPI is a two-pronged approach in dealing with -- in addressing the brain-waste. It's immigrant integration and policies with regard to admission.

So, in terms of immigrant integration, the examples of other countries -- and, again, I'm a person who always looks at what other people are doing to get the best ideas -- the examples of Canada and Australia show that the importance of multi-stakeholder approach. So, companies, employers, can do a lot at their level by incorporating language training, for instance, in their in-house communications-skills training.

States have huge, huge role in making sure that brain-waste and human capital are not wasted -- I'm sorry, brain and human capital are not wasted. So states, for example, can partner up with other stakeholders and provide support for mentorship and internship programs similar to what Canadian federal and provincial governments are already doing on a large scale. They can provide occupation-specific guidelines that are clear and up to date on how immigrants can have their foreign-earned credentials and work experiences recognized. They can spur the development of effective bridge programs that serve both immigrants and employers.

And there are important spillover benefits to other groups of workers, for example, those returning from the armed forces, women returning to work, or former inmates. And at the national level, a lot can be done in terms of funding innovative and successful programs and information sharing.

But we also talk about, we also think about policies that can be done at the immigrant

admission. Someone already mentioned the provisional visas, which will redefine who is hired, when he's hired, and what are the opportunities people have after getting experience, after both prospective workers and employers test waters. And the provisional visas will give rights to work, but also will give an opportunity to sponsor themselves for permanent residence afterwards.

And the last one -- I know I'm running out of time -- is our idea of having to bring -- we absolutely need to bring flexibility into how immigrant level and numbers and types of visas are set when the economy is changing like this, and we are still in the gridlock over undocumented immigration, and nothing is moving. So having a commission, an independent commission, on labor markets and immigrant would allow us to bring flexibility and transparency and analysis something along the lines that other countries are already doing.

All right. Thank you. (Applause)

MR. FINNERAN: Okay. Fortunately, our next speaker comes from outside our borders. This is Jennifer Hunt, professor in the Department of Economics at McGill University.

MS. HUNT: Thank you very much. I'm going to return to the topic of skilled immigrants and innovation. And I'll talk a little bit about entrepreneurship, as well, in the context of the United States. And I'm going to begin with some theoretical remarks, before telling you some of the results of my own research.

So how would we, in fact, expect skilled immigration to increase innovation? And, firstly, why do we care about innovation? Obviously, because it increases productivity growth, which is the driver of economic growth. And why would skilled immigrants help this?

Now, one thing I want you to think about is that one way it might help is simply by making the population bigger. If ideas can be spread costlessly over as many people as you like, then the more people you have, the more ideas are likely to pop up, and the richer per capita a country you will be.

The thing we usually think about, on the other hand, is that immigrants may, themselves, be more innovative than the native-born. An alternative, which is perhaps slightly less talked about, is that even if they're not more innovative, perhaps they're better at some skill that's complementary to innovation, like entrepreneurship.

Now, why would skilled immigrants have these superior capacities? There are two

options. One is that they have some natural ability that's actually better, like some entrepreneurial spirit or talent. The other is -- although they're not mutually exclusive -- is that the immigrants are better educated or perhaps more specialized in relevant fields of study.

How would these things, in turn, come about? One is what we call the "self-selection mechanism." The sorts of people who want to come to the United States have these attributes. And, again not mutually exclusive, the other possibility is that these are the people that our visa system actually lets come to the United States.

So is the analysis this simple? I want to bring up a couple of theoretical points here related to the importance, or otherwise, of where skilled immigrants actually live. And first I want to think about the amount of innovation that's actually done in the whole world -- so step back from the United States for a bit to think about the big picture. Does it actually matter where the immigrants live, or are we just talking about reshuffling where the innovation occurs?

Well, immigrants might actually be more innovative, their innovative capacity might be increased by moving to the U.S. or, even if their innovative capacity, their capacity to commercialize the innovation may be.

Are these conditions actually fulfilled? I can't cite you a lot of academic studies showing that definitely, but I think that we think that probably both of these things are fulfilled -- these conditions -- so that most probably by bringing somebody very able to the U.S., that they're going to actually be able to realize their potential better. But I can't actually prove that to you.

Now, let's actually think about a different issue. A lot of the discourse in the media, and in politics, seems to consider innovation to be some sort of sports competition, where winning is what matters. And if you come second, it's just a disaster. And the better your opponent is the worse off you are. So let's take the example of Intel.

So Darrell mentioned earlier, imagine what the U.S. would be like if Intel were in Hungary. The discourse in the media and politics is something that seems to say, Intel in Hungary is worse for the U.S. than there being no Intel at all. Now, obviously, that is wrong. Perhaps an even better outcome is Intel in the U.S. But if Intel were in Hungary, that would still be benefitting everyone in the U.S. a lot.

So let's remember that, and ask the question: in fact, does it make any difference? The answer actually is yes. There are academic studies that show that innovation done in the United States is more beneficial to the U.S. than innovation abroad. But just bear in mind, though, that the innovation abroad is beneficial as well. It's just a question of which is more beneficial. Okay?

So I think there's evidence that all of these conditions I've talked about is true, that bringing people to the U.S. actually improves their capacity for innovation and commercialization, and that that is somewhat better for the U.S. than having those people do their work abroad.

Let's just think about two other possibilities. So at the very beginning, I was talking about how the immigrants themselves might be extremely capable. Their contribution to the U.S. might be even bigger than their individual productivity if they actually improve the performance of the native-born. So, I work better when my colleagues are better, and so immigrants might actually improve the capacities of the native-born.

Now, on the other hand, immigrants might actually contribute less than you would think by looking at their own productivity because perhaps -- as has been mentioned a few times -- they're discouraging the native-born from going into innovative fields. And here, I'm going to actually present you some evidence of which is true.

So I'm going to go on and talk about my own research, some of which was done with Marjolaine Gauthier-Loiselle, who's a student at Princeton.

And there are two parts to this. One, we're really focusing on the individual immigrants and their productivity compared to the natives. And what are we looking at? We look at patenting, and I'm going to present the results to you specifically of people commercializing patents. Publishing frequently is another outcome we're going to look at; that was actually cited by an earlier speaker. And I'm also going to look at the probability of founding a company that grows very fast at the beginning. And that part of the analysis does not take into account the positive spillovers immigrants might have on natives, or their potential dissuasive effects.

