The Effect of H-1B Visas on Firms: Evidence from Publicly Traded Firms

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October 2017

1. Introduction. Business groups in the U.S. have been very vocal arguing for an increase in the number of visas for highly skilled foreign workers, particularly in the computer industry and other high-tech sectors. They argue that at current levels they are unable to hire the skilled workers they need, and this is reducing their innovation activity and global competitiveness. Other social commentators argue that there is no shortage of domestic skilled workers and that H-1B visas are widely used to replace domestic workers by cheaper and arguably less productive foreign workers.

The H1-B visa program is the main channel to hire skilled foreign workers in the U.S. There is an annual cap on the number of new H-1B visas, although some institutions, such as universities, are exempt from the cap along with some countries due to bilateral free trade agreements. The annual cap has varied substantially over the last two decades. In year 2000 the cap was 115,000 visas. The cap was temporarily raised to 195,000 visas in years 2001 through 2003, to be then reduced to 65,000 visas in 2004. In fiscal year 2005, an additional 20,000 visas were made available for individuals with a graduate degree obtained at a U.S. institution, effectively raising the annual cap to 85,000 visas from 2005 onwards.

2. Goals. Several studies have found that skilled immigrants may be important drivers of innovation and firm creation (e.g. Wadhwa et al. 2007, Kerr and Lincoln 2010). However, few studies have been able to analyze these questions at the firm level. The goal of our paper is to estimate the effects of H-1B visas on a wide range of firm-level outcomes, such as firm size (measured by sales and employment), productivity, profits, and innovation activity.

To carry out the analysis we have obtained case-level data from the USCIS on the universe of H-1B visas awarded over the period 2000-2012 through a Freedom of Information Act. We have aggregated these data at the employer-year level using probabilistic record-linking techniques and produced a longitudinal dataset that characterizes the stock of H-1B visas received by U.S. firms over the sample period. In addition, we have merged these data with Compustat, which provides a wide range of firm-level outcomes for publicly traded firms in the United States. This unique dataset will allow us to identify the causal effects of H-1B visas on firm outcomes by exploiting each firm's reliance on H-1B visas in earlier years coupled with changes over time in the size of the cap on the overall number of new H-1B visas.

At this point in time we have already concluded the stage of building our merged datasets, which has revealed a number of interesting insights, and are ready to begin the analysis of firm-level outcomes.

3. Preliminary Results. At this point in time we have developed a procedure to match case-level H-1B applications on the basis of employer name (and zip code) in a highly successful manner. This dataset contains close to 500,000 company names. We assess the accuracy of the matches on the subset of firms that top the ranking of H-1B visas received in our sample period. For this subset of firms, we are able to manually craft the data with a small degree of error. We are able to show that our name-matching procedure produces a good fit for this subsample of firms in terms of the counts of H-1B visas and their evolution over time. When merging these data with Compustat we find that about 42% of publicly traded firms in the United States have obtained H-1B visas during the period 2000-2012. The next step in the project is to proceed with the estimation of the effects of H-1B visas on the outcomes of publicly traded firms.

4. Literature Review and Contribution. Our paper contributes to the growing literature on the role of skilled immigrant labor on innovation. A number of studies have exploited cross-city variation and the changes in the annual cap on H-1B visas to examine the effects on patenting activity (e.g. Hunt and Gauthier-Loiselle 2010, Kerr and Lincoln 2010, and Peri et al. 2013), but analysis of the question employing firm-level are very limited in scope (Chellaraj et al. 2008, Kerr and Lincoln 2010).

A few recent studies have analyzed the effects of skilled immigration over firm-level productivity and employment in the context of different countries. Some studies have focused on firm-level productivity (Paserman 2013, Parrotta et al. 2014, Trax et al. 2013) but the results have been largely inconclusive and based on non-U.S. data. A few other studies have focused on the effects of skilled immigration on firm-level employment using data for the United States. Kerr, Kerr and Lincoln (2015) have used employer-employee matched data (from the LEHD Census) for a small number of firms with strong patenting activity. Using tax records data, Doran et al. (2014) analyze the effects of H1-B visas on firm-level employment and patenting activity. Their identification is based on the lottery that took place in fiscal years 2006 and 2007. However, this arguably random assignment was used to allocate a small number of visas to applications filed late in the application period by relatively small firms with limited innovation activity.

Relative to these studies, our paper uses a fairly large dataset containing all publicly traded firms in the United States, detailed information on the evolution of the stock of H-1B visas at the firm level over the period 2000-2012, and a larger set of firm-level outcomes.

Last, our paper is close in spirit to Ghosh et al. (2015). However, that study relied heavily on information on labor-condition applications, which turn out to be very loosely correlated with the actual number of visas received by the firm, casting doubts on the finding of a positive effect of H-1B visas on firm-level growth and productivity.

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