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## Discussion following the Remarks of Robert Crow and Scott F. Cooper

Discussion

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get to the end of the process to be able to change employers so they are not trapped with a particular employer during the process.

The other thing I need to explain is that we have some quota issues, and like this slide coming up, it is a very slow problem. But nonetheless, the impact on technology workers is that it discourages individuals.<sup>72</sup> They think they can be here but if they have to wait seven or eight years to become a resident of the United States, that discourages them from coming, so we have to be concerned about those quotas as well.

And that is my presentation for now.

#### DISCUSSION FOLLOWING THE REMARKS OF ROBERT CROW AND SCOTT F. COOPER

MR. UJCZO: Thank you, Bob and Scott. We will now turn to the audience for questions. Keeping the trend, Professor King?

DR. KING: I had a question for Mr. Crow. I heard that a lot of the individuals who graduate in science from Waterloo University end up at Microsoft and I wondered – can you hear me?

MR. UJCZO: Yes.

DR. KING: I wonder what your thoughts are on incentivizing the growth of our scientific workers. In other words, you talked about the problem, but what type of incentives do you think we have to incur to try to get people into this – we recognize the need; want to do something about it.

You are the doctor. What do we do about it?

Is that pretty direct?

MR. CROW: That is pretty direct. You have a supply and a problem a couple of times and probably a demand side problem as well, but let us think about the capacity of our institutions to increase their enrollment. This is in Canada where the institutions are publicly funded subject to price caps.

I mean, we have a really good old-fashioned Soviet system of funding our universities. It is right down to the funding formulas. We have, in fairness, made some great strides in freeing the institutions in critical areas to charge a little bit more, to be able to expand their enrollments.

And a number of our major institutions have been able to do that; just the flexibility to be able to charge higher tuition and, therefore, put some of that extra money to work has been important. Incremental public funding has gone into those institutions to assist. The most difficult problem is the professional in both countries.

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tional executives and managers).

<sup>72</sup> See generally Gary S. Becker, *Give Us Your Skilled Masses*, WALL STREET JOURNAL, Dec. 1, 2005, at A18 (explaining that the lack of permanent visas discourages aliens from assimilating into American society).

We have an aging and rapidly retiring professorial in both schools. We have not for many years been producing professors at the rate even of replacement, and therefore, we are completely dependent upon the rest of the world for producing the faculty who would be the ones to teach that. So there is a major issue there.

On the supply side, the pipeline side, again, Richard Rosen spoke about it yesterday. What is the problem with North American youth in terms of their interest and propensity, therefore, to attend higher education in the sciences, mathematics, business, and so forth?

Frankly, I think we have a problem that, as someone says, starts in the early grades where we have to find a way to make these disciplines sound fun and exciting and create role models, create the special kinds of opportunities, reward systems, bring back science fairs and their equivalent among businesses and really adequately fund and really champion such opportunities for our young people.

Without a combination of both, we have neither the organized capacity to deliver the education opportunity nor the candidate pool to deliver it, too. One point I would say that we have looked at, we have seen in Australia, kind of advocating in Canada, I noticed there was in the compromised Senate bill that blew up the other day was a very inspired feature – was a very inspired feature that allows graduates of – foreign graduates of such programs to have fairly straight forward access to permanent residency in those countries.

And I think we make it very difficult, both in Canada and the United States, for our graduates and our Ph.D. programs to stay, even when they want to, and to be productive here, they are allowed to study and work while they are students, but it is as if graduation day comes, it becomes very difficult for them to stay and make a home should they so desire.

DR. KING: Mr. Cooper, do you have any comments?

MR. COOPER: Yeah. Certainly the F-4 provision would be very useful. How do we attract U.S. residents into these programs? This is a stunner. We just can't – the statistics, NSF and NAS, show pretty clear, as Dan mentioned, a lot of the worker provisions that are focused on in the pending legislation that didn't make it through in the Senate focused – are seen to impact what we call essential workers, low-skilled workers.