But the second part does, because the second part is narrower in scope. It only looks at patenting. But it looks at the causal effect of skilled immigration on patenting per capita. And it's going to include these spillover effects. Okay?



The data I'm going to use for the first part, from something called the "National Survey of College Graduates," from 2003. And then for the second part, I'm going to be using many decades of census data and data from the U.S. Trademark and Patent Office.

So here's the first set of results. So these are from individuals. And I'm going to start off by looking at wages, even though that isn't directly related to what we're talking about. But I'm starting off with wages, because labor and commerce usually think of the wage as capturing that individual's productivity -- again, without any spillovers, but their overall productivity.

And I'm going to focus here on the first column first. What this number tells us is that -- and remember that the sample here, everyone has at least a college degree -- this tells you that the immigrants earned 2.9 percent more than natives. So, crudely speaking, we can say they're 2.9 percent more productive.

Then the next line is looking at -- actually, all the next questions refer to the preceding five years. And the first question is whether you've licensed or commercialized any patent -- not that common an outcome amongst natives. It's .6 percent of people who had. And amongst -- what this number says is amongst immigrants, it's .7 percent more. So, in other words, it's more than double. Okay? More than double is likely to have commercialized or licensed a patent.

And then the next measure I look at is whether you've published a lot of papers. I use a cutoff, just because of what the distribution looks like of "more than six." 3.6 percent of natives have done so. An additional 3.1 percent of immigrants have done so, so it's almost double.

And then the final outcome is quite rare. Because of the nature of the data, I can only look at not if you simply started a firm, but if you started a firm in the last 5 years that by the end had more than 10 workers. That's a very fast growth. So it's unusually successful companies. .6 percent of natives have done so. An additional .18 percent of immigrants. So the gap here is not as big. It's about one-third more likely for the immigrants.

Now, what I do in the second column is I tried to look at what explains this superior performance. And I do that by comparing similar natives and immigrants. And by "similar," what I really mean is here I'm comparing immigrants and natives with the same level of education, and the same field of study.

And when you do that, you find that compared to similar natives, the immigrants actually earn 8 percent less. This is a rather well known result that I won't linger on, that seems to be closely related to how old you are when you arrive in the U.S., and language ability. But what's very interesting is that the results are different for the other more technology-related outcomes.

So, you do, however, fully explain why the immigrants are better at patenting by comparing people. Here the key thing actually is the field of study of the highest degree. The immigrants are concentrated in science and engineering, and that explains why their double, they're twice as likely to patent. Okay? So you get a zero here.

"High publishing rates," you actually still get a little advantage of the immigrants when you compare similar immigrants and natives, but it's one-tenth the size. So the reason for the superiority here, that double is likely to publish frequently, is because of higher education and more -- and fields of study of highest degree where people publish more.

And then "starting firms," though, actually doesn't actually make any difference, comparing similar immigrants and natives.

Now, in my view, it's the first column that captures the actual contribution of the immigrants to the U.S. But this one is useful for understanding what it is -- namely higher education and the field of study of highest degree that allows that superiority.

Okay, now I'm going to tell you briefly about the paper where I look at the impact of skilled immigration on patenting per capita. Just very quickly, this is from 1940 to 2000, what patents per capita look like. There's a big increase starting in the '80s. Right?

This is what the share of immigrants -- this what immigrants as a share of skilled workers looks like. This is immigrants as a share of college degree-holders. It goes up to 3.5 percent by 2000.

And what I find is that, indeed, skilled immigration increases patenting per capita. And I'll give you some actual numbers.

So in the '90s, patents per capita rose 63 percent. The share of immigrants amongst the college population grew from 2.2 to 3.5 percent in that time. And there's a range of results that depends exactly how you specify things, but that increase in immigrants increased patents per capita from between 12 and 21 percent. So immigrants are responsible for between one-sixth and one-third of that

big increase in patenting per capita in the '90s.

So to conclude, because of higher education and different fields of study, skilled immigrants patent more, publish more and start more companies than natives. And they raise patenting per capita.

And this is where I just want to remind you that in this paper it actually takes into account spillover effects. And what I can actually do is to compare whether the impact I find here is greater or less than you would expect from the individual contribution of the immigrants.

And I find it's actually slightly more, which suggests that actually immigrants are increasing the productivity of the natives, rather than discouraging them. Of course there may be a few who are discouraged and more who are encouraged. But the net effect seems to be to actually increase the performance of the natives.

And then, finally, you can do a back-of-the-envelope calculation, the impact of these immigrants who arrived in the 1990s on innovation, the effect of innovation, in turn, on GDP per capita. And you can work out that because of the inflow that there was of college immigrants in the 1990s to the U.S., the GDP per capita was between 1.4 and 2.4 percent higher in the '90s than it would otherwise have been.

Thank you. (Applause)

MR. FINNERAN: Thank you. Our next speaker will be Ron Hira, an associate professor of public policy at Rochester Institute of Technology.

MR. HIRA: I want to thank David and Darrell for inviting me to present here. And I also want to thank the Economic Policy Institute for helping to support some of this research.

I'm going to talk about some policy issues. And the title of my talk is, "Bridge to Immigration or Cheap Temporary Labor?" The H-1B and L1 visas are a source of both cheap temporary labor, as well as permanent immigration.

So let me hit the key points here.

First, H-1B and L1 visas are temporary work visas. They're not the same thing as Green Cards or legal permanent residence. And we heard a little bit about the Green Card discussion this morning, some terminology that some of you might know: EB, employment based, EB-1, EB-2, EB-3;

there's different categories of Green Cards and getting Green Cards through employment based.

Having said that, H-1B and L1 visas are temporary, but they are also "dual intent." And what that means is that employers have the option of applying for legal permanent residence for those workers. Those workers can't self-petition. Of course they could try to go through the diversity lottery or go through some other means, but from an employment-based means, they generally do not have that ability.

And in this paper what I'll show you is that some employers, in fact, use the H-1B and L1 visas as a bridge to permanent immigration, as a bridge to a Green Card, while others are using it simply for labor mobility. And this is part of what's happened over the last decade, in terms of globalization and off-shoring, and I'll tie those together.

And this is important from a policy perspective, because we often -- at least in the public discussion -- conflate the two, that an H-1B is the same thing as a Green Card, and that our policy levers don't distinguish between the two, between the temporary work visa and legal permanent residence.

The H-1B and L1 visas also account for a lot of workers. It's about a million or so workers. We actually don't know how many -- and this is one of the problems in the discussion, also -- is that DHS, the government, really isn't collecting data, and it doesn't know exactly what's going on with these visa holders.

