Firm Age, Investment Opportunities, and Job Creation *

Manuel Adelino
Fuqua School of Business
Duke University

Song Ma
Fuqua School of Business
Duke University

David T. Robinson
Fuqua School of Business
Duke University and NBER

October 5, 2014

Abstract

New firms are an important source of job creation in the economy, but the mechanisms underlying the link between new firms and employment growth are not well understood. This paper focuses on employment creation as a result of new investment opportunities and asks whether growth is driven by new firms or by the expansion of existing firms. We use regional industrial structure and national changes in manufacturing employment to identify shocks to local income, and examine employment creation in the non-tradable sector. New firm entry is much more responsive to changing local economic conditions than growth by established firms. Moreover, their responsiveness doubles in areas with better access to small business finance. Although we focus on the non-tradable sector for identification, our results extend to the construction sector and the economy as a whole, indicating that the mechanisms we uncover are economically pervasive.

*Please address correspondence to Manuel Adelino, Fuqua School of Business, 100 Fuqua Drive, Durham, NC 27708. We are grateful to Andrew Abel, Hengjie Ai, Simon Gervais, Javier Miranda, Manju Puri, Michael Roberts, Vish Viswanathan, and seminar participants at NBER Productivity Meeting, Minnesota Corporate Finance Conference, Duke, Emory, HEC Paris, UCLA, UNC Charlotte, University of Miami and Wharton for providing helpful feedback. The usual disclaimer applies.

1 Introduction

It is well understood that startups create the vast majority of new jobs in the US economy.[1] The underlying economic mechanisms responsible for this pattern, however, are less well known. The goal of this paper is to shed light on those mechanisms by exploring how startups react to changing investment opportunities.

Evaluating how firms respond to shocks to investment opportunities is empirically challenging not just because of the well-known issues in measuring firm investment opportunities (Kaplan and Zingales, 2000; Erickson and Whited, 2000; Rauh, 2006; Benmelech et al., 2014), but also because of the inherent endogeneity of job creation, firm creation, and changes in q. In particular, beginning with the work of Schumpeter (1947), startups have long been recognized as playing an important role in driving growth through innovation. Thus, one important channel through which startups create new jobs is that startups are the *source* of innovations that are good investment opportunities, which in turn creates employment. This paper considers a different channel: we are interested in understanding whether startups are better able to seize (exogenous) investment opportunities that are potentially available to any firm, new or old.

In order to measure how the sensitivity to investment opportunities varies between new and existing firms, our empirical strategy focuses on the non-tradable sector and considers how firm entry and firm expansion respond to changes in local business conditions. Following Bartik (1991), Blanchard and Katz (1992), and Autor, Dorn, and Hanson (2013), we identify exogenous shocks to local income by interacting the preexisting composition of a region's manufacturing sector with the national growth in employment in that sector. This induces variation in local investment opportunities in the non-tradable sector that is exogenous to any opportunities *created* by the firms in this sector. Then we examine how employment in new and existing firms responds to these shocks to local income.

This approach rests on two key features of the non-tradable sector. First, conditions in this sector depend primarily on local demand (Mian and Sufi, 2014, Basker and Miranda,

[1] For example, see Haltiwanger, Jarmin, and Miranda (2013).

2014), easing concerns that the net job creation we measure is confounded by unmeasured changes in fundamentals that affect both national income and the demand for jobs. Second, R&D is quantitatively unimportant in this sector. This levels the playing field between startups and older firms with respect to an inherent innovation advantage. Of course, this does not mean that innovative thinking is not required to launch a new firm in this sector, merely that the innovation embodied in the new firm is not responsible for the demand shock that ultimately creates the new jobs we measure.

We find that firm entry responds strongly to new investment opportunities, much more so than expansion by existing firms. Moving from the 25^{th} to the 75^{th} percentile of 2-year income growth raises a region's job creation in the non-tradable industries by about 1.3% of the 2000 employment level. Startups account for 65-75% of a region's total response to income growth. Firms more than five years old account for the remaining response, and firms between two and five years old generally shed jobs in response to positive shocks, highlighting the importance of churning for the job creation process. The magnitude of this response is especially striking given the patterns of overall employment across the firm age distribution. Firms over five years old account for more than 84% of total employment on average in non-tradables in each commuting zone, while employment in startup firms accounts for only 6% of the total employment. Our results suggest that some combination of size, the flexibility of the entry decision, organizational arrangements and the incentives provided by entry itself allows startups to seize on opportunities that older, more established firms are not able to act upon.

These results are robust to a number of concerns. One is that organizational arrangements specific to the non-tradable sector (such as franchising) are driving our results. Our findings are similar when we look at the construction sector's response to the same shocks—like the restaurant sector, construction is especially sensitive to local demand conditions and generally not very innovative, but unlike the restaurant sector, franchising is unimportant. Our results are also robust to using the change in the penetration of imports as the regional economic shock, to using alternative geographical units of analysis, and to using alternative

measurement periods. The results also do not reflect changes in the value of local real estate.[2]

Our results raise a number of questions. First, how durable are the jobs created by startup firms? Perhaps established firms only react to permanent shocks whereas new firms react to transitory shocks. Is the marginal new entrant over-reacting to the economic shocks in their area, creating jobs that will quickly be destroyed? Looking within cohorts over time, we find no evidence that the marginal job creation by startups in high responsiveness regions results in greater job losses in later years, suggesting that, on the margin, new entrants do not seem to be overreacting to perceived business conditions.

Second, are financing constraints unimportant for new firm creation? To explore this we build on Petersen and Rajan (1994, 2002), Craig and Hardee (2007) and Robb and Robinson (2012) and develop variation in local bank market concentration as a measure of access to capital for new firms. Areas with high levels of local bank market penetration are areas with higher concentrations of startup firms, and we find that the responsiveness of new firm creation is about twice as strong in these regions. We find the reverse effect for firms over 6 years of age, where more local banks mute the response to changing local income. Thus, it appears that financing constraints are indeed important on the margin for affecting rates of new job and new firm creation.

Finally, given the recent work of Fort, Haltiwanger, Jarmin, and Miranda (2013), Hurst and Pugsley (2011), and Basker and Miranda (2014), it is natural to ask how startup responsiveness differs across firm size as well as firm age. Hurst and Pugsley (2011) show that many so-called entrepreneurs are small business owners who have no desire to expand their businesses. To explore this issue, we use data from the BDS, which allow us to examine the joint distribution of firm size and firm age. We find that the responsiveness of older firms is heavily concentrated among large, older firms: older small firms show no responsiveness to economic shocks. This indicates that we identify a channel through *new* firms, not small ones. It also speaks against the idea that increased bureaucratic constraints in older firms

[2]Given that local income can also impact local house prices, our findings could reflect the fact that real estate is an important source of collateral for new small firms; see, e.g., Adelino, Schoar and Severino (2013), Kleiner (2013) and Schmalz, Sraer and Thesmar (2013). We re-run our tests in areas with high and low house price appreciation and find that our responsiveness results are not reflecting changing house prices.

prevent them from seizing the opportunities presented by economic shocks: larger firms presumably have more complex bureaucracies than small businesses, and yet among older businesses it is the large, more organizationally complex firms that are more responsive to economic shocks.

All told, our results suggest that the connection between net job creation and startup activity is not simply a reflection of the fact that new firms are the vessels of new ideas. While we do not question the importance of innovation in terms of introducing disruptive technologies, our findings suggest that entrepreneurial response to outside shocks is also important: startups create most of the jobs that arise in response to changing investment opportunities affecting firms of all ages.

The remainder of the paper proceeds as follows. We begin in Section 2 by describing the data, our strategy for identifying localized economic regions, and our estimation strategy. In Section 3 we present our main findings on the link between firm age and the responsiveness to economic shocks, including a number of robustness tests. We explore the question of job resilience in Section 4. Section 5 explores the role of access to capital. We turn to BDS data allowing us to explore the link between size and age in Section 6. Section 7 concludes.

2 Data and empirical methodology

2.1 Data

The empirical analysis uses publicly available data from the Census Quarterly Workforce Indicators (QWI) to compute total employment by firm age and by county for the non-tradable and construction sectors. The QWI is derived from the Longitudinal Employer-Household Dynamics (LEHD) program at the Census Bureau and it provides total employment in the private sector tabulated for 5 firm age categories—start-ups (0-1 year-olds), 2-3 year-olds, 4-5 year-olds, 6-10 year-olds, and firms 11 years old or older. The totals are provided by county, quarter and industry, where industry is defined at the two-digit National American

Industry Classification System (NAICS) level. [3] We aggregate county-level observations in each age category to the Commuting-Zone (CZ) level using a county-to-CZ bridge provided by the Economic Research Service of the United States Department of Agriculture.[4]

Net job creation data is constructed by exploiting the transition of firms across firm age categories over time. Specifically, the firms in the "start-up" category (0-1 year-olds) in year $t-2$ are the same firms in the 2-3 year-old category at t, conditional on having survived that far. The difference in the total number of jobs in these categories at $t-2$ and t represents the net job creation by these firms over the two years (including the effect of firms that disappear). Firms in the "2-3 year-old" category at $t-2$ move into the "4-5 year-old" category at t, and so forth. The category "0-1 year olds" at time t includes firms that did not exist as of $t-2$: this is our measure of job creation by newly formed firms over the 2 year period. [5] For most of our analysis, we calculate the net job creation in the non-tradable sector over two-year intervals for four firm age categories—start-ups (0-1 year-olds), 2-3 year-olds, 4-5 year-olds and 6+ year-olds. In Section 3.2, we calculate job creation for firms aged 0-5 years and 6 or more years old. Given the age bins provided in the QWI, these are the only two horizons that can be used in the analysis.

Section 6 uses an alternative data source on employment by firm age from the Business Dynamics Statistics (BDS) to examine finer age breakdowns, as well as the joint distribution of firm age and firm size. The BDS provides a breakdown of employment by firm age and firm size for the country as a whole (including the states omitted from the LEHD), but it does not report sector information at a level of geographic detail that is fine enough for the purposes of this paper. Also, unlike the LEHD, the BDS uses Metropolitan Statistical Areas

[3] The coverage of the QWI data increases through time. The dataset covers 15 states in 1995, 37 states (including the District of Columbia) in 2000 (the first year in our analysis), and 45 states (including the District of Columbia) in 2007 (the last year we consider). During the whole period, six states are not covered—California, Louisiana, Massachusetts, Rhode Island, Virginia and Washington.

[4] The exact file is available from `http://www.ers.usda.gov/datafiles/Commuting_Zones_and_Labor_Market_Areas/cz00_eqv_v1.xls`.

[5] In this context it is natural to ask what constitutes a new firm as opposed to a newly formed establishment of an existing firm. The data classifies subsidiaries of existing firms as start-ups whenever they are formed as separate legal entities. For example, a new McDonald's franchisee opening her first McDonald's location is classified as a startup, whereas a new location opened by an existing franchisee, or by corporate headquarters, would be an expansion.

(MSAs) as its geographic unit of analysis.[6]

We supplement the QWI and BDS with data from several other sources. Income data at the county level comes from the IRS Statistics of Income. Income in a CZ is defined as the total CZ wages and salaries deflated to 2007 dollars. To compute the predicted changes in manufacturing employment, we use the County Business Patterns (CBP) data set published by the U.S. Census Bureau. We use the county-level employment at the four-digit NAICS level for all sub-industries in the manufacturing sector (NAICS 31-33) to construct the pre-existing manufacturing industry structure, as well as the national changes in employment in each sub-industry. We obtain county-level information from the Census Bureau Summary Files for 2000 on the total population, the number of households, and the percentage of individuals over 25 years old with a high school and bachelor's degree. Total Labor Force at the county level is obtained from the Bureau of Labor Statistics. These variables are all aggregated to the CZ-level for our regressions.