But, in fact, there are very important provisions both in the [Arlen] Specter and the [Bill] Frist Bills, which would help with encouraging foreign students to come back into the United States, but how do we encourage our own students to enroll in these curricula?

You know, the H-1 category, for example, the visa program, there includes a \$1,500 fee. Part of those filing fees goes to a fund, which is supposed to help fund scholarships for U.S. workers to go into the fields where we need people, and billions of dollars has been generated by these funds.

Has it made a difference? No. You have to get the students interested, and it starts early. While we have 50,000 students in our science fairs each year, the Chinese have about a million in their science fairs each year.

How are we ever going to compete when we have such low involvement in those kinds of activities in the United States? It is a real problem. Actually, by – I think the Canadian rules are a little more liberal on foreign students, have been liberalized a bit more in the last few years, so I have to say that the Canadians have stepped forward a bit more than we have.

MR. UJCZO: We will go with Marty Gelfand and then David Crane.

MR. GELFAND: Thank you, Dan.

I want to get back to the question of supply and demand and then something that Mr. Crow said a while back, the sources of how to get high tech workers here, and one is to grow them through our educational system, and the other is to bring them in from other places where they already are.

I would like to suggest the hybrid, which is that we have about 11 to 12 million undocumented immigrants here already working jobs because there is a demand for those jobs, and some people call them unskilled workers.

I do not think roofing, meat packing, growing crops, harvesting crops, and cleaning places, are unskilled jobs. I think these are important skills that people with a lot of gumption and stamina have to both get here and stay here to do those jobs. These are people who perhaps themselves or their children want to move into some of the higher paying, higher tech jobs.

And we need to find a way to, number one, recognize that there is a demand for these so-called unskilled workers to be here working jobs that we have in this country for them and, second of all, encourage them or their children so that we can grow the jobs, grow the skills here in this country through our educational system.

So we really need to get away from looking at these 11 or 12 million people as criminals and look at them as a very important source of our economy, which they are.

MR. COOPER: Absolutely. There was an interesting study, and it was published – I can't remember where the study came from, National Association of Foreign Student Affairs, has a journal, and there was a study in there about the contributions of the children of skilled workers who enter the United States and their impact and their achievement level, which compared to residents is very high.

It was an interesting study on that, and so, yes, the children of immigrants do excel in schooling and do more; we are a classic immigration story where a country was founded based on immigration, and we have to stay within that tradition because the children of immigrants do add to our society. But I think as a replacement worker issue this is very important as well.

MR. CROW: And just to add a thought again, you do not read about an undocumented worker problem in Canada, which you read about as an un-

derutilized skill problem, where we have, you know, foreign trade medical doctors driving cabs, and at the same time we have a shortage of people that stitch your finger if you cut it and seemingly difficulty putting those two together; different problem, but it is one that needs to be faced if a country is going to try to optimize the utilization of the skills in its population base.

MR. UJCZO: David.

MR. CRANE: I had a question for Bob Crow. Let us say by way of the answer to the question Canadians are very proud of the success of RIM, its commitment to the community, where it was born because it still maintains much of its activity in the local community and the efforts of Mike Lazaretis to provide leadership on the innovation debate in Canada.

When we talk about shortages, I am amazed when I write and I have my e-mail address at the bottom on the skills issues the number of e-mails I get from engineering graduates and others who complain that they cannot find employment.

And so we had five or six years ago this almost panic level of forecasts that we had, that our engineering schools were simply not producing what was needed and brought in new programs. One was called TOPS, I think, and things like this, and then we get a reversal of that because they cannot find jobs.

You had somebody from the [United] States saying there were not going to be the traditional entry level jobs for engineers in Canada that they were accustomed to unless they changed the nature of engineering, and you had a lot of people going through engineering who would not be able to get the kind of employment they were expecting.

But what I am wondering in this discussion, as far as a company like RIM is concerned, how much longer can it resist the pressure to move more of its activities where the people actually are? If you cannot get them into Canada because they are in China, and you are in a sector which has been extremely competitive and becoming more competitive, how can you resist the pressure to move to far away locations, which have skilled people and educated people? That is a dilemma I think.