I will also talk about some of the loopholes that make the visas attractive for cheaper, indentured labor, and also tie in how these loopholes are fueling off-shoring. What you'll see is that, in fact, the top employers are off-shore outsourcing firms.

So let me go through very quickly some of the gaping loopholes that we have in the program. There's really four that I would identify as being most important.

One big myth is that there's a labor market test. In fact, there is no labor market test for H-1B or L1 visas. Employers do not have to look for American workers before hiring H-1Bs or Ls. And, in fact, they can replace American workers with H-1B and L1 visas. And this isn't just a theoretical thing. It's been reported in various press accounts that major companies like Pfizer, Wachovia, when it was taking TARP money, IBM and Siemens have actually had, and forced their American workers to train foreign replacements on H-1B and L1 visas.

The upshot is that there is no shortage necessary here to bring in these workers.

They can also legally pay below market wages. And we know this in a variety of different ways. But the most obvious way is that, in fact, some employers of H-1B workers have told the GAO, yes, we hire H-1B, sometimes because they will take lower -- less than market wages. And, in fact, the GAO found that 54 percent are paid skill-level 1 wages. These aren't super high wages. These are the 17th percentile for those particular occupations in those locations.

So a lot of them are being brought in at essentially entry-level wages.

Another problem with the program -- both programs -- is that employers hold the visa and control the legal permanent residence opportunities. So, as I said, the workers can't self-petition. And because of the nature -- and we talked a little bit about this earlier today, about the small number of Green Cards that are there, relative to the large number of H-1B and the uncapped L1s -- that actually creates a very imbalanced relationship. And you've got a large number of people who are on these temporary work visas that are waiting in long Green Card queues. And they're stuck, not only to that employer, but even within that job.

And so they're really indentured in a lot of ways.

And there's been very little government oversight. The system integrity mostly depends on whistle-blowers. And that's really not the best way to run things -- particularly when -- if a temporary worker is terminated, they actually have to leave the country right away. So it really discourages them from going through that.

Okay -- so let me get into some data here.

This is the top H-1B employers. And what I've done is added up these top employers from FY'07, FY'08 and FY'09 data. And what the upshot of it is is that 7 of the 10 top employers actually have significant off-shoring. They're off-shoring firms. And this is kind of the Who's Who of the offshore or outsourcing industry, mostly based in India: Infosys, Wipro, Satyam. So if we're going to talk about who are the beneficiaries of the H-1B program, one has to say that the off-shore outsourcing industry has been a huge beneficiary. Seven of the top 10 employers, beneficiaries of H-1Bs are actually off-shoring firms.

And then what I've done is looked at to what extent these serve as a conduit to

permanent immigration. So, to what extent do H-1Bs and L1s serve as a bridge to immigration?

And I'm just going to show you one chart here, which is the H-1B data, in the interest of time.

And what I've done is taken those top 10 employers, and I've reshuffled them a little bit, based on what I call "immigration yield." And what I've done is looked at the Green Card applications that each of these employers have filed on behalf of their H-1B workers over that three-year period, and divided by the number of H-1Bs. And what I get is an immigration yield.

So just to clarify here: Tata Consultancy applied for 0 Green Cards, but received 2,368 H-1Bs. That would be a 0 percent yield. Whereas if you look at Microsoft, they applied for about 67 percent of the number of H-1Bs they got.

Now, this isn't a perfect measure, but it gives you an indication of how these employers are using these programs in very different ways. And we have to have a more nuanced discussion, I think, about thinking about policy and policy levers and criteria that we use when we look at the impacts of these types of programs -- high-skill immigration. If the goals are really to bring the best and brightest and to keep them here, then we need to look at this kind of data, think about how we disaggregate some of the uses and the criteria that's being used.

And you can see there's some clustering there at the top. Companies that might surprise you, like Accenture, apply for very, very few Green Card applications, whereas they're getting quite a few H-1Bs. IBM similarly.

And part of what's going on there is they're getting pressure, basically, to adopt the off-shore outsourcing business model. And I'll show you another chart in just a minute that will explain this. But you've got U.S. companies that have essentially been pushed in the direction of adopting the same model than an Infosys or a Satyam plays.

So this chart here is from 2005. And the reason I pulled this out is this is kind of a tipping point for the IT services off-shore outsourcing business, where it really took off.

And what this shows -- and I'll just point out -- I've got four of the top IT services companies, two based in India, two based in the U.S., and I'll focus on Infosys, the top Indian one, and EDS, which was the top U.S. one until it was bought out by Hewlett-Packard.

And what you see here is the pressure from Wall Street. "Market cap" is the market capitalization. So this is the total value of the company, as priced out -- if you took its stock price and multiplied by the number of outstanding shares. If you and I wanted to take Infosys private back in 2005, we would have to come up with \$20 billion. If we wanted to take, like, EDS private it would cost about \$12-1/2 billion.

So why was Infosys priced so much higher by the market, even though it had much lower sales? About a 20th of the sales. The reason's pretty simple. It's because their profit margins were much higher. The reason their profit margins were much higher is partly because they were doing the work off-shore, but also because they had advantages by bringing in on-site labor at lower costs on H-1B and L1 visas.

So, in fact, government policy tilted the field in favor of that kind of business model. And to give you some sense of companies like Infosys really don't hire very many Americans. They have a very small share.

And the companies themselves have actually talked about this quite a bit. And here I pull out a quote from the CIO, the chief information officer, of Wipro, told *Business Week* this back in 2007, how they use the H-1B program. They bring about a thousand new temporary workers to the U.S. each year, while a thousand rotate back to India to serve clients. So what it does is it serves as a training ground, where you bring in workers to learn the jobs, and then move them overseas.

These policies also disadvantage companies that are hiring American workers, or try to hire American workers. And this quote is from an interesting guy, Neeraj Gupta, who's the CEO of Systems in Motion -- which is actually a U.S. rural source based company trying to hire Americans. But he's kind of interesting because he's actually a former executive of one of the off-shore outsourcing companies. And his quote is: "The widespread abuse of current work visa laws, be it B1, H-1B or L1 programs, that allow companies to bring in cheap labor from other countries to replace an American labor pool is extremely damaging to our business, because it creates artificial pressure on prices and, consequently, wages of an equally qualified local workforce."

So you've got some who knows the system inside and out -- because he's been an executive in one of those companies -- and how it's harming now his business as he tries to hire

American workers.