Banking sector variables are calculated from the Federal Deposit Insurance Corporation (FDIC) Summary of Deposits. HHI is the CZ-level Herfindahl index of the banking sector, calculated using each bank's share of total deposits in the CZ. We classify banks as "large" if they are within the top 30 largest US banks by deposits and they are defined as "local" to a CZ if they have 75% or more deposits concentrated in that CZ (following Cortes (2013)).

The housing prices used in robustness tests come from the Federal Housing Finance Agency (FHFA) House Price Index (HPI) data at the Metropolitan Statistical Area (MSA) level. The FHFA HPI is a weighted, repeat-sales index, and it measures average price changes in repeat sales or refinancings on the same properties. We use data on the MSA-level index between 1999 and 2007. As an alternative to using the change in housing prices during the period, we also use the housing supply elasticity measure developed by Saiz (2010). This

[6]This dataset provides detailed age data for firms aged 0, 1, 2, 3, 4, 5, 6-10, 11-15, 16-20, 21-25, and 26+ years. Firm size is categorized by the number of employees, and the bins used in this dataset are 1-4, 5-9, 10-19, 20-49, 50-99,100-249, 250-499, 500-999, 1,000-2,499, 2,500-4,999, 5,000-9,999, and 10,000+ employees. For consistency with the analysis using the QWI data, we aggregate firms into the same four age categories 0-1, 2-3, 4-5 and 6+, and we aggregate size categories into firms with fewer than 20 employees, 20-100 employees and more than 100 employees.

measure varies at the MSA level and it is constructed using geographical and local regulatory constraints to new construction. This measure is available for 269 MSAs that we match to 776 counties using the correspondence between MSAs and counties for the year 1999 as provided by the Census Bureau, and then aggregate up to the CZ level.

Finally, we obtain import, export, and total shipments data at the 4-digit NAICS level from Peter Schott's webpage.[7]

2.2 Summary statistics

Table I reports summary statistics for commuting zones included in the QWI data. We report pooled averages for all CZs and years in the sample, which yields 3,614 observations. The average CZ in our data is made up of 5 counties, has around 460,000 in total population, and a labor force of about 233,000. Total income grew at a real growth rate of 2 percent over each two-year period, with no growth in the 25th percentile of CZ-year observations, and 4% growth in the 75th percentile. The predicted change in manufacturing employment by CZ is, on average, -1% and it ranges from -2% in the 25th percentile to 0 in the 75th percentile. This is consistent with the overall downward trend in the manufacturing sector in the U.S. during this time period. About 80 percent of individuals over 25 years have a high school diploma, and 19 percent have a bachelor's degree.

Our main analysis focuses on responsiveness in the non-tradable sector, namely Retail Trade (two-digit NAICS 44-45), and Accommodation and Food Services (two-digit NAICS 72). Our definition of non-tradable industries matches the definition in Mian and Sufi (2014) as closely as possible given that the LEHD data is not broken down by 4-digit NAICS industries. Around 37,000 workers are employed in the non-tradable sector in the average CZ, implying a total employment in the non-tradable sector in our sample of around 17 million workers. Given that the LEHD omits certain states from its employment counts, this squares with US aggregate level employment for the sector.[8] Firms over 6 years of

[7] `http://faculty.som.yale.edu/peterschott/sub_international.htm`.

[8] Aggregate US employment in NAICS sectors 44-45 and 72 is approximately 27.1 million as of the end of 2007 according to the Bureau of Labor Statistics (http://www.bls.gov/iag/tgs/iag_index_naics.htm), and

age account for the overwhelming majority of employment (about 84%) in the non-tradable sector, with just 6 percent coming from newly formed firms (0-1 years old). The remaining nine percent of employment is in firms between two and five years old. Table I also shows average employment numbers for the construction industry (NAICS 23). There are about 10,000 employees in the construction sector in each CZ-year observation, with 78% of those in firms over six years old, and 7.8% in startups.

The average HHI of deposits in a CZ is 0.13 (or the equivalent of about 7.7 equally-sized banks). Large banks hold about 37% of all deposits, and local banks hold another 31%.

Table II summarizes the two-year net job creation in the non-tradable sector for each firm age category in the QWI dataset. Panel A shows that, on average, 530 jobs are created in each CZ's non-tradable sector over each two-year period. Startup firms (0-1 year-olds) create 2,307 jobs on average, while job losses occur on average in all other age categories. Old firms shed 1,071 jobs every 2 years on average, and they were hit particularly hard in the recession in the early 2000's. These patterns are consistent with the results in Haltiwanger et al. (2013), who show that all of the net employment creation over the last 30 years in the US has come from new firms. Panel B reports the two-year job creation scaled by the CZ's non-tradable sector labor force in 2000 and shows similar patterns. On average, new jobs in startups represent about 5% of the level of employment in a CZ in non-tradables in 2000, and the net employment loss in the oldest firm category is about 2.3% of the number of employees. When we aggregate over all firms in the sector, net employment creation is about 1% on average over two year periods.

2.3 Empirical strategy

Our primary empirical tests measure how shocks to income in a region affect employment growth in the non-tradable sector for firms in different age categories. We use the real growth rate of total income in a commuting zone as our measure of changes in investment opportunities for the local non-tradable sector. Given that firms in this sector depend primarily

the QWI dataset covers, on average, 63% of the CZs in the country.

on local demand (Mian and Sufi, 2014), higher local income creates more opportunities for those businesses. We are interested in estimating regressions of the following form:

$$\Delta_\tau e^a_{it} = \alpha + \beta \times \Delta_\tau I_{i,t} + \gamma \times X_{i,2000} + \varepsilon_{i,t} \tag{1}$$

where Δe^a_{it} is the change in net employment in firms in the non-tradable sector in each age category a over the previous τ years in CZ i. We scale all employment numbers by the total non-tradable sector employment as of 2000 in that CZ. We perform the above empirical strategy on both the totals by CZ and separately for the subsamples of start-ups (0-1 year-olds), 2-3 year-old firms, 4-5 year-old firms and 6+ year-old firms (age measured at the end of t). The parameter τ is two years in all specifications except when we consider longer term shocks (Table IV), where τ is six years instead (as we discuss in Section 2.1, these are the only two horizons for which we can measure net employment growth for well-defined firm age categories). $\Delta_\tau I_{i,t}$ is the CZ-level income growth over the same time period. The time-invariant CZ-level controls $X_{i,2000}$ include the logarithm of the total number of residents in the labor force, the percentage of the population with at least a high school degree, and the logarithm of total income in the county as of 2000.

Our main findings rely on comparing the β estimates from these age-sorted subsamples. A higher β indicates a higher sensitivity to the shocks to investment opportunities. In the Appendix, we also show a "stacked" version of this equation, where we include indicator variables for each age category, as well as interactions of the income growth variable with the age dummies.

We use the strategy in Bartik (1991) and Blanchard and Katz (1992) to instrument for CZ-level income growth. This strategy is widely used in economics (see, e.g., Bound and Holzer (2000), Gallin (2004), Saks and Wozniak (2011), or Charles et al. (2013); Imai and Takarabe (2011) use this approach on Japanese data). Formally, the instrument is given by:

$$\widehat{\Delta_\tau e^m_{it}} = \sum_j \omega_{ij(t-\tau)} \times \Delta_\tau e_{jt} \tag{2}$$

where $\widehat{\Delta_\tau e_{it}^m}$ is the predicted growth rate in total manufacturing employment in CZ i between $t-\tau$ and t. This is calculated as the percent change in the nationwide number of jobs in each four-digit NAICS manufacturing sector j between $t-\tau$ and t, denoted $\Delta_\tau e_{jt}$, weighted by region i's ratio of jobs in that manufacturing sub-sector j to overall employment as of time $t-\tau$, $\omega_{ij(t-\tau)}$. We instrument the growth in income $\Delta_\tau I_{i,t}$ with this Bartik instrument, which leads to the following first stage regression:

$$\Delta_\tau I_{i,t} = \pi_0 + \pi_1 \times \widehat{\Delta_\tau e_{it}^m} + \pi_3 \times X_{i,2000} + \eta_{i,t} \tag{3}$$

This empirical strategy is equivalent to a CZ-level fixed effects regression of scaled non-tradable employment on the logarithm of income if we only use two time periods (i.e., only one $t-\tau$ and t). We use a 2-period setup (growth between 2001 and 2007) when we consider long term effects in Section 3.2 below, and this is the same setup as the main analysis in Autor et al. (2013). In the presence of multiple periods (as in our main specification), this regression is equivalent to flexibly controlling for CZ-level effects.

We focus on the sample period between 2000 and 2007 to avoid confounding the estimates with the effect of the 2008 financial crisis. We start in 2000 because of the limited geographic coverage of the QWI dataset before that (as discussed above). Given the structure of the QWI data (described in detail in Section 2.1), our main sample is a "*non-overlapping*" sample that uses observations every two years (2001, 2003, 2005 and 2007). This ensures that we minimize the potential correlation within a region in consecutive years. As robustness checks, we also perform the analysis on an "*overlapping*" sample, where we keep all years between 2000 and 2007. All standard errors are clustered at the CZ level.

3 Entry, expansion and job creation

3.1 Short-term responsiveness

The main test of the responsiveness of startups and established firms to shocks to investment opportunities is shown in Table III, where we run a two-stage least-squares (2SLS) regression (Equation (1)) of the scaled two-year job creation on two-year regional income growth and demographic characteristics as of 2000, the first year of the sample. Panel A reports results from the "*non-overlapping*" sample described above. Column (1) of Table III shows the first stage result (specified in Equation (3)), where we regress regional income growth on the Bartik instrument of manufacturing employment growth. The coefficient of 1.037 means that a 1% increase in the instrument is associated with an 1.037% increase in two-year income growth. In other words, the point estimate indicates that a one-percent increase in the predicted number of manufacturing jobs in a CZ translates into a similar increase in total wages and salaries in the CZ, indicating that the jobs in question are in some sense "middle-income" jobs. The F-statistic of this first stage regression is 49.91, well above the conventional threshold for weak instruments (Stock and Yogo, 2005).

In Column (2), we regress job creation on income growth using ordinary least squares (OLS). The OLS regression shows that the raw, conditional correlation between net employment growth and local income is strong. This regression suffers from significant reverse causality problems, however, as employment growth mechanically makes total income of an area increase. Column (3) is the 2SLS version of Column (2), where income growth is instrumented using the Bartik IV for the same period. The causal effect of income growth on job creation in the non-tradable sector is strongly positive and 22% larger (0.317/0.259) than the OLS estimate. The direction of the bias indicates that in general as incomes rise, jobs are bid out of the non-tradable sector; however, focusing only at the income growth attributable to growth in manufacturing employment removes some of the negative selection.

The remaining columns identify the firms that are mostly responsible for this strong positive relation between jobs in the non-tradable sector and local income growth. Columns

(4) and (5) estimate the same regressions as (2) and (3), but only examine job creation among startups (firms aged 0-1 years old). The coefficient of 0.236 in column (5) means that a one standard deviation change in the local income growth leads to 448 more jobs per CZ created because of new firm formation, or around 318,000 jobs nationwide.[9] Comparing 0.236 with the point estimate in column (3) of 0.317 tells us that startup firms are responsible for 74.5% of the net employment growth in response to changing investment opportunities at a CZ level, even though startups represent only 6% of the total non-tradable employment in the average CZ (as reported in Table I).

