DOWNSIDE OF THE EINSTEIN EXEMPTION; JOB SHORTAGES IN SCIENCE AND MATH FIELDS INCREASED BY INFLUX OF SCIENTISTS

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Body

Let x equal the shrinking number of job openings for high-level mathematicians, physicists and other scientists in the United States each year.

Let y equal the number of new American- and foreign-born Ph.D. scientists fighting for those jobs.

As many young scientists see it, x minus y equals dismal hopes of ever landing a prestigious academic post.

"My situation probably won't elicit much sympathy," said Stephen Sawin, an assistant ***professor*** of mathematics at Fairfield ***University*** in Connecticut. "I have a nice job now, but I am unhappy with how things progressed for me."

At a time when overall unemployment has fallen to around 5 percent, high-level scientists have been experiencing double-digit unemployment. This does not put them in unemployment lines or soup kitchens, but it does lead to jobs for which they are overqualified.

Take Sawin, 33. He has an undergraduate degree from Princeton, a Ph.D. from Berkeley, and he spent five years doing post-doctoral work at MIT. He won a prestigious National Science Foundation fellowship, was given letters of recommendation from some of the most notable mathematicians in the field, and has a strong research and publication record.

Sawin applied for positions at research ***universities*** three years in a row, beginning in 1994 - "casually the first year, seriously the second, and really, really seriously the third." In response to about 90 applications, he received only two job offers before settling on Fairfield, a liberal arts college with a few small graduate programs, where very little research goes on.

The job market Sawin thought was there when he decided to pursue pure ***math*** back in the 1980s collapsed by the '90s. Throughout the sciences and humanities, new Ph.D.s are complaining about how difficult it is to land one of the prestige academic posts they spent years training for.

But in science and ***math***, the job shortage is exacerbated by the steady stream of foreign-born scientists entering the United States.

Unlike any other employment category - where the number of foreign workers who may enter the U.S. job market each year has a strict ceiling - U.S. law allows in a virtually endless stream of foreign-born scientists and academics under what is known as the ***Einstein*** ***exemption***.

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Like American doctors, who are urging cuts in the influx of foreign medical students, many young American scientists want fewer foreign-born scientists competing with them for jobs.

"Scientists, engineers and computer people are getting pretty mashed around" by U.S. immigration law, said former Sen. Alan K. Simpson, co-author of 1990 immigration reform legislation and now a lecturer at Harvard's John F. Kennedy School of Government.

Critics of current policy say it not only discriminates against one class of Americans - scientists - but discourages young Americans from entering the sciences and may ultimately hamper the country's innovativeness.

As Sawin puts it: "The established generation of scientists hasn't grokked the effect yet - people do not want to go into a field where they scramble to find any job, with little security."

Joblessness is especially severe in mathematics, a discipline that has seen major academic cutbacks in recent years, an influx of talented mathematicians from Eastern Europe and the former Soviet Union, and a continuing increase of foreign-born talent from Asia, led by Chinese, Taiwanese, Indians and Koreans.

"I've seen what's happened with colleagues in mathematics, and it's horrible," said Geoff Davis, an assistant ***professor*** of mathematics at Dartmouth. "They are constantly having to uproot and move from one postdoctoral position to another with no prospect of permanent employment. It is very demoralizing."

Only about 1,100 new mathematics Ph.D.s are produced each year in the United States, but through much of this decade, mathematicians have experienced unemployment of more than 14 percent - more than twice the rate of the overall economy.

The good news, according to the Providence-based American Mathematical Society, is that preliminary figures show ***math*** unemployment may have dipped below 10 percent by late last year. But some mathematicians suspect the numbers understate the problem, since they track only new Ph.D.s, not those who have been in the job market for a few years and have given up hope of finding a position in their chosen discipline.

The world's biggest employer of mathematicians is the National Security Agency, the super-secret encryption and code-breaking operation based at Fort Meade, Md. It has 400 to 500 mathematicians on staff, and last year it hired 50 fresh ***math*** Ph.D.s, accounting for a large part of the year's decrease in unemployment. Some scientists trace the problem back to the mid-1970s, when the National Science Foundation warned of an impending shortage of scientists and mathematicians and urged that the United States open its borders to the best brains from around the world. That warning was reissued as recently as 1990.

The shortage never materialized, but in the process ***university*** teachers and research scientists were classified for "special handling" under immigration laws. This meant an employer could hire a foreign scientist or teacher if it could be shown that he or she was more qualified than native workers. In other fields (except, oddly, shepherding, where a shortage was also believed to exist), a foreigner cannot be hired if even a minimally qualified native is available.

While the ***Einstein exemption*** has brought some of the brightest lights in the sciences to the United States, it has also flooded the job market.

Among scientists, the surge in foreign-born labor is of growing concern, but fear of being branded a xenophobe, or a sore loser in the job market, has made many reluctant to speak out on the subject.

"You see evidence of immigration everywhere - people from the former Soviet Union and Eastern Europe," said Donald McClure, a ***professor*** of ***math*** at Brown ***University***.

In almost all the hard sciences - physics, ***math***, astronomy - and even in applied sciences like engineering, 40 percent of new Ph.D.s are foreign-born, according to the National Science Foundation. More than two-thirds of

these graduates stay in the United States, most already armed with permanent resident status by the time they receive their doctorates.

To some observers, that isn't a bad thing.

"I'm sure a lot of other countries would like to have the problem of attracting too many brilliant people to their country," said Stuart Anderson, an immigration policy specialist at the Cato Institute, a free-market think tank in Washington, D.C.

The brain drain is a problem for other countries, said Mario Molina, MIT ***professor*** of earth, atmosphere, and planetary sciences. Molina was born in Mexico, is now a U.S. citizen, and won a Nobel Prize in 1995.

"It is rather obvious that a significant number of MIT ***professors*** who have excelled were foreign born," said Molina. "For most research, it is very hard to think of circumstances where there appears to be no benefit" for the country that has liberal immigration.

Columbia ***University*** economist Jagdish Bhagwati, an Indian native, describes how the influx of foreign scientists pushes bright natives into jobs in second-tier schools and in other segments of the economy, improving overall quality. Natives, he said, have more options in the wider market than foreigners. Mathematicians, for instance, are in strong demand on Wall Street.

"I'm not saying there aren't temporary adjustment problems," Bhagwati said, but almost everybody in the nation "benefits when the super-brightest people in the world see America as the place to go."

Meanwhile, a number of talented natives have to find work - people like Charles Yeomans, who received a Ph.D. in ***math*** in 1990 from the ***University*** of Kentucky and now handles the accounting network for his wife's law firm.

"I'm fairly laissez-faire on most issues, but for me individually it has been very frustrating," Yeomans said. "Now I do ***math*** on the side. You could say I've regained my amateur status."

Graphic

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