And you hear this also from trade groups like the National Association of Computer Consulting Businesses -- now known as TechServe Alliance -- where they testified before Congress about the L1 and the opportunities there. In the case of the L1 visa, there's no wage floor, so there's huge wage arbitrage opportunities -- where they testified that, in fact, they were being -- their clients or their companies were being undercut by 30 to 40 percent, in terms of their billing rates.

So let me conclude with some discussion of policy reform. And I'm sure we'll talk about this in a lot more detail during the Q&A.

But it seems to me that it's pretty clear that the current system is harming American workers, students and companies -- as well as foreign workers, as they become tethered to not just an employer, but to a specific job, waiting for 6, 8 or 10 years for their permanent residence. And I think it's right for incumbent U.S. STEM workers to question these kind of government policies, whether they're being undercut or not.

And that's important for a few reasons, not only because it hurts them -- you could say, well, it helps the public welfare, and it may be at their expense. But if STEM really does matter, and you think that you want to encourage U.S. domestic supply into STEM, these are the best ambassadors to that next generation. It's the incumbent workers who will go out and work with young people to say these are great careers and great professions you should come into.

So, in terms of my recommendations, I'd say we should close these four loopholes, which I don't think should be controversial.

One is that we should implement effective labor market tests. You should look for American workers. There should be some demonstration of some kind of need there. That those foreign workers should be paid market wages, at least. And that you should increase the portability of visas, and have a clear and rapid path to a permanent residence. And that we should conduct regular audits of these programs.

We also need a lot more sunshine on these programs, particularly the L1 visas. We have very little data, and very little information on what's going on -- particularly in terms of wages. You can hire a typical IT worker or engineer in India for \$7,000 a year. So you can imagine that kind of wage



arbitrage when you have no wage-floor at all. So we really don't know what's going on there.

Secretary of Labor Ray Marshall has recommended a Foreign Worker Adjustment Commission. I know Migration Policy Institute's worked on these things.

And I'll leave it with this last one and just say that I don't think that trade policy should circumvent immigration policy. One aspect that hasn't been discussed enough is the intersection of trade and immigration policy. Trade agreements are increasingly having these kinds of immigration-type of provisions in them, as low-cost countries want to see immigration as a non-tariff barrier to trade; that their comparative advantage is low-cost, high-skill workers, and the barrier to trade is moving their workers into the high-cost countries.

Thank you. (Applause)

MR. FINNERAN: All right. And our final speaker is the person who's most responsible for bringing this entire session together, and that is David Hart, from George Mason University.

MR. HART: Thank you, Kevin. And thank you all for staying. It's been a long morning. And I know we have some discussion to go, and I look forward to that.

So my work is on a relatively small but important slice of this subject. And I want to acknowledge my co-author, Zoltan Acs. I put his name in parentheses only because he shouldn't be associated with anything I might say in the Q&A, especially -- and he can speak for himself, I'm sure -- if he disagrees with me on any of the points.

This work builds on Zoltan's prior work. And we're focusing on a particularly important population of firms. These are firms that have doubled in size in a four-year period. And his earlier work suggests that these firms are responsible, basically, for all of the economic growth in the economy, and employment growth, as well.

They're an interesting group of firms. They need to be studied more. They're not all startups, but most of them are pretty young. And they're not all in the high-tech sector. In fact, they're distributed very broadly across sectors.

But there is some reason to think that high-tech firms are more important than other firms. So in our study, we focused particularly on these high-impact, high-tech firms, with the idea being that perhaps this is a point of leverage for accelerating economic growth in some fashion. I should

mention and reference this paper that Darrell mentioned at the beginning of the talk. We have a policy briefing that we're releasing today, through Brookings, and then that's related to broader peer-reviewed work in the academic literature. And so I'll allude to that, and you may want to look up some of the more - fine details in that paper, or in the published work.

Okay, so we did a survey of these companies. And there were about 25,000 firms in our population -- that is, these are the high-tech firms that had doubled in that 4-year period from 2002 to 2006. And we basically called them up and asked them a short series of questions. And we had about 1,300 responses. And the reason we kept it short is because that's the way you get a reasonably high survey response rate. Of course the disadvantage is, we only know a little bit about these companies. So there's a lot more detailed questions we'd like to know about them, but we don't know the answers. We did do some follow-up interviews with a small group of companies, and that shed some qualitative light on it. But it's difficult to draw final conclusions from that small set of case studies. But they're complementary.

And our basic finding is that about a sixth of these firms had at least one foreign-born founder. And I was calculating from Jennie's number. Her number was around a quarter, I think, if we extrapolate out. And we have other studies in this field. A quarter is kind of the high end. We're sort of on the low end. And there's a variety of reasons for that -- different populations that got studied, different ways of defining the population. But my view -- and I think Zoltan's view -- is that either way you look at it, it's a sizeable share of these companies.

Many of the companies are founded by more than one person. So if we look at the population of founders, rather than the population of companies -- so we take each founder individually -- the number goes down a little bit. About 13 percent of the founders of these companies were foreign-born.

And then -- so you notice I'm shifting back and forth between the language "foreign-born" and "immigrant," and I want to clarify that. So, someone in U.S. law doesn't become an "immigrant" until they get a Green Card. And the reason that I think it's justified to use that term here is that most of these founders have been here a long time. Most of them, in fact, are naturalized citizens. And many of them are highly educated.

And these characteristics are not surprising, because we're only looking at companies where they've been successful, right? They doubled in size in a four-year period. And, in fact, in our case studies, our little case studies, we found a surprising proportion of people had founded previous companies. So they're serial entrepreneurs -- which also is a success factor that's well known to be associated with entrepreneurship. So this is the kind of profile of these founders.

I think the thing that strikes people most when they look at our paper, and the think I've gotten the most feedback on, it's just, where do these people come from? They come from all over the place. And in the very back of the paper you can find the table of 55 different countries that are represented in this population.

Here's a little bit of detail on education. We know that these foreign-born founders -- so here, the dark bars are the foreign-born founders, or immigrant founders, and the light bars are the native-born. So you can see they're far more likely to have a higher education -- to have a graduate education. And I think that's because, as Jennie said, education is a major gateway for highly skilled people to come to the U.S. And also, there are opportunities for people to start high-tech firms, natives to start high-tech firms, before they get to graduate school. So Bill Gates and Paul Allen being very famous examples, college dropouts who started Microsoft. Obviously, that option isn't open for someone who just arrives in the U.S. as a graduate student.