Columns (6) through (11) consider the response of 2-3, 4-5 and 6+ year-old firms to total CZ income shocks. Columns (6) through (9) show that firms between 2 and 5 years old in the non-tradable sector are generally unresponsive to shocks to local income. If anything, these firms shed employees in response to income shocks. The point estimates show an economically small negative coefficient (a one standard deviation change in income leads to a drop in employment of 125 and 4 employees per CZ for 2-3 year-old and 4-5 year-old firms, respectively). Columns (10) and (11) complete the picture by showing the positive response of old firms (6+ year-olds) to local economic conditions. The insignificant coefficient of 0.148 translates to the creation of 281 jobs per CZ, or around 200,500 jobs nationwide (63% of the responsiveness of new firms). These magnitudes are especially striking in light of the fact that, on average, the oldest age category comprises over 80 percent of total employment in the average CZ (see Table I).

Panel B of Table III repeats the analysis in Panel A using the overlapping sample (2000 to 2007).[10] The results produced from this bigger sample are similar to those using the non-overlapping sample, with a larger difference between the coefficients of the youngest and oldest firms. The coefficient of local income growth on startup job creation, estimated in column (5) of Panel B, is 0.273, which implies that a one standard deviation increase in the

[9]There are 709 commuting zones in the US, and our results are estimated at the CZ level.

[10]Clustering at the CZ level should largely account for the correlation in standard errors due to the overlapping nature of the sample (we have to measure employment creation over two-year periods because of the way the QWI data are organized). Still, our main sample only uses non-overlapping observations to avoid this problem.

income growth will bring 518 new jobs in start-ups in the non-tradable section per CZ. The effect for firms over 6 years old is statistically indistinguishable from zero.

The Online Appendix shows that the results are similar when we weight the regressions by CZ-level population (Table A.I) and also robust to using counties as the unit of observation instead of CZs (Table A.II). Table A.III shows that results hold when we stack all firm-age observations into one regression (instead of running separate regressions for each age category), and Table A.IV shows that we can use per capita income as the dependent variable instead of an area's total income with similar findings.

3.2 Medium term responsiveness

Although the preceding table indicates that startups are more responsive than established firms, the Bartik instrument may be more suited for longer term analysis given that local manufacturing employment may take longer than 2 years to fully adjust to nationwide shocks to manufacturing. Table IV reports results from a longer time window of six years and compares the responsiveness of all firms created over a six year period to that of all other firms that already existed in a CZ.[11] In this test we use the cross-section of all CZs as of 2007, and consider the net job creation in non-tradable firms during the period between 2001 and 2007. We instrument for the growth in income with the 6-year predicted change in employment in the manufacturing sector for the CZ. In the absence of CZ-level controls, this specification is numerically equivalent to running a regression of the fraction of employment in each firm-age category in 2001 and in 2007 on the logarithm of total income in the two years with CZ fixed effects (to account for time-invariant characteristics of the CZ).

The first stage regression in Table IV (at the six-year horizon) is even stronger than the results in Table III at the two-year level. The F-statistic on the first stage is over 90, and the point estimate for the Bartik-weighted manufacturing income implies a much larger impact on local income than in the shorter horizon analysis. The second stage results in Table IV

[11] As we discuss in Section 2.1, our choice of a six year period is driven by the need to match the age bins provided by the QWI. Two years and six years are the only two time windows that allow us to cleanly measure employment creation of firms of different ages.

show a very similar pattern to what we observe in Table III. The aggregate 2SLS estimate of job creation implies that a 10% increase in local income at the six-year horizon translates into about 4.1% growth in employment (the standard deviation of 6-year income growth is 9.6%). At the six-year horizon, startups are responsible for about 75% of the aggregate responsiveness, which is very similar to what we obtain in Panel A of Table III. Previously existing firms make up the remainder of the aggregate response. The fact that results are stable across different sampling periods reinforces the main message of the paper that new firms account for the majority of the responsiveness of the non-tradable sector to local shocks to investment opportunities.

3.3 Startup responsiveness in the construction sector

Although the non-tradable sector provides the cleanest setting for identification purposes, the construction sector (NAICS 23) provides an important robustness test for a few reasons. First, the construction sector is also largely driven by local demand, especially at the geographic scale of Commuting Zones. Second, some of the features of the non-tradable sector, like the presence of franchisee firms (and thus well proven business models that are simply replicated by new firms), do not apply. Third, the construction sector is responsible for a significant fraction of the variation in employment in booms and busts (see, for example, Charles et al. (2013)).

We repeat our main regressions from Table III for the construction sector in Table V. The findings are similar to those of the non-tradable sector—the total responsiveness of the construction sector is about 0.84 percent for every one percentage point increase in local income, and firms 0-1 years old are responsible for approximately 60 percent of the total responsiveness. For this sector, we see an economically and statistically significant response by firms that are more than 6 years old, but, as before, proportionally to their contribution to total employment in the sector (more than 80 percent of all employees are in this age bin), the response is much smaller than that of new firms. Also, firms between two and five years old do not show any responsiveness on average.

3.4 Creating jobs in good times versus destroying jobs in bad

One question that arises from the results above is whether the responsiveness of new and existing firms is symmetric for positive and negative local income shocks. In particular, the results could be showing that startups fail to create jobs in bad times, rather than creating more jobs in good times, or vice versa.[12] To explore how the responsiveness of startups varies in different types of economic conditions, we report reduced-form regressions of job creation by age category on the Bartik instrument split into terciles (Table A.V of the Online Appendix shows the reduced form regressions without breaking out the instrument by terciles). Results are reported in Table VI, where we omit the lowest terciles of the Bartik instrument. Net change in employment is higher by 0.7 percentage points in CZs that experience median Bartik shocks, and it is 0.9 percentage points higher in CZs with the highest Bartik shocks relative to the lowest tercile. This variation is mostly coming from the startup category, where median shocks are associated with 0.4 percentage points higher net employment creation (as a proportion of total non-tradable employment in the CZ as of 2000), and the CZs with the most positive predicted manufacturing shocks create 0.8 percentage points more jobs in the non-tradable sector. Employment creation in the other three categories of firms is much flatter across the distribution of Bartik shocks, mirroring the results we showed in the previous tables. Overall, this table shows that startups create more jobs in good times, and that the sensitivity is not just coming from the downside.

3.5 Import penetration as an alternative shock

China's ascension to most-favored nation status in the World Trade Organization in 2000 induced a sharp drop in US manufacturing employment, especially in low-skilled, low-wage industries (Pierce and Schott, 2012). This drop, in turn, induced geographic variation in employment responses depending on the degree to which a region was exposed to the sectors that were most hit by Chinese import penetration (Autor, Dorn and Hanson, 2013). Because

[12]The work of Fort et al. (2013), Duygan-Bump et al. (2010), and Fairlie (2013) argues that young firms were particularly hit during the recent recession.

China's ascension to the WTO coincides with a broad trend away from manufacturing in the US economy, this suggests an alternative measure, namely one constructed from import penetration instead of employment shocks.

This "Import Bartik" is constructed in the same vein as our main instrument (shown in Equation (2)), except that we replace the change in nationwide employment by industry $\Delta_\tau e_{jt}$ with the change in import penetration in each industry j (which we denote as $\Delta_\tau imp_{jt}$). The import penetration measure is constructed as the net imports (total imports minus total exports) over the total US shipments for each 4-digit NAICS manufacturing sub-sector in each year. This is then used as the shock to local manufacturing employment. The instrument is formally defined as

$$\widehat{\Delta_\tau e^m_{it}} = \sum_j \omega_{ij(t-\tau)} \times (-\Delta_\tau imp_{jt}) \tag{4}$$

Results from this extension are reported in Table VII. The new first stage regression is reported in Column (1) and shows a very similar point estimate to what we obtain with the previous strategy. The F-statistic for the first stage regression is approximately 25, indicating that import penetration is also a powerful way to generate meaningful variation in manufacturing employment and to shock local income. The remaining columns echo the preceding analysis, both qualitatively and quantitatively. Decompose the aggregate IV response into age categories reveals that about 65% of the total effect comes from startups. The firms in the other age categories show similar responses as before.

3.6 Are collateral effects driving our results?

One of the prominent features of the time period we consider is the nationwide increase in house prices in the US between 2000 and 2007. Given that our instrument may also affect demand for housing (through migration, for example), it is important to explore the implications of changing house prices for our results. There are a couple of channels through which a shock to demand for housing (and higher prices) could impact our analysis. First,

previous work has argued that the increase in house prices had implications for demand in the non-tradable sector (Mian and Sufi, 2011, 2014). This mechanism by itself fits into our empirical strategy, as it amplifies the fact that non-tradable businesses faced higher demand in places with higher values of the Bartik instrument. The second channel by which housing could affect our results is emphasized in recent work by Adelino et al. (2013) and Schmalz et al. (2013), who argue that the increase in house prices also led to easier access to collateral for entrepreneurs, and this led to an increase in employment in firms under 20 employees. This implies that our results could reflect differentially easier financing on the part of firms in different age categories, and not differential ability to pursue investment opportunities.

We should first note that, by looking at the non-tradable sector, our empirical design minimizes the relative contribution of the collateral channel. There are two main reasons. First, the non-tradable sector faces demand shocks that mostly stem from changing local conditions. Thus, the relative contribution of the collateral channel is minimized in this sector. Second, the startup capital requirements in restaurants and retail establishments are large (Adelino et al, 2013): the inventory requirements in retail and the kitchen up-fit costs associated with starting a restaurant place the non-tradable sector above the median in terms of the startup capital requirements. This means that these types of firms are harder to start using a house as collateral. Nevertheless, in spite of these mitigating factors, it is possible that the response we observe on the part of startups might be significantly affected by the value of residential or commercial real estate collateral, and that removing this effect would alter our conclusions.

In order to directly test the impact of changing house prices on the responsiveness of firms to the Bartik shock we split the sample of CZs into areas that experience high and low house price appreciation during the sample period. We define high and low house price appreciation areas using the pooled median of two-year house price growth between 2000 and 2007. Because house prices could themselves be endogenous to employment growth, we also split the sample into high and low elasticity areas as defined by the Saiz (2010) housing

elasticity measure using the median of this measure.[13]

Results are shown in Table VIII.[14] Columns (2) and (4) show that, consistent with our interpretation of the main results, the responsiveness of new firms to shocks to investment opportunities is very similar across CZs that experience high and low house price appreciation during this time period. This suggests that our instrument affects employment creation in firms of this age through shocks to local income, and not due to shocks to house prices. We also find that the results for startup responsiveness are large, statistically significant, and unchanged in the high and low elasticity subsamples (shown in columns (6) and (8)). In sum, these results suggest that our results are primarily being driven by demand-side considerations rather than through a collateral channel.

4 How permanent are the jobs created by new firms?

One of the most natural questions to arise in the context of job creation is whether the jobs being created by new firms are jobs that last. Do these jobs persist or are they short-lived? This question has both a normative and a positive dimension to it: perhaps it is undesirable from a public policy standpoint to promote job creation by new firms if the jobs themselves are short-lived, and therefore the normative question asks whether these jobs are somehow better or worse than ones created by established firms. At the same time, this question reveals alternative mechanisms that may be ultimately driving the result. For example, perhaps the greater responsiveness of new firms reflects misjudgments about the magnitude of the economic shocks. Under this view, new firm creation is a mechanism for seizing on short-lived opportunities and it is possible that a form of irreversibility makes hiring employees in established businesses inherently difficult.

[13]The Saiz (2010) housing supply elasticity is a cross-sectional Metropolitan Statistical Area (MSA)-level measure and it includes a geographic and regulatory component that are meant to capture the relative ease with which the housing stock in an area can adjust to a positive shift in the demand for housing. Areas where is it relatively easy to build tend to see more construction (and smaller house price increases) when demand for housing increases, whereas low elasticity areas (those where it is hard to build) tend to see higher prices and lower levels of new construction. This measure is available for 269 MSAs in the U.S.

