Rachna Maheshwari

Description of All Ongoing Research Projects.

A Dynamic Analysis of Occupational, Family and Human Capital Accumulation Choices: Classifying Occupations by Non-Wage Work

(Job Market Paper)

This paper analyzes the costs associated with combining different family structure and occupational choices. I ask whether family friendly non-wage work characteristics, like work-flexibility and family related tax subsidies, change the educational, labor force participation, occupational and family formation choices of individuals. I develop a dynamic structural model in which individuals make choices with regard to schooling, labor force participation, occupation and child birth. I classify occupations by the non-wage characteristics of work flexibility and formal education requirements. Individuals in the model derive non-pecuniary utility from family structure choices and from non-wage characteristics of occupations. Pecuniary utility is derived from wages, spouse's income and potentially from welfare payments. Individuals are observationally heterogeneous with regard to demographic, geographic, ability and family background measures. I allow for unobserved heterogeneity in ability and in preferences for occupations and fertility. The structural parameters of the model will be used to perform counterfactual experiments to examine the extent to which family and work choices of individuals vary in response to more attractive non-wage work characteristics and in response to child tax credits like EITC and CTC. Non-structural estimates show that having a larger family is associated with a reduction in the probability of choosing high-education, non-flexible occupations relative to high-education, flexible occupations by 6.5 percentage points. Among low-education occupations, having a larger family is associated with a reduction in the probability of being in a non-flexible occupation relative to a flexible one by 2.6 percentage points.

Policy Drivers of the Direction of Innovative Activity: An Examination of Renewable Energy Incentives in Driving Innovation, with Michael Lenox, Mary Margaret Frank (Darden Graduate School of Business, University of Virginia) and Jeffrey York (Leeds School of Business, University of Colorado at Boulder)

Addressing human induced climate change will require a migration away from fossil fuels and towards the adoption of renewable energy sources which emit lower levels of greenhouse gases. This challenge motivates our analysis of how a variety of state-level policies in the U.S. in conjunction with research funds granted to large research institutions have affected innovation in renewable energy production technologies. The policies we examine are : 1) tax incentives which focus on personal, corporate, property, and sales tax credits for the adoption of renewable energy, 2) direct investment by the state through either grants or loans, 3) demand incentives such as state agreements to purchase renewable energy and 4) policy incentives such as the implementation of Renewable Portfolio Standards and net metering initiatives that allow electricity generated by customers to flow back into the grid (offsetting the electricity consumed). We consider the impact of these policies and research grants on the locus of innovation as measured by green technology patents acquired by geographical region.

Status of work on this project:

- We have collected data on all state level renewable energy related policy variables and location of and funding received by research institutions.

- We have an extremely preliminary draft of the paper which provides motivation for the research and some theoretical background.
- We are putting together data on number of green technology patents acquired (our measure of green technology innovation) by 4 digit zip codes in the US.

Analysis of Professional Impact by Gender Using Data from Computer Science and Engineering, with Joanne Cohoon (Department of Science, Technology and Society, University of Virginia) and Joseph Kaye (Nokia Research Center)

Policies for promoting gender-diversity in occupations that are predominantly male require a better understanding of why women are less likely to enter and succeed in such occupations. We attempt to empirically analyze gender differences in computer science and engineering along one dimension of success: professional impact as measured by research citations received. Using information on all publications of the American Computing Machinery over the years 1985 to 2007, we examine citations received by gender composition of author groups. We find that, after controlling for publication title, year of publication, and number of authors, female-only author groups receive fewer citations than mixed-gender and male-only groups. Female-only publications that fall in the top 25% of the publications with regard to citations received get cited as much as publications from other author groups in that subset of observations. Thus, the gender gap in professional impact is not significant among high performing scientists. Further, we find that the marginal contribution in terms of the number of additional citations of a female author added to a group of one male and one female author is statistically insignificant, while that of only one additional male author is significant. This difference in marginal contribution in citations by gender suggests that there may be a difference in the size of networks of authors by gender.

Status of work on this project:

- We have a working paper draft with all empirical results. We are doing revisions of the draft now and will submit the paper soon.

Promotions, Productivity, and Success among Scientists, with Joanne Cohoon (Department of Science, Technology and Society, University of Virginia)

It is important to understand the determinants of research productivity and innovation by scientists. From the point of view of labor economics, several factors may affect the research productivity and creative capabilities of a career scientist. Even though individuals who choose to obtain higher education in the sciences usually have high caliber and high motivation levels, their motivation for work may vary over the life-cycle either due to varying time requirements for activities outside work (family formation, for instance) or for other reasons. This may cause research output to vary. Moreover, individual creativity and thus research productivity may also fluctuate randomly over time. We refer to fluctuations in motivation over the life-cycle and random fluctuations in creativity as “individual factors”. Individual scientists get hired by (or matched to) employers (companies, university departments, research labs) in labor markets. They may get matched to employers that have a work environment that enhances their productivity or vice-versa. We refer to this as “individual-organization match factors”. Employers vary in the kind of work environment, networks, resources, benefits and amenities they provide to their workers. Some do better than others in providing all of this and will thus have more productive and creative workers. We call this “organizational environment”. Employers also vary in how they deal with diverse population groups in their workforce. So, while one may do better than another in terms of overall productivity, it may not do well in promoting employees from minority groups. We call this “organizational support for diversity”. In this study we try to empirically identify and estimate the separate impact of each of the above stated factors. Scientists work in many different fields and with different kinds of employers. In

order to ensure that we can compare outcomes across individuals and employers, we restrict our sample of scientists to computer scientists and employers to computer science and engineering departments in research institutions in the US. We are collecting data on academic computer scientists from a random sample of research departments for this study.

Status of work on this project:

- We have a team of RAs who are working on data collection for this project.
- We will collect most of the data off the web for this project. We have conducted several pilot data collection exercises to see if our data collection methods work.
- We are now in the process of getting IRB approval for data collection for the entire project.