Now, the real difficult question here is are these folks complementary to native-born, or is there some kind of crowding out? And, unfortunately -- and I think all of us in the field feel this is unfortunate -- there is no definitive answer to this question. Do the founders make the firms or, in a sense, does the environment make the firm?

We get a little bit of leverage on that by comparing those firms that have at least one foreign-born founder with those that were native founded. And what we find is that they're very similar, unless we take out -- this is if we control for education. If we take education out, actually the foreign-born firms perform better. The firms founded by foreign-born founders perform better.

This is a question of interpretation. Again, to what extent is their success due to their individual characteristics -- again, as Jennie alluded to -- or does it have to do with the environment in which these firms are being founded? And if a native-born person had had that same education, would

they have founded a similar kind of firm?

One difference that we do find is that -- we asked a question, do you have -- does your firm have a strategic relationship with a firm in a foreign country? And we do find a difference between the firms that have at least one foreign-born founder, and those only founded by native-born.

Again, a question of interpretation. Is this a vehicle for outsourcing jobs that would have otherwise stayed in the United States? Or is this a business strategy that is really essential to the firm's survival? A question I don't think we have a definitive answer to, but is interesting to think about.

Another finding that I'm not going to talk about a lot, but that struck us as we looked at the data, was that the foreign-born founders were more likely to team up with people who might be considered "outsiders" in the U.S. context -- that is, minorities, U.S. minorities, and women -- compared to their White, native-born counterparts. So that's an interesting finding. There's not a lot of these firms, so I think you have to be very, very careful in doing much with that. But it's an interesting proposition for future research.

So the bottom line -- and this is gone into in more detail in the paper -- I don't think we can rule out the crowding-out hypothesis. But if we put that finding, what we find, in conjunction with the work of Jennie and others, our inclination is to view the foreign-born founders as complementary to the native-born founders. But I would absolutely admit that there is some interpretation and extrapolation required to get to the policy implications.

Okay, so let me turn now, in the last piece of the talk, to the policy issues.

The first thing I want to say is we need to embed this in a broader set of policy themes, and that we're talking about long-term policy, not any kind of help for the recession that's going on right now. And the idea is that maybe we can expand that big population of high-impact firms, and that that might help the economy.

Can we do that? I don't know. I think the Administration is starting to engage in an experiment that would try to answer that question. And I hope that they will move that forward.

Then, what's the role of founders in leading to that outcome? I think it's necessary, probably, but not sufficient. And the question was raised earlier about the counter-factual. What happens if we take these foreign-born founders out of the equation?

I think, certainly, if there's not demand -- and Lindsay alluded to this -- if there's not demand for the products of high-tech companies, and high-impact companies, then expanding the number of people who might found them is not going to lead to more companies. But, in conjunction with a broader policy that deals with all aspects of the environment for high-impact and high-tech companies, I think that having immigrants who have these characteristics is probably a positive contribution. And that's obviously something we're going to discuss now in the panel.

So how would you do that? I put "Not So New Ideas." As I've gotten into the immigrant filed -- so, I come into this from science and technology policy -- there are no new ideas in immigrant policy, as far as I can tell. Every idea has been thought of, debated, recycled. People said it's paralyzed. It's been paralyzed a long time.

Anyway -- so my "not so new ideas," there are three of them.

The first one -- and I think this is the one that has the most leverage -- is to just try to deal with the backlog of people who are already here waiting for their Green Cards. There's not a lot of data on this, but there is a paper that suggests about a half a million so-called employment principals, that is, people, not counting families -- but a half a million people just waiting in line for their Green Card, and doing, you know, various things that it takes to extend their stay in the U.S. Most of these people are from a small number of countries -- India and China. Some of the categories were alluded to earlier.

EB-2, that is Employment-Based second category, includes professionals with advanced degrees. So if you're from India and you have an advanced degree, the immigration system is basically processing people from the middle of 2006. So about a five year, four-and-a-half year backlog for that. EB-3, professionals with bachelor's degrees, or skilled workers -- so that's a much broader group -- there, if you're from India and you've applied for a Green Card in February of '02, you're now at the top of the priority list. So we're talking about, you know, six, eight, 10 years for many people.

And my basic -- my view is this is just accommodating reality. These people are here. They're working. Let's free them up from being tied to their employer. So that's idea number one.

The second idea -- I think, again, some of the previous speakers have mentioned something like this -- is to try to address the immigration pathway for students. Students have to figure out how to get employed. There is a pathway for them to get employed through so-called OPT -- Optional

Practical Training -- so it's possible for students to stay and look for a job. But when that period expires, they have to have an employer who's ready to sponsor them, and that may be difficult. And then, obviously, they have to get through the Green Card process like everybody else.

So I'm in favor of trying to link these statuses together. But I think it's important to build in the employment piece as well as the student piece as opposed to those who would say that we should staple the Green Card to the diploma. As a representative of higher education, I can tell you there's a lot of creativity in higher education, and there would be universities that would recruit on the basis of attractiveness to the Green Card, as opposed to other kinds of things that you might want to recruit students for. So I think there's some need to temper that idea with an employment element.

And then the third one -- and this one I think is much more difficult to implement, but it hasn't been mentioned today, so I'm glad I have it on my list -- is the idea of creating some kind of a point system. And here, the immigration system would pick people on the basis of some set of characteristics - - educational qualifications, language qualifications and so on. And this is in place in a number of countries, Australia and Canada most prominently. And it was contemplated in the 2007 bill.

For picking high-tech, high-impact entrepreneurs, I think that's a much more difficult proposition. We're talking about a tiny fraction of the population, and it's very difficult to observe those qualities like risk-taking, like some kind of outlook on seeking opportunities, that you might want to identify these people.

So I think that's difficult to do, but it would be worth talking about, and thinking about it.

So to wrap up -- my time is over -- I don't want to exaggerate the importance of high-tech entrepreneurs. It's a very small slice of this population. But I think it is a consideration that would be worth thinking about as we debate this broader question of competitiveness, innovation and high-skill immigrant.

And, again, thanks for coming. I'm looking forward to the discussion. (Applause)

MR. FINNERAN: I'm going to ask a couple of questions.