[14]Because we run the tests only for CZs for which we have house price and elasticity data, Columns 1, 3, 5 and 7 show the first stage results for all subsamples, and in all cases we obtain a strong first stage.

Table IX examines these issues. It groups newly created firms by cohort and compares the magnitude of their initial job creation to the magnitude of later job creation or destruction. Because the LEHD groups firms into 24-month age buckets until firms are greater than 60 months old, the total net employment in firms that are 2-3 years old $t+2$ years later (and 4-5 years old $t+4$ years later) corresponds to jobs among the same cohort of firms started at time t. Using this feature of the data, the table examines employment over time for each cohort based on whether the geographic region in question experienced a high, medium or low (Bartik) total income shock. To maintain consistency with previous tables, we express total net jobs as a fraction of year 2000 total population in the commuting zone.

Panel A groups each cohort by terciles of the Bartik instrument. Pooling across the four cohorts for which complete data are available, startups in regions that experienced manufacturing shocks in the top tercile added jobs totaling 5.43% of the year 2000 local employment. The middle column indicates that about 80% of these jobs remain after two years. The right-most column indicates that around 70% of these jobs remain after four years. Commuting zones in the lowest tercile of manufacturing shocks witnessed startups creating fewer jobs per capita (4.39% as opposed to 5.43%, a highly statistically significant difference), and about two-thirds of these jobs remain after four years in both high and low shock regions. In Table A.VI of the Online Appendix we show that similar patterns hold across each cohort.

Panel B repeats the analysis of Panel A but groups commuting zones according to the magnitude of their income growth rather than according to the magnitude of the shock. The results are similar. In each cohort, the proportion of new jobs created that remain after four years is higher in the high income growth area than in the low income growth area.

The analysis presented in Table IX does not support the idea that the jobs created by startups as a result of local investment opportunities are particularly short-lived. There is no evidence that the extra jobs created in high job creation regions are less likely to persist than the ones in low creation regions – in general, about 7 out of 10 jobs created are still there after 4 years. This evidence speaks against the idea that net job creation among startups results

from misjudging the magnitude of the economic opportunity. It also speaks against the idea that new firm creation is primarily driven by the desire to organize temporary employment.

5 Access to capital and startup job creation

The evidence thus far clearly favors the hypothesis that startups are more responsive to local income shocks. However, it is far from obvious that this should be the case in the non-tradable sector, where technological advantage is less important and young firms are likely to face more severe financing constraints than older, more established firms. Even though startups are more responsive, it could still be the case that financing constraints create economically meaningful barriers preventing them from taking advantage of changing opportunities (Hellman and Puri, 2000; Cagetti and De Nardi, 2006; Kerr and Nanda, 2009; Chemmanur et al., 2011; Lelarge et al., 2010; Kerr et al., 2011; Chemmanur and Fulghieri, 2014).

To study how access to finance interacts with firms' ability to pursue investment opportunities, we use the share of local banks in a CZ as a measure of local access to finance. A "local" bank is defined as one that has 75% or more deposits concentrated in one CZ (following Cortes (2013)). We then construct the local bank share of a CZ, defined as the share of all deposits in a CZ that are held by banks local to that CZ. The identifying assumption is that, as shown by Petersen and Rajan (1994, 2002), small (local) banks are more likely to be able to lend to small firms, and especially so to more opaque firms. Lending to old (established) firms is likely to require less screening and monitoring than lending to new firms in an area, so potential entrepreneurs in CZs with a higher proportion of local banks are likely to have better access to financing. In order to mitigate the effect of labor market dynamics on the evolution of the local banking sector, we use a time-invariant CZ-level measure by calculating the time-series median of the deposit concentration in local banks for each CZ. As shown in Table I, the share of deposits held by local banks account, on average, for 31% of all CZ deposits.

We start by confirming that local banking is important for firm creation. Table X performs a cross-sectional OLS regression of employment in young and old firms on the share of local banks. The dependent variable is the time-series median of the share of CZ employment in 0-1 year-old firms (column (1)) and in 6+ year-old firms (column (2)). The independent variables are the time-series median of the local bank share and demographic covariates. Consistent with the literature (e.g., Guiso et al., 2004), we find that the strength of local banks in an area is positively correlated with the share of employment in startup firms (parameter estimate is 0.016) and negatively correlated with the share of employment in existing older firms (estimate is -0.036). The long term average of the share of employment in startups is 6.4%, and a one standard deviation change in the share of local banks yields a change of 0.3 percentage points in the employment in those types of firms. This result is consistent with the share of deposits held by local banks capturing the ease of access to finance by startup firms.

To identify the effect of access to bank financing on firms' ability to capture local investment opportunities, we introduce the local bank share into the specifications by adding the main effect of this measure and its interaction with the instrumented income growth. For interpretation purposes, we incorporate this measure as an indicator variable, where $I_{High\ LB}$ is equal to 1 if commuting zone i's long-term median of the share of local banks is higher than the median share of all CZs. Specifically, we estimate a modified version of Equation (1) that includes the additional dummy and its interaction by 2SLS:

$$\begin{aligned}\Delta_\tau e^a_{it} = \alpha &+ \beta \times \Delta_\tau I_{i,t} \\ &+ \gamma' \times I_{High\ LB,i} \\ &+ \beta' \times \Delta_\tau I_{i,t} \times I_{High\ LB,i} \\ &+ \gamma \times \text{Controls}_{i,2000} + \varepsilon_{i,t}.\end{aligned} \tag{5}$$

The interaction term β' can be interpreted as the "additional" responsiveness to local investment opportunities of firms in areas with easier access to finance relative to those in areas with worse access to bank finance. We instrument the income growth and the inter-

action of income growth and the high local bank share dummy with the Bartik instrument and its interaction with the same dummy.

Table XI reports the estimation results of Equation (5) for firms of different ages. Column (3) shows the regression for startups. The responsiveness to income growth is 0.144 for startups. If the CZ is an area with a high share of deposits in local banks, the responsiveness of the startups increases to 0.309 (0.144+0.165)—more than doubling the initial responsiveness. Interestingly, the responsiveness of old firms decreases in areas with high share of local banks. This suggests that in areas with easier access to credit for new firms the responsiveness of firm entry to new opportunities is strongly increased, and that the heightened responsiveness of firm creation may even crowd out the response of existing firms.

6 Firm age and firm size

The empirical strategy in the preceding sections establishes a causal link between economic shocks and job creation across the firm age distribution, which is consistent with a few different mechanisms. For one, startups are often thought to be nimbler than older firms, especially in terms of their ability to seize on disruptive innovations—the non-tradables sector, however, is not typically thought of as one characterized by rapid technological disruption, nor is it one in which highly skilled labor plays a critical role. Perhaps the nimbleness stems from organizational flexibility–perhaps their small size, as much as their age, allows them to react more quickly–or perhaps the additional layers of bureaucracy in older firms create an organizational or geographic barrier between the decision-maker in a mature firm and the economic opportunity.

In this section we address these possibilities by exploring the joint roles of firm size and firm age for explaining our results. Specifically, we compare the responsiveness not just of new and existing firms, but also of large and small firms to local changes in investment opportunities.

The QWI data we have used thus far does not allow us to compare firms of different sizes,

so we turn to data from the US Census Business Dynamics Statistics, described in detail in Section 2. As we discuss before, this dataset differs in some important ways from the one constructed for the previous analysis. In particular, it contains Metropolitan Statistical Area (MSA)-level data instead of county-level data, and it also does not break down employment by sector. We cannot, therefore, consider the effect of the shock on different sectors in isolation. It does, however, contain age and size breakdowns instead of just age classifications.

We proceed exactly as we have above, using the Bartik manufacturing instrument for local income shocks, to confirm that our findings extend to job creation in all sectors (not just non-tradables). We should emphasize that, by construction, our experiment is most applicable to the "purely" non-tradable industries (NAICS sectors 44-45 and 72), but the other sectors in the economy should also respond to changes in local income.[15] The results are reported in Table XII. We first show descriptive statistics for the number of employees (Panel A), as well as the number of firms (Panel B), in each size and age bin. As in the QWI, the majority of employees are in older firms, and over 60 percent of jobs are in firms with more than 100 employees. Of the employees in large firms, almost all are in firms that are over 6 years old, whereas the smaller firms dominate the other three categories (0-1, 2-3 and 4-5 year old firms). In Panel B it becomes apparent that large, new firms are very rare, and that, as one would expect, smaller firms are the most numerous across all age categories.

Panel C shows the regression results. For brevity, we have reported only the point estimates from the second stage regression on the main variable of interest, instrumented income growth (the first stage regressions, as well as the regressions including all controls, are in Table A.VIII of the Online Appendix). The table shows the results of the breakdown of the age categories into three size bins: firms with fewer than 20 employees, those with more than 20 and fewer than 100 employees, and those with more than 100 employees. We also show in the appendix that our results extend to gross job creation (Table A.IX).

We find that the responsiveness of new firms comes almost exclusively from small firms (with fewer than 20 employees), whereas the responsiveness of older firms comes from those

[15]Table A.VII in the Online Appendix shows that the results are very consistent when we perform our analysis using the QWI data for all sectors (rather than just the non-tradable industries) and the BDS data.

with more than 100 employees. This suggests that geographic proximity is unlikely to be an important reason for the responsiveness we observe in the previous sections. Indeed, while it is new small firms that respond to higher income, the fact that we see no responsiveness from small old firms suggests that there are other mechanism at play behind the patterns in the previous sections. The result on large older firms is consistent with the view in Gromb and Scharfstein (2002) that these types of firms may provide a safe environment for pursuing investment opportunities because of the ability to redeploy individuals through internal labor markets if projects fail (which is not the case in small mature firms). The lack of responsiveness of firms aged 2 to 5 years is present across all size categories. Interestingly, small firms aged 2 years or more all seem to lose jobs when income rises, potentially pointing to a crowding out effect of startups relative to older ones. As before, the positive and significant result for firms aged six years or more is much smaller relative to the proportion that these firms make up of the economy than the effect we find for new firms.

Although the point estimates are not immediately comparable to those from the preceding sections, these results using all sectors of the economy reinforce and amplify our previous results. In particular, the findings in this table support the notion that some unobserved firm characteristics that are proxied by firm age correlate with job creation: new firms that possess these characteristics grow and thrive, becoming larger, older firms that continue to respond to changing economic conditions. Firms that lack these characteristics languish. This perspective is consistent both with Puri and Zarutskie (2012), whose focus is on venture- versus non-venture-backed firms but who show that a tiny fraction of new firm starts are responsible for a large fraction of overall employment, and Hurst and Pugsley (2011), who conversely show that a large number of small businesses simply have no desire to grow.

7 Conclusion

Understanding the mechanics of job creation has become a central objective for academic researchers, politicians and policy makers alike, especially in the wake of the financial crisis

and ensuing economic recession of 2007-2009. Recent evidence tells us that startups are responsible for most job creation. This paper explores why this is the case.

One potential channel is that startups create jobs because they are the source of new investment opportunities through innovation, but there is otherwise nothing different about firm entry and firm expansion. Through this channel, startups *cause* demand shocks through their innovative activities; these demand shocks in turn create jobs. The second channel is an entrepreneurship channel, whereby holding constant differences in the innovativeness of different-aged firms, startups create jobs because they are quicker to *react* to local demand shocks. Under the entrepreneurship channel, they are not a by-product of the job creation process, they are central to it.