The second thing, just as a point, we talk a lot about getting kids interested in science and math. If people are really concerned about that, they should become advocates of early childhood development. There is so much research now that shows that if kids do not enter the school system ready to learn, kids who come from disadvantaged backgrounds, even in grade one up to two years are behind in math capability as kids who come from a more privileged background.

We have to start much earlier, I think, in the system. So the leaders of the technology and the knowledge-based corporate sector should be out there pushing for serious early childhood development, recognizing that this is also going to cost money.

MR. CROW: Just, let me address the first one, and rather than saying how long do you hold out, let us say how do you cope with the natural pressure to do that? I think, David, an important thing to realize is that we are a fast-growing company but still a modest sized company.

The big companies I talked about are ten times our size. However, you know, we have recently opened up our tech support in Halifax and Nova Scotia. So one of the very important strategies that we have had is to look for places where there are folks and moved an operation out there.

And so while there are 500 or 600 people in Waterloo performing that function and will continue to be, incremental growth will happen in Halifax, and Halifax will ultimately dominate the Waterloo operation by two to one. So there are wonderful places in North America where you can find people for certain types of work.

Secondly, we have labs that have both grown dramatically in size and are now kind of squeezed by the amount of physical space in the west end of Ottawa and also in Mississauga by the Toronto Airport. So we have made employment opportunities available in areas that are closer to large pools of technical work. So that's strategy number one.

The other one is the one I mentioned in the talk, and that is through strategic acquisition. We have actually opened up employment opportunities in a couple locations in the United States and in the UK where there were firms that we acquired with highly qualified people, and that is going to be a reality.

Somehow, you know, I guess I am optimistic on this, and I am thinking, gee, I want to learn more about how the Finnish do it? How does a country the size of Toronto staff up a Nokia and do it in a way with people that are of exceptional quality without a heck of a lot of immigration? It takes –

MR. CRANE: Finland and Sweden have the most advanced early childhood development programs in the world.

MR. CROW: And here we swing into the second question where I think I am in violent agreement.

MR. CRANE: Do you have any thought on that?

MR. COOPER: Well, yeah.

I was just thinking that one of the problems is certainly childhood development which is important, but what we are running into now, the stark reality, that we are running into a period where we are going to have very high numbers of teachers retiring both in the post-secondary area, higher education and in elementary and secondary education.

Even in the Government, actually, there is a pretty high number projected to retire. If you do not have the teachers, how are you going to do the early childhood development? How are you going to teach math and science? And that is a critical problem.

It certainly relates to how much we pay our teachers. How do we support them when states are busy cutting back on budgets left and right – and I certainly see this in Michigan where school districts are scraping for money to exist – where are our priorities on that?

So to me, it is going to be the lack of teachers for either in early childhood development or all the way through our elementary and secondary school systems, especially in the technology areas.

MR. ROMOFF: Well, do not come and take our teachers.

MR. COOPER: Yeah, well, we are having a problem. Anyway, but it is the aging of the baby boomer generation that is going to create this and the Bureau of Labor Statistics studies, although they talk about those jobs in high need areas, are going to be in lower skilled or what I would call skilled versus highly skilled jobs, we are ignoring this phenomena that is occurring in our educational system.

MR. CRANE: One thing that is a thought that puzzles me about our political and governance systems, and that is we knew that a lot of our teachers and professors were going to retire. We knew it 15 years ago. Anybody can do the math and say this is the age people retire. This is the age – you know.

In our system, our political systems and governance systems do not seem to be able to look into the future and take steps today that affect where you need to be ten years from now. Even all this flurry over these high tech special temporary visas and things, that's an opportunistic response to a serious problem.

You say, well, we cannot solve our school system problem; well, just pressure to allow more people to come in from other countries. It is a very shortsighted, I think, approach to a much more serious problem.

But it seems that our institutions are simply not capable of dealing with problems that should be obvious, and this is just one of many examples one could pick because, as I said, the math is simple enough, and we know – I mean, one of the easier areas to do forecasting is in demographics.