First, I think to focus the discussion a little bit, one of the things I'm realizing in listening to all these presentations is that the presentations -- we're confronting layers upon layers of questions. I mean, for 25 years I've been worrying about the fundamental question about how can we even provide

evidence that investments in research and development lead to innovation, and that innovation leads to growth in the economy, and that growth in the economy is benefitting the country largely.

And I've had no success in answering that question satisfactorily.

So we have lots of questions. We have to look at where innovation comes from.

Although people in the science and technology community hate to talk about it, it's possible that the reason that the United States is so innovative is not because we have great scientists and engineers, but that we have great financial managers on Wall Street who can provide the capital where it's needed and when it's needed, or that we have terrific lawyers who are able to negotiate contracts, property rights and so on that make it possible for these great ideas to become profitable businesses.

So we're not going to try to resolve all of those questions. But we have a tremendous amount of information here, and I'm going to try to focus a couple of questions on where we have data, and where we've raised specific questions that I think we might be able to help answer.

So I was going to start with if we can even agree that it's a good thing to have highly skilled immigrants come into the United States? Can we say that without also deciding how it is we allow them to come in?

So, for instance, we talked about many of them come here, they're well educated, but they can't get the right degrees.

So I was going to ask Jeanne, when she was listening to Ron's talk about the way many people -- the system they have to work through in order to find jobs, how big a problem is that? How much of the problem that you see of people not being able to find adequate jobs with the training they have, how much of that is caused by the way that we regulate, particularly, the temporary work visas?

MS. BATALOVA: By the way, I found all the presentations being very insightful, and I do agree with a number of -- with the loopholes that Ron described, and how they contribute to this mismatch in opportunities that domestic and foreign workers have.

But in our work on brain-waste, we found that the people who are affected the most are not so much those who come through temporary and employment-based routes, but rather those who come through family reunification or under humanitarian protection. On the other hand, those who do come through H-1B, L1, F-1 student visas, their employment opportunities are usually substantially better.

MR. FINNERAN: Okay. Also, I think a related -- the follow-up question is, when you look at the differences, the sort of "brain-waste" as you call it, do we know how common this is in other countries? Is the United States particularly bad at wasting the skills of its population?

MS. BATALOVA: Well, Canada and Australia have done tremendous amount of research on the issue. And they were, in fact, the pioneers in the field identifying that it is a problem. Both countries have points-based system, and the government actively selects who's supposed to come based on their human capital. Yet they found that immigrants who arrive, they can't find jobs and their outcomes are rather poor.

So both countries have done work, and not only identified the extent of brain-waste, but also quantified it, and found that there are substantial economic costs at the national and provincial levels.

So we are somewhat in the beginning in doing this work, and MPI tried to quantify it for the first time in the United States. But in Canada and Australia, it's been recognized as a policy issue of national priority, and substantial resources, investments and coordination of many stakeholders have been done to address this.

MR. FINNERAN: Okay.

Ron, I wanted to ask you, you complained a lot about the way, particularly, Wipro and Infosys treat their workers.

Just to give us a little bit more concrete understanding, what exactly is the nature of their business? And also, when we're thinking about the larger effect of having skilled workers, how do companies like this -- how do you understand them, in terms of what they do for the overall economic benefit for the United States, and for global productivity?

MR. HIRA: Sure. Just to clarify it, I think, from their perspective -- and probably from the workers' perspectives that work for Wipro and Infosys -- that they feel like they're being treated well, because their opportunities are actually better than the alternative, which would be working abroad. In fact, I have cousins who are much happier working for these large firms. So that's one aspect. So they're choosing those positions.

And I think this then raises the larger aspect of how does this impact not only the U.S.



companies who are benefitting by getting lower-cost services -- generally these companies work in IT services and BPO -- and you'll have the U.S. companies, the U.S. multinationals, who are very happy to get those lower costs and, in fact, advocate on behalf of a more liberalized H-1B and L1 visa program, including putting them in the trade agreements and all.

Now the question is, is that good for the U.S. economy? How does that affect American workers who are competing? We could, as some economists do, believe that everybody who comes in is complementary, no matter what their wages and working conditions are. But I don't think that that's the case.

I think it does have an impact in a couple of different ways -- one, in terms of affecting Americans' wages and working conditions, putting pressure on there, but also in speeding up off-shoring. I showed you the types of profit margins that these companies have. They're really transferring knowledge and capabilities overseas. And what they're doing is they're creating competitive landscapes where an IBM, an Accenture, an EDS, the major U.S. companies, are adopting that off-shoring model much faster than they normally would have without those kinds of policies.

And so we hear from the *Economist* magazine that IBM now has more workers in India than they do in the U.S. Accenture has had more workers in India than the U.S. since 2007. They have over 50,000 workers in India, less than 35,000 here in the U.S.

And we wonder about job creation in the U.S. It's not just entrepreneurs that matter. It does matter that you have that human capital employed even in large companies here -- that next generation of entrepreneurs also comes out of those large companies. And we can look at history. You know EDS, Ross Perot was an IBM salesman; Sysco, John Chambers was an IBM salesman; and so on and so forth.

So I think there's lots of -- we need a more nuanced discussion about those impacts. It's good for some of these U.S. companies. Is it good for the country? I mean, this goes back to the Bob Reich, "Who is us?"

MR. FINNERAN: Okay. Jennifer, since you've tried to identify some of them, how do we look at benefits? How do we see how this affects the sort of larger economic forces?

Is there any way to sort of ferret out the differences? The types of innovation and the

types of companies? The types of changes we are seeing, and the way we are using this talent, in determining what the overall benefits are?

MS. HUNT: That's a good question, but a hard question. But it does tie into a few things that I did want to say, and that you actually brought up in your initial remarks.

When I began the paper, for example, to look at the effect of skilled immigrants on patenting, why did I actually pick patenting? Because it's measurable, not necessarily because I thought it was the biggest contribution of immigrants. But if you want to look at the contribution of immigrants to the finance industry, for example, or to the management consulting industry, you can't really measure it.

And so we shouldn't lose sight of the fact that science and engineering are not the only places that people in general, and immigrants in particular, can contribute to productivity growth in the U.S. But it is a little bit easier to measure than contributions in other areas.

In terms of the benefits, let me talk about what Ron was just talking about. There's something a little bit strange about the literature that talks about off-shoring. Let's think about the literature that looks at trade in goods.

Of course, when you're looking at the effect of trade, you look at both imports and exports when you're thinking about goods. And if you're thinking about trade in services, one would imagine one would do the same thing.