Focusing primarily on firms in the non-tradable sector allows us to focus on firm responsiveness to changes in opportunities. This empirical design allows us to test a geographically segmented version of q-theory. The thought experiment is as follows: when income from the local manufacturing sector changes for reasons unrelated to the performance of a given region itself, this ripples through the local economy, causing retail stores, restaurants, and local service organizations to expand or contract in response to the shock. Who responds, new or existing firms? We find strong evidence that this is an important reason why startups create so many jobs.

In this sense, this paper adds a new dimension to the entrepreneurial spawning literature found in Bhidé (2000), Klepper (1996), or Klepper and Sleeper (2005) and others, which observes that many new businesses are started by people who already work in existing firms. The innovation channel would suggest that this occurs because employees generate new ideas that they appropriate for themselves because the large firm is not conducive to commercialization. Our entrepreneurial responsiveness findings suggest that this mechanism does not simply arise because old businesses are ill-suited to gamble on the new ideas generated by their employees: they instead either fail to recognize or act upon the opportunities in their midst (see also Chatterji (2008)). Our finding that new firm formation responds strongly to new investment opportunities is also consistent with Glaeser, Kerr, and Kerr (2013), who

show that the amount of local entrepreneurial human capital leads to future city growth.

Why are startups so much more responsive to local economic shocks than older firms, even in the non-tradable sector, where the widely touted technological and innovative advantages of startups are probably unlikely to be important? Ultimately this is beyond the scope of this paper, but the question suggests that factors such as bureaucratic inflexibility, unobserved characteristics tied to the entrepreneur (Gompers et al. (2010)), and the strength of incentives play an important role even in less technologically sophisticated sectors. This is an important and ongoing research question in the economics of productivity, organizations and management (see (Bloom et al., 2013; Bloom and Van Reenen, 2007)).

These findings open the door to many fruitful questions, including questions about the precise economic mechanisms that allow startups to move so much more quickly than established firms to seize opportunities. One possible mechanism is that these opportunities simply go unrecognized in more mature firms because the internal bureaucratic and governance mechanisms impair their ability to recognize new possibilities. Another possibility is that more mature firms see the opportunities but cannot act upon them. Our preliminary investigations along these lines suggest the latter is more likely: if anything, the larger old firms, which presumably have more management layers and more physical distance to the source of the new idea than smaller old firms, are the more responsive among older firms. At the same time, access to capital seems to be a quantitatively important impediment to startup responsiveness, even in settings in which the innovation channel is minimized. Further distinguishing these alternatives is challenging giving current data restrictions, but could shed light on important policy questions surrounding the widespread desire to spur entrepreneurial activity in the US and abroad.

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Table I: Summary statistics for commuting zones (1999 to 2007)

This table reports the summary statistics for all Commuting Zone-Year observations in our sample, from 1999 to 2007. For each variable, we show the pooled average, standard deviation, 25th, 50th and 75th percentiles. We use the 2000 Department of Agriculture definition of Commuting Zones (CZs). Income in a CZ is defined as the total CZ wages and salaries, extracted from the county-level IRS Statistics of Income. Population, number of households, and the percentage of 25yr+ with a high school (bachelor's) degree are all obtained from the 2000 Census and aggregated from the county-level to the CZ-level. Total Labor Force is obtained from the Bureau of Labor Statistics. Banking Sector variables are calculated from the FDIC Summary of Deposits. HHI is the CZ-level Herfindahl index of the banking sector, calculated using the shares of deposits, % of Large Banks is the percentage of the CZ deposits concentrated in Top 30 largest US banks. % of Local Banks is the percentage of deposits concentrated in "local" banks (defined in detail in the Section 2). Employment is calculated from the QWI data published by the LEHD program in Census. Non-tradable sector includes 2-digit NAICS 44-45 (Retail Trade) and 2-digit NAICS 72 (Accommodation and Food Services); Construction sector is 2-digit NAICS 23.

	N	Mean	Std.Dev	p25	p50	p75
Number of Counties in the Commuting Zone	3614	4.93	2.38	3	5	6
2yr Income Growth (Total Wages and Salaries)	3614	0.02	0.05	0	0.02	0.04
Manuf. Employment Bartik	3614	-0.01	0.01	-0.02	-0.01	0
Import Bartik	3614	-0.01	0.01	-0.01	0	0
Population as of 2000	3614	457405	984236	78585	158442	398505
Total Labor Force	3614	233245	502440	37376	77681	202946
Household as of 2000	3614	172988	358495	30443	60412	152251
% of 25yr+ with High School Degree	3614	79.35	7.17	74.83	80.9	84.44
% of 25yr+ with Bachelor's Degree	3614	18.88	6.4	14.29	17.45	22.15
Non-tradable Employment (Aggregate)	3614	37045	80667	3703	10132	30198
Non-tradable Employment (Startups)	3614	2307	5326	232	634	1855
Non-tradable Employment (2-3 year-olds)	3614	1857	4192	196	518	1517
Non-tradable Employment (4-5 year-olds)	3614	1579	3561	166	451	1317
Non-tradable Employment (6+ year-olds)	3614	31302	67885	3000	8507	25296
Construction Employment (Aggregate)	3346	9972	21509	889	2493	8053
Construction Employment (Startups)	3346	780	1658	74	207	633
Construction Employment (2-3 year-olds)	3346	761	1634	69	195	620
Construction Employment (4-5 year-olds)	3346	689	1481	61	172	574
Construction Employment (6+ year-olds)	3346	7742	16894	669	1855	6242
Banking Sector HHI	3614	0.13	0.07	0.09	0.12	0.15
% of Deposit from Large Banks	3614	0.37	0.23	0.18	0.33	0.55
% of Local Bank)	3614	0.31	0.18	0.18	0.3	0.44

Table II: Job creation and firm age (Non-tradable sector)

This table summarizes the 2-year job creation in the non-tradable sector (NAICS2= 44, 45, 72) in a commuting zone, sorted by firm age. The data is extracted from the QWI data published by the LEHD program in Census, and is calculated by exploiting the mechanical transition of firms across firm age categories (details in Section 2). Panel A reports the average number of jobs created by CZ in each age category and year, and Panel B shows the average net job creation by CZ and year scaled by the total employment in the non-tradable sector in the CZ as of 2000.

Panel A: Commuting Zone Level, Raw Job Creation						
Year	N	0-1 yrs	2-3 yrs	4-5 yrs	6+ yrs	Total
2000	350	2434.74	-426.04	-187.59	-194.49	1626.66
2001	368	2051.27	-510.36	-289.43	-1991.84	-740.52
2002	431	2299.21	-598.25	-406.36	-2611.80	-1317.20
2003	470	2232.23	-332.90	-304.50	-746.99	847.92
2004	484	2364.33	-381.62	-206.74	-650.28	1125.63
2005	498	2307.62	-381.55	-197.59	-867.46	861.02
2006	506	2408.26	-493.16	-262.50	-839.81	812.67
2007	507	2326.47	-470.07	-227.61	-831.83	796.84
Pooled Average		2307.35	-446.55	-259.30	-1071.18	530.28

Panel B: Commuting Zone Level, Scaled by 2000 Employment						
Year	N	0-1 yrs	2-3 yrs	4-5 yrs	6+ yrs	Total
2000	350	5.24%	-1.00%	-0.55%	-1.02%	2.68%
2001	368	4.68%	-1.09%	-0.64%	-4.66%	-1.71%
2002	431	4.65%	-1.12%	-0.80%	-4.53%	-1.80%
2003	470	4.77%	-0.77%	-0.65%	-1.22%	2.13%
2004	484	4.99%	-0.86%	-0.42%	-1.57%	2.15%
2005	498	5.12%	-0.91%	-0.50%	-2.21%	1.49%
2006	506	5.34%	-1.03%	-0.50%	-1.90%	1.91%
2007	507	5.01%	-1.03%	-0.50%	-1.44%	2.05%
Pooled Average		4.98%	-0.97%	-0.56%	-2.25%	1.20%

Table III: Job creation and investment opportunities

This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth. We run regressions for the aggregate change in employment and for the change in employment in 4 age categories (startups, 2-3, 4-5, and 6+ years old). Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as columns (2) and (3) for firms of different ages. Panel B performs the same analysis as Panel A on an overlapping sample of 2000 to 2007. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel A: Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.037***										
	(7.065)										
Income Growth		0.259***	0.317**	0.121***	0.236***	-0.003	-0.066**	-0.004	-0.002	0.145*	0.148
		(2.604)	(2.297)	(7.218)	(2.952)	(-0.452)	(-2.174)	(-0.578)	(-0.077)	(1.789)	(1.057)
ln(Total Laborforce)	-0.123***	-0.039**	-0.032	0.002	0.017	-0.002	-0.010*	0.001	0.001	-0.041**	-0.040*
	(-5.999)	(-2.167)	(-1.340)	(0.221)	(1.172)	(-0.509)	(-1.764)	(0.429)	(0.361)	(-2.408)	(-1.690)
% Highschool Edu	-0.576**	-0.317	-0.307	0.664***	0.685***	-0.064	-0.076	-0.055	-0.054	-0.863***	-0.862***
	(-2.482)	(-1.517)	(-1.498)	(4.036)	(4.315)	(-1.216)	(-1.410)	(-1.640)	(-1.594)	(-4.692)	(-4.704)
ln(Total CZ Wages)	0.109***	0.036**	0.029	-0.000	-0.014	0.001	0.009*	-0.001	-0.001	0.036**	0.035*
	(6.216)	(2.226)	(1.372)	(-0.055)	(-1.066)	(0.423)	(1.677)	(-0.550)	(-0.442)	(2.431)	(1.675)
Constant	1.384***	0.420**	0.364	-0.032	-0.196	0.014	0.104*	-0.013	-0.014	0.451**	0.470*
	(6.322)	(2.139)	(1.388)	(-0.306)	(-1.233)	(0.351)	(1.660)	(-0.480)	(-0.351)	(2.493)	(1.810)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843
R-squared	0.260	0.107	0.105	0.109	0.065	0.013	-0.051	0.011	0.011	0.075	0.075
F-Statistics	49.91										

Panel B: Overlapping sample (2000 to 2007)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	0.957***										
	(6.604)										
Income Growth		0.187*	0.144	0.114***	0.273***	-0.006	-0.093***	-0.001	-0.008	0.080	-0.028
		(1.919)	(1.027)	(5.874)	(3.411)	(-1.120)	(-3.642)	(-0.148)	(-0.423)	(1.087)	(-0.195)
ln(Total Laborforce)	-0.128***	-0.038**	-0.044*	0.008	0.029*	-0.006	-0.017***	-0.001	-0.001	-0.039**	-0.053**
	(-7.665)	(-2.552)	(-1.869)	(0.744)	(1.909)	(-1.638)	(-3.717)	(-0.243)	(-0.471)	(-2.584)	(-2.308)
% Highschool Edu	-0.539**	-0.357*	-0.365*	0.688***	0.715***	-0.079*	-0.094**	-0.067**	-0.068**	-0.899***	-0.918***
	(-2.208)	(-1.753)	(-1.759)	(4.136)	(4.508)	(-1.775)	(-1.965)	(-2.348)	(-2.392)	(-5.026)	(-5.025)
ln(Total CZ Wages)	0.115***	0.035***	0.040*	-0.005	-0.024*	0.005	0.015***	0.000	0.001	0.035***	0.047**
	(7.740)	(2.653)	(1.905)	(-0.579)	(-1.795)	(1.486)	(3.553)	(0.124)	(0.387)	(2.632)	(2.298)
Constant	1.441***	0.409**	0.499**	-0.096	-0.326**	0.060	0.187***	0.005	0.017	0.440***	0.622**
	(7.814)	(2.571)	(1.963)	(-0.812)	(-1.963)	(1.476)	(3.580)	(0.201)	(0.478)	(2.718)	(2.474)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,614	3,614	3,614	3,614	3,614	3,614	3,614	3,614	3,614	3,614	3,614
R-squared	0.213	0.099	0.098	0.108	0.018	0.017	-0.119	0.021	0.019	0.066	0.058
F-Statistics	43.61										