MR. UJCZO: We will take one last question from Dr. Naimark.

DR. NAIMARK: Yes. Thanks.

I wanted to return to a point Dr. King mentioned. It is at the other end of the point of people graduating from science and engineering, and what we are finding there, of course, is that people who have the potential to be top notch graduate students are not going into graduate programs, and you have to ask yourself the question: What are the disincentives?

We did a bit of a study on it and found that one of them, of course, is the attraction of the employment situation where employers are willing to hire people with bachelor degrees because they have needs, and they are willing to pay them reasonable salaries. And you have students facing high student debt loads, and so it is an issue about competing motivations.

So the incentive, of course, suggests maybe the employers have to think about premiums; that they are willing to pay for people who come into their programs with graduate degrees of high potential and to create that incentive or at least that potential incentive that is available and visible to graduates at the point of graduation.

Right now there are many high demand areas in which students just do the math for themselves, and they say, yeah, maybe I would be better off in 10 or 15 years if I had a Ph.D., but it looks pretty good right now, and I have just been married and have a huge student loan and off you go.

So I think there are some specific incentives, and it really depends on people having people in industry serious about the value they place on those advanced degrees in the long-term.

MR. CROW: I will just take that as a question, but I will also say that is a very, very telling comment. I think, again, Roger Martin, et al. have measured the relative rate of return on graduate education in Canada versus the United States and found that it is far superior in the United States, the rate of return, far greater.

So we do seem to have in Canada not only an aspiration deficit as someone has called it but, indeed, a deficit from the standpoint of the employer's willingness to pay for future performance, maybe too high a discount rate in our mind.

MR. COOPER: Well, you certainly see employers in the United States in terms of overall cost cutting, one of the things that seems to go out the door frequently is encouraging their work force to achieve higher education programs.

Before I was an immigration lawyer, I was a dean at a medical school at the University of Illinois, and we saw medical students coming out way back then with about \$80,000 dollars of debt, thinking how am I going to pay this off when I work for an HMO, but, you know, people going through graduate programs, you look at the – well, we will not call them slave wages – but we will certainly call teaching assistantships and research assistantship funds not those that would encourage someone to full-time study, especially, as you say, if they want to have a family, develop it, so the job market looks a lot more attractive.

MR. UJCZO: I would have to defer to the conference chair. There is one more question here.

DR. KING: Go ahead.

MR. ROBINSON: There are 19 minutes until the end of the session. So look at your watch.

DR. KING: Well, we will give you a special dispensation.

MR. ROBINSON: Two short comments: I think there is a two-word answer to the remuneration problem. It is called stock options, and in terms of



the professorial issue, I think that has not become a two-edge sword in Ontario since the mandatory retirement at 65 ceased.

My wife, who has moved into her fourth career and has just finished her post-doctoral fellowship, not in science and history, moved into that fourth career in anticipation of those demographics that David pointed to, which the Government seems to have ignored until the change in the mandatory retirement law and said, oh, this is wonderful.

I will have lots of professorial positions. There are none, period, in the history of the province of Ontario. Every one of these guys that was supposed to retire is not retiring, are hanging around on their tenured positions to enhance their pensions. So it is a two-edge sword.

You have those professors still around, but they are the old tired guys who just want more pensions, and all the brave young people have no work. I mean, this is a serious problem. I hope you do not apply that to law.

MR. UJCZO: Do you have any comments on that?

MR. COOPER: No, not really.

MR. UJCZO: Okay. With that, we will adjourn. I should note that you may have heard that Research in Motion has been in the news for other matters tied into our afternoon session yesterday in the patent area, patent litigation, and several of their representatives have expressed some views on that, one on Wednesday before the house subcommittee, and we will have that testimony available around the lunch hour out in the outside. So you can see sort of the view from the trenches perspective on patent litigation.

With that, I would like to thank Bob and Scott, and we will reconvene at 10:30. Thank you.

(Session concluded.)