But importing services -- that's what "off-shoring" is -- and exporting services is "on-shoring," and yet I don't think I've ever seen a paper about on-shoring to the U.S., except about three papers that show that value of on-shoring to the U.S. is about equal to the value of off-shoring.

So it makes as little sense to study only off-shoring as it does to study only imports of goods. You have to look at the other side, as well. So you can't say just is off-shoring bad? Is the idea really that the U.S. would somehow never off-shore anything ever, but would continue to on-shore in equal value?

And there's really no change in policy that you can make to any economy that improves everyone's well-being. There's always going to be winners and losers. And so if you think of trade in services, one assumes -- but I've never seen a study -- that the on-shoring is of jobs of higher skill level than the ones that are off-shored. And so presumably this whole process does increase inequality. But

there's certainly no reason to think that it decreases employment.

MR. FINNERAN: Okay --

MR. HIRA: Can I get to just that point?

MR. FINNERAN: Thirty seconds. All right.

MR. HIRA: As a number of blue-ribbons panels have shown -- the National Academy of Public Administration, Tim Sturgeon's group at MIT -- we don't measure services, particularly when it comes to trade, very well. In fact, there's huge data gaps. And so there isn't a way to talk about on-shoring and off-shoring in terms of the trade data itself in services.

MR. FINNERAN: Okay.

And finally, with David, I just wanted to get a picture of how this system looks when you look at the backlog of people applying for Green Cards, and the continuing and growing stream of people -- foreign-born people -- coming out of our institutions of higher learning.

What does the picture look like for them? What happens if we don't do anything about this? Where does this go?

MR. HART: Well, I think the evidence is that we just continue to muddle through. I mean, what we have in an imbalance between people who come, nominally on temporary, for temporary purposes but, in practice, the culture is that you find a way to work your way through the system.

And I think the answer is we have a lot of people in limbo. And we don't provide clear signals. Ron mentioned that the H-1B is dual-intent, which means that it could be temporary or it could be permanent. But, of course, there aren't permanent places for everybody, so the intent is a little bit fuzzy there, I think it's fair to say.

So I think we ought to remember that there are people involved here, and it's not just about the economy as a whole, but also about these people. And I think the biggest impact is that they're stuck, those who would like to stay but are unable to.

Now, also, people go home. And I don't think that's necessarily a bad thing. In fact, it's one of the great success stories of U.S. policy over the 50 or 60 years that it's been in place. So -- Bob Hamilton mentioned the idea of a "positive-sum game" here, right? The goal isn't just to accumulate and accumulate and accumulate. There needs to be some balance.

But I think we have -- the policy now, it brings people in without giving clear signals as to what the disposition is going to be in the long run. And I would like to see that sorted out.

MR. FINNERAN: All right. Now let's turn to the audience.

We have a question over here.

SPEAKER: I have the same question for David Hart that I asked before, about the data.

Have you looked at a "silent immigrant" versus the kind of immigrants you addressed in your policy recommendations? My take on your data is that a large fraction of those entrepreneurs, for some it's a silent immigrant.

MR. HART: Yes, we don't have the data for our study on that, because we didn't necessarily talk to the entrepreneur themselves in doing the survey. We talked to the company. And we felt it wasn't necessarily realistic to ask the respondent to know what kind of visa the person came in on.

But in the interviews, it's pretty clear people are coming as students or as workers. I think there may be some individual cases of the sort that you're talking about, but my own gut instinct is this is a pretty small share. And I think Jeanne's data backs that up a bit.

Now, the early Cold War period may be a different story than the 1990s.

MR. FINNERAN: Right here.

SPEAKER: My question is for Professor Hunt.

I found your study very interesting. But I was wondering, if you only did this for the U.S. case, would replicating this, say, for the community of Ecuadorians in Spain, would it -- do you think it would produce the same results? Would they publish more, patent more? Have you explored maybe studying that, as well?

MS. HUNT: Well, in the study, I was focusing on people with a college degree or more, so I'm deliberately homing in on the skilled component of immigration to the U.S.

Things would look different if I just looked at all immigrants against all natives, because the immigrants to the U.S. are concentrated in the more-than-college section, and the less-than-high school section. And to some extent, if you were looking at these outcomes, they would cancel out, probably.

And so in Spain, for example, because it's very difficult, unless you're from the European

Union, to move to Spain legally -- for example, the Ecuadorians mostly go illegally to Spain, and then wait for an amnesty. And the sort of people -- so, from outside the European Union, the sorts of people who go are people who are willing to work illegally for a while and wait for an amnesty, and so they're not likely to be so skilled.

But the reason -- there was actually a reason that I looked at the U.S. for the study, though, is precisely because I think that the U.S. probably does have the best environment for innovation, and the U.S. has been a leader in innovation. And that's why I was interested particularly in immigration to the U.S., and innovation in the U.S.

I think it would be more interesting to take a country like, say, Canada and try and look at the outcomes there, if you were looking at an alternative to the U.S. But I think it's inherently not quite as interesting, because Canada's not the leader in innovation. But I also don't know any data that would allow you to do that for Canada.

So I haven't actually looked at other countries.

MR. FINNERAN: The back of the room, please?

MS. LI: Good morning. This is Jin Li from George Mason. I have a question for Jennifer.

Actually I enjoyed your presentation very much. But I'm wondering, if foreign-born and native-born are truly comparative, since even if they are -- in your research you say they are from the same field, and they're at the same level of education. But since the high-skilled immigrants, they are far away from the average in their home country.

So my question is, in terms of productivity, should we compare the high-skilled immigrant to the native-born, or should we compare them to their counterparts in their home countries?

Thank you very much, indeed.

MS. HUNT: That depends on what the question is that you want to ask. I think if you want to ask what's the impact on the U.S., then, yes, you want to compare them with the people who are here already.

If you're interested in what's happening to the home country, of course, then you want to compare to the home country. And if you're interested in the world as a whole, you might want to know both, I think.

But you're right that an issue, when we say we're comparing similar immigrants and similar natives, is whether the observable characteristics really are comparable. So, just for example, in many data sets we don't know where the person has studied. And we say, all right, this is a college graduate from Ecuador, and this is a college graduate from the U.S. And we say that therefore they have similar education. But we don't really know how well it transfers -- something Jeanne alluded to.

In the particular data I used, you actually do know exactly do know exactly where the people studied. And I find, for example, that people who studied outside the U.S., in terms of wages, get a 20 percent lower return.

