Name: Sarah H. Bana, Ph.D. Candidate in Economics

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Status: 5th year student and returning student applicant to NBER Economics of Digitization Graduate Student Tutorial

Committee: Peter Kuhn (Chair), Kelly Bedard, Heather Royer

Fields: Labor, Econometrics, Macroeconomics

Relevant Coursework: Search and Matching, Labor Economics, Wage Structure, Econometric Theory, Bayesian Econometrics, and Stochastic Processes.

Research Focus: J24 - Human Capital/Skills/Occupation Choice/Labor Productivity

Research Interests:

My research is broadly on the changing composition of tasks in the economy. I am interested in how workers and firms respond to changes in labor demand, either as a result of technological change, globalization, or other circumstances. Additionally, I am interested in understanding effective policy responses to these changes and the potential consequences of policy intervention in this space.

In my first paper, I explore an intuitive reason why some displaced workers may experience lower earnings than others: poor local labor market conditions in their pre-displacement occupation. Because fine occupation-level growth rates are not available, I construct an estimator of occupation growth rates using a shift-share method by using state-level variation in industry composition. I find displacement from a shrinking occupation is associated with decreased earnings, increased unemployment duration, and a higher likelihood of an occupation change. A one standard deviation decrease in the worker's occupation growth rate (which is approximately four percentage points) is associated with a 3.1% increase in the probability of changing occupations, a 11.2% increase in the duration of unemployment and a 7.1% decrease in weekly earnings.

The magnitude of the main estimate in this paper (a 7.1% decrease in weekly earnings per standard deviation decrease in occupation growth rate) is similar to the short-run effects of graduating during a recession found in Oreopoulos et al. (2012) and Altonji et al. (2016). These occupation-level growth rates, likely exogenous to the worker, display a significant impact of adverse labor market conditions at the time of displacement on displaced workers' outcomes. This suggests that aggregate indicators like the national unemployment rate mask the heterogeneity in employment prospects within occupations, across states, and over time.

I also find that state-level occupation growth impacts unemployment duration and

changes in earnings significantly more than state-level industry growth. The power of the industry growth rate diminishes in models including occupation growth rate. This is consistent with other research including Jensen and Kletzer (2010) and may suggest policies targeted at declining industries may be poorly focused if displaced workers' difficulties are more related to their skills than the goods and services they were producing.

To the best of my knowledge, this is the first study to create such a measure and show its importance for displaced workers' labor market outcomes. This new evidence that the relevant employment conditions are at the occupation level suggests a significant role for occupation-specific human capital over industry-specific human capital. In contrast to workers displaced from shrinking industries, there appears to be considerably less scope for workers from shrinking occupations to find work with similar earnings.

In my second paper, with co-authors Kelly Bedard and Maya Rossin-Slater, I have looked at the causal impacts of benefits of California's first-in-the-nation paid family leave program. While this is not directly related to digitization, this project gave me the opportunity to understand a research design commonly used in evaluating social insurance programs.

My third paper is looking at the consequences of granting nurse practitioners prescribing privileges on the health care production function and labor market outcomes. This is a unique situation in which the task composition of an occupation is explicitly changing. This is quite different from most situations in the digitization space where adoption is not legislated, and often endogenous. I hope to use this setting to understand the effects of occupational task composition on the job postings, employment, and earnings of nurse practitioners and also other contributors to the health care profession.

While my current work is not directly related to digitization, it complements work done in the digitization space – particularly, the effect of digitization on the labor market outcomes of a wide range of workers. I find my interactions with peers met at this tutorial have been extremely valuable in thinking about research ideas. I hope to continue to contribute and learn from this group.

References

ALTONJI, J. G., L. B. KAHN, AND J. D. SPEER (2016): "Cashier or consultant? Entry labor market conditions, field of study, and career success," *Journal of Labor Economics*, 34, S361–S401.

JENSEN, J. B. AND L. G. KLETZER (2010): "Measuring tradable services and the task content of offshorable services jobs," in *Labor in the new economy*, University of Chicago Press, 309–335.

OREOPOULOS, P., T. VON WACHTER, AND A. HEISZ (2012): "The short-and long-term career effects of graduating in a recession," *American Economic Journal: Applied Economics*, 4, 1–29.