Table IV: Job creation and investment opportunities—medium-term analysis

This table shows regressions of long-term net employment creation at the commuting zone (CZ) level on longer-term measures of local income growth. Observations are at the CZ-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) between 2001 and 2007 in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the growth of total wages and salaries in the CZ between 2001 and 2007. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (7) perform similar regressions as columns (2) and (3) for firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. Heteroskedasticity-robust t-statistics are shown in parenthesis. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

	Job Creation from 2001 to 2007						
		Aggregate		0-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	1st Stage	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.462***						
	(9.710)						
Income Growth		0.484***	0.408***	0.188***	0.295***	0.296***	0.113
		(7.162)	(2.576)	(4.654)	(3.191)	(4.914)	(0.744)
ln(Total Laborforce)	-0.405***	-0.034	-0.070	-0.002	0.047	-0.032	-0.116
	(-9.613)	(-0.747)	(-0.803)	(-0.080)	(0.932)	(-0.691)	(-1.336)
% Highschool Edu	-2.374***	-1.016	-1.111*	1.643***	1.775***	-2.658***	-2.885***
	(-4.230)	(-1.607)	(-1.690)	(4.150)	(4.316)	(-4.592)	(-4.842)
ln(Total CZ Wages)	0.359***	0.036	0.067	0.005	-0.039	0.030	0.106
	(9.576)	(0.905)	(0.874)	(0.208)	(-0.866)	(0.760)	(1.362)
Constant	4.600***	0.449	0.837	0.003	-0.536	0.446	1.371
	(10.099)	(0.906)	(0.887)	(0.010)	(-0.968)	(0.902)	(1.454)
Observations	489	489	489	489	489	489	489
R-squared	0.439	0.216	0.212	0.163	0.143	0.125	0.103
F-Statistics	94.29						

Table V: Job creation and investment opportunities—Construction sector

This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth, using data from the construction sector (NAICS2 = 23). We run regressions for the aggregate change in employment and for the change in employment in 4 age categories (startups, 2-3, 4-5, and 6+ years old). Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the construction sector over the previous two years created in firms of each age category, and this variable is scaled by the total construction employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as columns (2) and (3) for firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.195***										
	(7.531)										
Income Growth		0.821***	0.840***	0.318***	0.535***	0.060***	-0.047	0.031*	-0.055	0.412***	0.407**
		(3.113)	(4.041)	(3.117)	(5.254)	(2.803)	(-0.604)	(1.955)	(-1.151)	(2.935)	(2.245)
ln(Total Laborforce)	-0.122***	0.020	0.022	-0.012	0.015	0.010	-0.003	0.003	-0.007	0.018	0.017
	(-5.963)	(0.347)	(0.471)	(-0.542)	(0.750)	(1.166)	(-0.258)	(0.530)	(-0.870)	(0.368)	(0.384)
% Highschool Edu	-0.802***	1.177**	1.183**	0.423	0.492	0.484**	0.449**	-0.060	-0.087	0.330	0.328
	(-3.112)	(2.151)	(2.237)	(1.145)	(1.451)	(2.128)	(2.109)	(-0.640)	(-0.943)	(0.583)	(0.602)
ln(Total CZ Wages)	0.108***	-0.021	-0.023	0.009	-0.016	-0.009	0.003	-0.004	0.006	-0.016	-0.016
	(6.160)	(-0.414)	(-0.555)	(0.443)	(-0.861)	(-1.138)	(0.300)	(-0.678)	(0.777)	(-0.395)	(-0.412)
Constant	1.386***	-0.291	-0.359	0.152	-0.172	-0.154	-0.010	-0.039	0.082	-0.250	-0.258
	(6.296)	(-0.456)	(-0.675)	(0.620)	(-0.752)	(-1.445)	(-0.080)	(-0.552)	(0.893)	(-0.457)	(-0.514)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,705
R-squared	0.261	0.144	0.144	0.140	0.096	0.032	-0.003	0.032	-0.006	0.054	0.054
F-Statistics	56.72										

Table VI: Job growth by firm age in good and bad times

This table shows regressions of net employment creation at the commuting zone (CZ) level on the national change in manufacturing employment at the sub-sector level weighted by the local region's exposure to that sub-sector (Manufacturing Employment Bartik). The analysis is performed on a categorized version of the Bartik instrument divided into terciles. We run regressions for the aggregate change in employment and for the change in employment in 4 age categories (startups, 2-3, 4-5, and 6+ years old). Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000 and uses non-overlapping samples in years 2001, 2003, 2005 and 2007. T-statistics in parenthesis are based on standard errors clustered at the CZ level. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Categorized IV Variable, Non-overlapping Sample (01, 03, 05, 07)					
	Aggregate	0-1 year-olds	2-3 year-olds	4-5 year-olds	6+ year-olds
	(1)	(2)	(3)	(4)	(5)
$Dummy_{MedianBartik}$	0.007**	0.004**	-0.000	-0.001	0.004
	(2.005)	(2.492)	(-0.161)	(-1.363)	(1.138)
$Dummy_{HighBartik}$	0.009**	0.008***	-0.002**	-0.000	0.003
	(2.409)	(3.627)	(-2.524)	(-0.692)	(1.004)
ln(Total Laborforce)	-0.070***	-0.011	-0.002	0.002	-0.059***
	(-4.979)	(-1.041)	(-0.698)	(0.683)	(-4.556)
% Highschool Edu	-0.511**	0.533***	-0.043	-0.045	-0.956***
	(-2.132)	(3.081)	(-0.844)	(-1.360)	(-4.744)
ln(Total CZ Wages)	0.063***	0.011	0.002	-0.002	0.052***
	(5.040)	(1.187)	(0.609)	(-0.812)	(4.552)
Constant	0.764***	0.113	0.019	-0.018	0.650***
	(5.003)	(0.994)	(0.496)	(-0.757)	-4.715
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843
R-squared	0.072	0.073	0.019	0.012	0.063

Table VII: Import penetration as the local income shock

This table performs the same analysis as Table III using a different instrument for the local income growth — a measure of local import penetration. This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth. Regressions are run for aggregate change in employment and for the change in employment in each of the 4 different age categories. Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We instrument for this variable using an interaction of changes in import penetration by four-digit NAICS manufacturing sector with the preexisting manufacturing composition in a CZ. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Import Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as column (2) and (3) for the net change in employment in firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis. Standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Import Bartik	0.952***										
	(4.958)										
Income Growth		0.259***	0.492**	0.121***	0.316**	-0.003	-0.109**	-0.004	-0.005	0.145*	0.289
		(2.604)	(2.527)	(7.218)	(2.249)	(-0.452)	(-2.414)	(-0.578)	(-0.148)	(1.789)	(1.414)
ln(Total Laborforce)	-0.125***	-0.039**	-0.010	0.002	0.027	-0.002	-0.015**	0.001	0.001	-0.041**	-0.022
	(-6.036)	(-2.167)	(-0.315)	(0.221)	(1.293)	(-0.509)	(-2.157)	(0.429)	(0.165)	(-2.408)	(-0.713)
% Highschool Edu	-0.350	-0.317	-0.275	0.664***	0.700***	-0.064	-0.084	-0.055	-0.055	-0.863***	-0.837***
	(-1.532)	(-1.517)	(-1.397)	(4.036)	(4.399)	(-1.216)	(-1.483)	(-1.640)	(-1.628)	(-4.692)	(-4.605)
ln(Total CZ Wages)	0.111***	0.036**	0.009	-0.000	-0.023	0.001	0.014**	-0.001	-0.001	0.036**	0.019
	(6.242)	(2.226)	(0.328)	(-0.055)	(-1.214)	(0.423)	(2.090)	(-0.550)	(-0.220)	(2.431)	(0.693)
Constant	1.382***	0.420**	0.114	-0.032	-0.310	0.014	0.166**	-0.013	-0.009	0.451**	0.270
	(6.211)	(2.139)	(0.342)	(-0.306)	(-1.335)	(0.351)	(2.073)	(-0.480)	(-0.159)	(2.493)	(0.790)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843
R-squared	0.242	0.107	0.076	0.109	-0.017	0.013	-0.170	0.011	0.011	0.075	0.062
F-Statistics	24.58										

Table VIII: Job creation and investment opportunities in high and low house price appreciation areas

This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth. Observations are at the CZ-year-firm age level. The analysis is performed in subsamples with different local housing market conditions during the 2000-2007 period. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in startup firms (0-1 years old), and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We instrument for income growth using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. We perform the analysis on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Local house price growth is the two-year house price index growth provided by Federal Housing Finance Agency; Saiz elasticity is provided by Saiz (2010) and it measures the geographic and regulatory constraints to the supply of housing in 269 MSAs in the U.S. The sample is categorized into "high" and "low" by the median of each variable. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics but omitted here for brevity. All regressions include year fixed effects. T-statistics are shown in parenthesis. Standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High House Price Growth		Low House Price Growth		Low Saiz Elasticity		High Saiz Elasticity	
		0-1 yrs		**0-1 yrs**		**0-1 yrs**		**0-1 yrs**
	1st Stage	IV	1st Stage	IV	1st Stage	IV	1st Stage	IV
Manuf. Employment Bartik	2.240***		1.496***		2.548***		1.937***	
	(4.723)		(7.095)		(5.306)		(8.281)	
Income Growth		0.297***		0.346***		0.274***		0.333***
		(4.250)		(4.430)		(3.553)		(4.247)
ln(Total Laborforce)	-0.079	0.042***	-0.091***	0.023*	-0.057	0.059***	-0.134***	0.026
	(-1.645)	(3.215)	(-5.103)	(1.710)	(-0.965)	(3.423)	(-4.965)	(1.571)
% Highschool Edu	-0.960*	0.214	-1.625***	0.574**	-1.646	0.809**	-2.112***	0.247
	(-1.768)	(0.926)	(-3.952)	(2.512)	(-1.585)	(2.121)	(-5.131)	(0.859)
ln(Total CZ Wages)	0.071*	-0.035***	0.080***	-0.016	0.049	-0.050***	0.120***	-0.020
	(1.800)	(-2.961)	(4.954)	(-1.284)	(1.006)	(-3.196)	(5.039)	(-1.288)
Constant	0.959**	-0.432***	1.129***	-0.262*	0.790	-0.652***	1.626***	-0.273
	(1.983)	(-2.978)	(5.710)	(-1.722)	(1.377)	(-3.514)	(5.507)	(-1.412)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	506	506	507	507	389	389	385	385
R-squared	0.188		0.477	0.143	0.145		0.536	0.068
F-Statistics	22.31		50.33		28.15		68.57	

Table IX: Startup job creation and job resilience

This table shows the share of employment of four cohorts of new firms (between 2000 and 2003) and asks how many jobs remain after 2 or 4 years in those firms. The table shows the number of employees in these cohorts of firms at the time that they are started, 2 years later, and 4 years later. Employment is scaled by the total employment in each CZ as of 2000. The sample includes only firms until 2003 because that is the last year that we can track firms for a full four years. T-statistics for the difference between high and low shock areas are shown in parenthesis on the last line of each panel.