But what was very interesting, though, is that doesn't make any difference for all those other things I talked about, all the innovation and so forth. That was something that very much surprised me. It doesn't seem to be any handicap to have your degree from outside the U.S., in terms of patenting and publishing and starting companies.

And, similarly, one of the big reasons -- and this has been extensively studied in Canada -- why immigrants earn less than similar natives is that there seems to be no return to foreign experience at all. So any time you worked outside Canada, it doesn't increase your wage at all in Canada.

And, again, I find that in my data for the U.S., but, again, not -- this really surprised me -- not for these innovative outcomes. It doesn't -- you get the same return to foreign experience as to U.S. experience.

MR. FINNERAN: I would just add, it's a curiosity -- when you look at high-tech companies, you know, for many workers they say, well it's hard to tell who's good and who's bad. But among the very best, they really do believe that the very -- you know, there is that one person, or one or two people who are really important.

So that -- I heard from a Google board member that when they were starting Google Earth, they found the right designer, the person that was supposed the project, he was an Australian. And they said, well, we'll give you whatever you want to come to the United States. What they could not give him was the permission, the work card, for his wife to have a job in the United States. So Google Earth was done in Australia, because they believed that once you found the right person, that's what mattered, and that's what would make the difference.

Not all companies work that way. But certainly among the entrepreneurial high-tech companies, there's a strong believe that, at least at a certain level of the work force, the individual matters immensely.

Let's see -- I'm looking for someone who hasn't had a question yet.

In the back, in the corner.

MR. MILLIKIN: Al Millikin, AM Media.

What more do any of you know about the higher and lower education preparation of the immigrants you have studied, particularly what they have learned outside the United States?

MS. BATALOVA: I'm sorry; could you please repeat the question?

MR. MILLIKIN: Yes. I was trying to find out about the preparation --

MS. BATALOVA: Mm-hmm.

MR. MILLIKIN: -- the immigrants have had, their studies outside the United States?

MS. BATALOVA: Well, in our study we were unable to assess the quality of the degree earned abroad, versus in the U.S. But again, from the literature we know that the quality of education varies in other countries, as well as in the U.S. The degree from Cornell matters much more, and is valued much more than from a smaller university in, let's say --

SPEAKER: Leave it there. (Laughter)

MS. BATALOVA: Okay, I'm not going to give a name.

What was alluded in the earlier session is that employers often have no idea how to evaluate a degree from -- okay, I'll use my own country (Laughter) -- from a technical university in Moldova, right? But they might know Beijing University. So often, what happens is that there is an ad hoc evaluation that is happening, just based on the knowledge that they already have, without a proper system that would quantify and properly evaluate the credentials that were earned abroad, and would transfer them properly in the qualifications systems in the United States.

MR. FINNERAN: Very briefly, and then we're going to wind it up.

MS. HUNT: Okay. Well, some of what I just said before was relevant to your question. But I'll just say also that some people who are in favor of admitting very highly educated immigrants to the U.S. say somewhat cynically that that can't be bad for the U.S. to have some foreign country pay for so

much education and then the U.S. to reap the reward.

But I'd just point out, though, that there is actually a cost to this apparent "free gift," which is that the older a person is when they arrive in the U.S., the lower their wage is -- again, not so much of the innovative sides, but for the overall productivity and wage it has a big impact I saw made it also.

So there are offsetting effects. The more a person has studied abroad, the older they are. So they're more educated, but that affects their productivity.

MR. FINNERAN: All right, I want to give our panelists their chance to leave you with parting words. Knowing that all of us have only 30-second brain capacities, they are all going to give you their last words in just 30 seconds, and that will be their takeaway messages.

Start with Ron?

MR. HIRA: Sure. I'll just hit my key points very quickly again.

The public discussion needs to disentangle temporary work visas from Green Cards.

And I think the reality is that companies and business models are way ahead of the immigration policy debate, which is no surprise. Usually in innovation, usually technology policy lags what goes on in terms of the reality of technologies out there. The same thing seems to be happening right now.

And so we should really reconfigure the debate around what's really happening amongst companies and what they're doing, at least in terms of work visas and employment-based Green Cards, and what we want in terms of goals -- the normative side or, as Jennifer has put it, the objective functions of the various different constituents and stakeholders.

MR. FINNERAN: Jennifer.

MS. HUNT: I think that Zoltan brought up a good point in the earlier panel. Is there something that's actually not working that we're trying to fix?

And I actually think that in this domain we're discussing, with the exception of the big backlog for employment-based Green Cards, there isn't actually anything that needs to be fixed here that's very major. A couple of caveats, like the indentured servitude problem, which I agree with.

But because there isn't anything huge that needs to be fixed, I'm actually opposed to a point system. And I say this partly on the basis of my experience with Canada, but also from my study of



who is doing well in the U.S., based on what visa they actually had when they first came to the U.S.

And in terms of who seems to be the best "unobserved" -- so if you compare natives and immigrants with similar characteristics, and what's left over is actually their unobserved characteristics, it's actually the people who came in on temporary visas who are the best. And those are the ones picked by firms. And I think that firms know best who will work best with the firms, and not the government.

MR. FINNERAN: Jeanne.

MS. BATALOVA: I would suggest that we have to follow -- we have to keep an eye on what other countries are doing. And for example, the way Canada found out that they have brain-waste is that they tracked the success and the outcomes of their immigrants longitudinally, and found out that, over time, they're just not doing better.

So understanding of what happens to immigrants after they arrive is key, is absolutely the key.

Which brings me to the point that I was trying to make earlier, is that we have to have some sort of an independent agency, a commission or committee or whatever you want to call it, that would analyze the economic trends, analyze what happens to immigrants after their arrival, and match the two trends in order to bring flexibility in admission levels and the types of visas that are available.

MR. FINNERAN: And David.

MR. HART: I guess I'll say two somewhat contradictory things.

The first is that we need to embed our discussion of high-skill immigration, and probably in immigration broader, in a larger economic strategy discussion. That's one part of an environment that's going to lead to better economic outcomes and other kinds of outcomes for Americans, but it's not an answer. Certainly by itself, it's not an answer.

But then the other thing I think that it's important to keep in mind -- and I'll just repeat what I said earlier -- there are people involved. This is what distinguishes this factor of production from all others. So we need to be fair to the people who are involved in this process, and hopefully we can meld those two things together.

MR. FINNERAN: Okay. Thank you all for your attention and your interest in this subject.

(Applause)

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