Panel A: Bartik Shocks (2000-2003 cohorts)

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low Bartik Area	4.39%	3.44%	2.94%
Medium Bartik Area	5.13%	4.06%	3.56%
High Bartik Area	5.43%	4.40%	3.85%
High Bartik-Low Bartik	1.04%***	0.96%***	0.91%***
	(9.94)	(9.60)	(7.55)

Panel B: Income Shocks (2000-2003 cohorts)

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low ΔIncome Area	4.45%	3.64%	3.13%
Medium ΔIncome Area	4.77%	3.79%	3.25%
High ΔIncome Area	5.74%	4.48%	3.96%
High ΔIncome-Low ΔIncome	1.29%***	0.84%***	0.83%***
t-statistics	(12.33)	(8.70)	(7.08)

Table X: Local bank share and employment in different-aged firms

This table analyzes the relationship between the share of deposits held by "local banks" and the employment distribution across young and old firms. If 75% or more of a bank's deposits are concentrated in one CZ we define this bank as "local". The local bank share is the percentage of total deposits in a CZ held by "local" banks. In order to mitigate the effect of labor market dynamics on the evolution of the local banking sector, we calculate a time-invariant CZ-level measure—Local Bank Share—by calculating the time-series median of the share of local banks in the CZ. In column (1), the dependent variable is the time-series median level of the share of employment in firms $<$ 1 year old in the CZ, and in column (2) the dependent variable is the time-series median level of employment share in firms $>$ 6 years old. Control variables are extracted from the 2000 Census. Both regressions include state fixed-effects. Heteroskedasticity-robust t-statistics are in parenthesis. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

	(1) % of Firms $\leqq$ 1 Year Old	(2) % of Firms $\geqq$ 6 Years Old
% of Local Banks	0.016**	-0.036**
	(2.406)	(-2.210)
ln(Total Laborforce)	-0.003	0.011
	(-0.308)	(0.397)
% Highschool Edu	0.742***	-1.709***
	(3.595)	(-3.380)
ln(Total CZ Wages)	-0.000	-0.001
	(-0.045)	(-0.024)
Constant	0.033	0.870***
	(0.298)	(2.879)
State FE	Yes	Yes
Number of CZs	507	507
R-squared	0.218	0.264

Table XI: Access to finance and the responsiveness to investment opportunities

This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth, an indicator for above median share of deposits held by local banks, and the interaction of the two variables. Local banks are defined as those with 75% or more of its deposits in one CZ. $I_{(High\ LB)}$ is a dummy variable equal to 1 if the CZ's local bank share is higher than the median of all CZs. Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. The interaction term Income Growth $\times$ $I_{(High\ LB)}$ captures the role of local bank shares on the responsiveness of firms in creating jobs. Analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) to (6) are IV regression for different firm age categories. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis. Standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

		Aggregate	0-1 year-olds	2-3 year-olds	4-5 year-olds	6+ year-olds
	(1)	(2)	(3)	(4)	(5)	(6)
	1st Stage	IV	IV	IV	IV	IV
Manuf. Employment Bartik	1.195***					
	(7.628)					
Income Growth		0.337**	0.144**	-0.065**	0.008	0.249
		(2.146)	(2.212)	(-2.048)	(0.319)	(1.641)
Income Growth $\times$ $I_{(High\ LB)}$		-0.080	0.165**	-0.003	-0.016	-0.227
		(-0.479)	(2.370)	(-0.079)	(-0.605)	(-1.399)
$I_{(High\ LB)}$	-0.011***	-0.006	-0.008***	-0.000	0.001	0.001
	(-3.527)	(-1.209)	(-3.736)	(-0.030)	(1.362)	(0.143)
ln(Total Laborforce)	-0.120***	-0.031	0.013	-0.010**	0.002	-0.036
	(-11.440)	(-1.347)	(1.356)	(-2.125)	(0.474)	(-1.608)
% Highschool Edu	-0.577***	-0.318	0.652***	-0.076*	-0.050	-0.844***
	(-3.444)	(-1.510)	(7.447)	(-1.785)	(-1.552)	(-4.143)
ln(Total CZ Wages)	0.107***	0.028	-0.010	0.009**	-0.002	0.031
	(11.266)	(1.341)	(-1.210)	(2.063)	(-0.543)	(1.562)
Constant	1.362***	0.357	-0.148	0.104**	-0.019	0.421*
	(11.680)	(1.397)	(-1.394)	(2.012)	(-0.485)	(1.701)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843	1,843
R-squared	0.266	0.107	0.086		0.009	0.067
F-Statistics	38.2					

Table XII: Firm size and firm age

Panel A (B) summarizes the average regional employment (number of firms) tabulated by firm age and firm size, from 2000 to 2007. Observations are at the MSA-year-firm age-firm size level. Data is from the Census Business Dynamics Statistics. Panel C summarizes the regressions of net employment creation by firm age and firm size at the MSA level (coefficients for all control variables are shown in Table A.VIII). The reported coefficients are from instrumental variables regressions of the change in employment in each of the 4 different age categories and 3 firm size categories on local income growth. For each age-size pair, the dependent variable is the net change in employment in all the industries over the previous two years created in firms in each age-size bin, and this variable is scaled by the total employment in the MSA as of 2000. Income growth is the 2-year growth of total wages and salaries in the MSA. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in the MSA. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by MSA. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel A:	Total Employee in the Region	**Age**				
		Aggregate	0-1 yrs	2-3 years	4-5 years	6+ years
	Aggregate	263811	13359	11984	10607	227862
	<20	48810	8347	5789	4724	29950
Size	20-100	47301	3472	3893	3572	36363
	>100	167701	1540	2302	2310	161549

Panel B:	Total Firms in the Region	**Age**				
		Aggregate	0-1 yrs	2-3 years	4-5 years	6+ years
	Aggregate	12390	2119	1460	1156	7654
	<20	10050	2026	1326	1028	5670
Size	20-100	1322	80	113	104	1025
	>100	1018	13	21	24	959

Panel C:	Regression Coefficients	**Age**				
		Aggregate	0-1 yrs	2-3 years	4-5 years	6+ years
	Aggregate	1.263***	0.404***	-0.000	-0.006	0.865***
	<20	0.150***	0.310***	-0.058***	-0.031***	-0.071***
Size	20-100	0.185***	0.079***	0.036***	0.015	0.055***
	>100	0.928***	0.015***	0.022***	0.010	0.881***

Internet Appendix—Not for Publication

Table A.I: Job Creation and Investment Opportunities (Weighted Regression)

This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth. We run regressions for the aggregate change in employment and for the change in employment in 4 age categories (startups, 2-3, 4-5, and 6+ years old). Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Both the OLS and the 2SLS regressions are weighted by the CZ population. Columns (4) to (11) perform similar regressions as columns (2) and (3) for firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel: Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.037***										
	(7.065)										
Income Growth		0.070	0.394***	0.093***	0.285***	-0.011***	-0.066***	-0.012***	-0.019*	-0.001	0.193
		(1.005)	(2.959)	(6.371)	(5.165)	(-4.577)	(-4.311)	(-3.461)	(-1.708)	(-0.011)	(1.470)
ln(Total Laborforce)	-0.123***	-0.057***	-0.057*	0.036	0.036	-0.015**	-0.015**	-0.005	-0.005	-0.073***	-0.073**
	(-5.999)	(-3.029)	(-1.782)	(1.147)	(1.358)	(-2.053)	(-2.510)	(-1.432)	(-1.560)	(-3.459)	(-2.281)
% Highschool Edu	-0.576**	-1.458***	-0.924***	0.225	0.542	-0.111	-0.203**	-0.030	-0.043	-1.542***	-1.221***
	(-2.482)	(-3.559)	(-2.652)	(0.605)	(1.614)	(-1.298)	(-2.400)	(-0.690)	(-0.907)	(-5.027)	(-3.798)
ln(Total CZ Wages)	0.109***	0.052***	0.052*	-0.029	-0.029	0.013**	0.013**	0.004	0.004	0.064***	0.063**
	(6.216)	(3.091)	(1.830)	(-1.075)	(-1.298)	(2.080)	(2.560)	(1.430)	(1.565)	(3.409)	(2.263)
Constant	1.384***	0.696***	0.673*	-0.361	-0.388	0.154**	0.165***	0.047	0.050	0.856***	0.847**
	(6.322)	(3.317)	(1.931)	(-1.130)	(-1.472)	(2.046)	(2.640)	(1.324)	(1.562)	(3.664)	(2.446)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843
R-squared	0.260	0.130	-0.185	0.160	-0.224	0.063	-0.199	0.056	0.045	0.095	-0.036
F-Statistics	49.91										

Table A.II: Job Creation and Investment Opportunities (County-level Results)

This table shows regressions of net employment creation at the county level on local income growth. Regressions are run for aggregate change in employment and for the change in employment in each of the 4 different age categories. Observations are at the county-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the county as of 2000. Income growth is the 2-year growth of total wages and salaries in the county. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a county. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the county on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as column (2) and (3) for the net change in employment in firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis. Standard errors are clustered by county. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel: Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	0.248***										
	(6.028)										
Income Growth		0.269***	0.161	0.060***	0.389***	0.004	-0.019	0.008*	-0.033	0.197***	-0.175
		(5.007)	(0.651)	(6.151)	(3.049)	(0.676)	(-0.302)	(1.664)	(-0.604)	(4.276)	(-0.679)
ln(Total Laborforce)	-0.094***	-0.068***	-0.078***	-0.029***	0.002	-0.001	-0.003	0.004*	-0.000	-0.042***	-0.077***
	(-11.971)	(-6.587)	(-2.970)	(-5.668)	(0.172)	(-0.316)	(-0.486)	(1.961)	(-0.030)	(-4.620)	(-2.869)
% Highschool Edu	-166.357***	-183.903***	-203.103***	-80.349***	-21.783	4.412	0.286	1.224	-6.191	-109.303***	-175.460***
	(-10.344)	(-8.496)	(-4.203)	(-7.541)	(-0.856)	(0.729)	(0.024)	(0.220)	(-0.553)	(-5.714)	(-3.575)
ln(Total CZ Wages)	0.079***	0.060***	0.069***	0.023***	-0.004	0.001	0.003	-0.003*	0.000	0.039***	0.069***
	(11.557)	(6.708)	(3.063)	(5.277)	(-0.309)	(0.600)	(0.595)	(-1.803)	(0.094)	(4.919)	(2.990)
Constant	1.066***	0.744***	0.896***	0.392***	0.028	-0.006	0.019	-0.049**	-0.002	0.406***	0.850***
	(12.742)	(6.785)	(2.983)	(7.128)	(0.176)	(-0.217)	(0.262)	(-2.348)	(-0.036)	(4.215)	(2.763)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,360	6,360	6,360	6,360	6,360	6,360	6,360	6,360	6,360	6,360	6,360
R-squared	0.164	0.094	0.090	0.043		0.002		0.003		0.069	0.012
F-Statistics	36.34										

Table A.III: Stacked Regression of Job Creation and Investment Opportunities

This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth. Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of total wages and salaries in the CZ. We include the dummies for different firm ages and the interaction terms of age dummies with income growth, in order to capture the difference in responsiveness across different age categories. We instrument for income growth using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. We perform the analysis on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis. Standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

	(1) First Stage	(2) OLS	(3) 2SLS
Manuf. Employment Bartik	1.037***		
	(7.072)		
Income Growth		0.146**	-0.056
		(2.009)	(-0.692)
Dummy(0-1yr) * Income Growth		-0.031	0.355***
		(-0.474)	(4.014)
Dummy(2-3yr) * Income Growth		-0.152**	0.055
		(-2.282)	(0.769)
Dummy(4-5yr) * Income Growth		-0.144**	0.129*
		(-2.226)	(1.773)
Dummy(0-1yr)		0.072***	0.062***
		(32.191)	(20.742)
Dummy(2-3yr)		0.017***	0.011***
		(8.290)	(4.847)
Dummy(4-5yr)		0.021***	0.013***
		(10.135)	(5.413)
Constant	1.376***	0.088*	0.069
	(6.269)	(1.783)	(1.046)
Year FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	7,372	7,372	7,372
R-squared	0.260	0.428	0.398
F-Statistics	13		

Table A.IV: Job Creation and Investment Opportunities—Using Per Capita Income Growth

This table performs the same analysis as Table III except using a different measure for investment opportunity—the per capita income growth. This table shows regressions of net employment creation at the commuting zone (CZ) level on local income growth. Regressions are run for aggregate change in employment and for the change in employment in each of the 4 different age categories. Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. Income growth is the 2-year growth of per capita income in the CZ. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in a CZ. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the CZ on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as column (2) and (3) for the net change in employment in firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis. Standard errors are clustered by CZ. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Non-overlapping Sample (01, 03, 05, 07)		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	0.463***										
	(5.168)										
Per Capita Income Growth		0.229***	0.709**	0.088***	0.528***	0.018*	-0.147**	0.000	-0.004	0.123***	0.332
		(5.864)	(2.150)	(4.996)	(2.676)	(1.859)	(-1.969)	(0.040)	(-0.077)	(3.606)	(1.031)
ln(Total Laborforce)	-0.094***	-0.050***	-0.004	-0.005	0.037	0.000	-0.016*	0.002	0.001	-0.047***	-0.027
	(-7.416)	(-3.519)	(-0.111)	(-0.480)	(1.572)	(0.088)	(-1.790)	(0.659)	(0.217)	(-3.545)	(-0.762)
% Highschool Edu	0.625***	-0.548**	-0.933***	0.572***	0.220	-0.079	0.054	-0.054	-0.051	-0.988***	-1.156***
	(3.630)	(-2.448)	(-2.678)	(3.381)	(1.004)	(-1.445)	(0.726)	(-1.606)	(-1.072)	(-5.091)	(-3.427)
ln(Total CZ Wages)	0.081***	0.046***	0.006	0.006	-0.030	-0.000	0.013*	-0.002	-0.001	0.042***	0.025
	(7.241)	(3.666)	(0.194)	(0.670)	(-1.479)	(-0.145)	(1.727)	(-0.795)	(-0.283)	(3.591)	(0.803)
Constant	0.926***	0.569***	0.188	0.055	-0.327	-0.007	0.141*	-0.018	-0.013	0.539***	0.387
	(6.591)	(3.686)	(0.522)	(0.483)	(-1.413)	(-0.179)	(1.660)	(-0.718)	(-0.259)	(3.788)	(1.155)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843	1,843
R-squared	0.568	0.090	-0.001	0.078	-0.373	0.017	-0.297	0.011	0.011	0.069	0.049
F-Statistics	26.71										

Table A.V: Reduced Form Estimation of Job Growth

This table shows regressions of net employment creation at the commuting zone (CZ) level on the national change in manufacturing employment at the sub-sector level weighted by the local region's exposure to that sub-sector (Manufacturing Employment Bartik). We run regressions for the aggregate change in employment and for the change in employment in 4 age categories (startups, 2-3, 4-5, and 6+ years old). Observations are at the CZ-year-firm age level. The dependent variable is the net change in employment in the non-tradable sector (NAICS2= 44, 45 and 72) over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the CZ as of 2000. The analysis is performed on a continuous version of the Bartik variable using non-overlapping samples in years 2001, 2003, 2005 and 2007. T-statistics in parenthesis are based on standard errors clustered at the CZ level. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Continuous IV Variable, Non-overlapping Sample (01, 03, 05, 07)					
	Aggregate	**0-1 yrs**	**2-3 years**	**4-5 years**	**6+ years**
	(1)	(2)	(3)	(4)	(5)
	OLS	**OLS**	**OLS**	**OLS**	**OLS**
Manuf. Employment Bartik	0.329**	0.244**	-0.068**	-0.002	0.154
	(2.127)	(2.580)	(-2.213)	(-0.077)	(1.046)
ln(Total Laborforce)	-0.071***	-0.012	-0.002	0.002	-0.058***
	(-5.081)	(-1.194)	(-0.522)	(0.677)	(-4.598)
% Highschool Edu	-0.490**	0.549***	-0.038	-0.053	-0.948***
	(-1.994)	(3.086)	(-0.730)	(-1.613)	(-4.602)
ln(Total CZ Wages)	0.064***	0.012	0.001	-0.002	0.052***
	(5.148)	(1.344)	(0.441)	(-0.813)	(4.599)
Constant	0.779***	0.134	0.011	-0.018	0.652***
	(5.160)	(1.187)	(0.280)	(-0.737)	(4.797)
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,843	1,843	1,843	1,843	1,843
R-squared	0.071	0.067	0.015	0.011	0.063

Table A.VI: Startup job creation and job resilience—results by year

This table shows the share of employment of four cohorts of new firms (between 2000 and 2003) and asks how many jobs remain after 2 or 4 years in those firms. The table shows the number of employees in these cohorts of firms at the time that they are started, 2 years later, and 4 years later. Employment is scaled by the total employment in each CZ as of 2000. The sample includes only firms until 2003 because that is the last year that we can track firms for a full four years. T-statistics for the difference between high and low shock areas are shown in parenthesis on the last line of each panel.

Panel A: 2000 cohort

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low Bartik Area	4.85%	3.84%	3.45%
Medium Bartik Area	5.55%	4.32%	3.97%
High Bartik Area	5.32%	4.27%	3.84%
High Bartik-Low Bartik	0.47%	0.43%	0.39%
	(1.35)	(1.46)	(1.32)

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low ΔIncome Area	4.64%	3.68%	3.24%
Medium ΔIncome Area	5.02%	4.06%	3.63%
High ΔIncome Area	6.05%	4.69%	4.38%
High ΔIncome-Low ΔIncome	1.41%***	1.01%***	1.14%***
t-statistics	(4.26)	(4.04)	(4.52)

Panel B: 2001 cohort

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low Bartik Area	4.05%	3.43%	3.00%
Medium Bartik Area	4.77%	3.93%	3.42%
High Bartik Area	5.20%	4.40%	3.81%
High Bartik-Low Bartik	1.15%***	0.97%***	0.81%***
	(4.27)	(3.97)	(3.48)

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low ΔIncome Area	4.04%	3.35%	2.89%
Medium ΔIncome Area	4.74%	3.90%	3.37%
High ΔIncome Area	5.25%	4.51%	3.97%
High ΔIncome-Low ΔIncome	1.21%***	1.16%***	1.08%***
t-statistics	(4.48)	(4.83)	(4.88)

Panel C: 2002 cohort

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low Bartik Area	3.77%	3.10%	2.71%
Medium Bartik Area	4.90%	3.97%	3.40%
High Bartik Area	5.28%	4.38%	3.80%
High Bartik-Low Bartik	1.51%***	1.28%***	1.09%***
	(5.63)	(5.53)	(4.71)

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low ΔIncome Area	4.32%	3.58%	3.06%
Medium ΔIncome Area	4.26%	3.49%	2.99%
High ΔIncome Area	5.36%	4.38%	3.87%
High ΔIncome-Low ΔIncome	1.04%***	0.79%***	0.81%***
t-statistics	(3.72)	(3.35)	(3.44)

Panel D: 2003 cohort

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low Bartik Area	3.97%	3.13%	2.71%
Medium Bartik Area	5.00%	4.05%	3.51%
High Bartik Area	5.36%	4.46%	3.95%
High Bartik-Low Bartik	1.39%***	1.33%***	1.24%***
	(5.23)	(5.88)	(5.67)

	Job creation from start-ups	Jobs remaining after 2 years	Jobs remaining after 4 years
Low ΔIncome Area	4.65%	3.75%	3.31%
Medium ΔIncome Area	4.52%	3.57%	3.12%
High ΔIncome Area	5.15%	4.31%	3.72%
High ΔIncome-Low ΔIncome	0.50%*	0.56%**	0.41%*
t-statistics	(1.85)	(2.37)	(1.85)

Table A.VII: Job Creation and Investment Opportunities–All Industries–Comparison of QWI and BDS Data

This table shows regressions of net employment creation at the commuting zone (CZ) and Metropolitan Statistical Area (MSA) level on local income growth. The dependent variable is the net change in employment in all sectors over the previous two years in firms of each age category. This variable is scaled by the total non-tradable employment in the region (CZ in Panel A, MSA in Panels B and C) as of 2000. Income growth is the 2-year growth of total wages and salaries in the region (CZ in Panel A, MSA in Panels B and C). We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in an area. All panels use a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the manufacturing employment instrument. Column (2) is the OLS regression of net employment change on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as columns (2) and (3) for firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by CZ in Panel A and by MSA in Panel B, C. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel A: CZ-level, QWI Data, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.039***										
	(7.560)										
Income Growth		0.362***	0.500***	0.174***	0.395***	0.008	-0.069**	0.001	-0.021	0.180***	0.194*
		(3.628)	(4.373)	(6.263)	(6.437)	(1.088)	(-2.432)	(0.101)	(-0.955)	(2.718)	(1.787)
ln(Total Laborforce)	-0.124***	-0.026	-0.008	-0.002	0.027**	0.000	-0.010*	0.001	-0.002	-0.025*	-0.023
	(-6.275)	(-1.390)	(-0.385)	(-0.189)	(2.263)	(0.033)	(-1.863)	(0.553)	(-0.435)	(-1.677)	(-1.233)
% Highschool Edu	-0.618***	-0.020	0.012	0.475***	0.525***	-0.030	-0.047	-0.029	-0.034	-0.436***	-0.433***
	(-2.733)	(-0.106)	(0.069)	(2.857)	(3.472)	(-0.605)	(-0.907)	(-0.773)	(-0.868)	(-3.090)	(-3.080)
ln(Total CZ Wages)	0.111***	0.022	0.006	-0.000	-0.026**	0.001	0.010**	-0.001	0.001	0.022*	0.021
	(6.523)	(1.341)	(0.325)	(-0.008)	(-2.411)	(0.179)	(1.974)	(-0.544)	(0.443)	(1.711)	(1.233)
Constant	1.396***	0.288	0.072	0.023	-0.307**	-0.004	0.107*	-0.016	0.018	0.285*	0.254
	(6.555)	(1.457)	(0.332)	(0.225)	(-2.321)	(-0.112)	(1.790)	(-0.626)	(0.444)	(1.784)	(1.243)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,901	1,901	1,901	1,901	1,901	1,901	1,901	1,901	1,901	1,901	1,901
R-squared	0.266	0.173	0.159	0.149	-0.023	0.009	-0.099	0.017	0.005	0.095	0.095
F-Statistics	57.15										

Panel B: MSA-level, QWI Data, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.550***										
	(7.438)										
Income Growth		0.679***	0.827***	0.196***	0.345***	0.023**	-0.009	0.007	0.001	0.454***	0.491***
		(12.828)	(8.464)	(6.737)	(4.998)	(2.568)	(-0.520)	(0.742)	(0.030)	(10.698)	(7.715)
ln(Total Laborforce)	-0.066***	0.015	0.024**	0.000	0.009	-0.004	-0.005*	-0.002	-0.002	0.021**	0.023**
	(-3.791)	(1.545)	(2.173)	(0.013)	(1.022)	(-1.366)	(-1.850)	(-0.772)	(-0.898)	(2.186)	(2.305)
% Highschool Edu	-0.976***	-0.298	-0.213	-0.054	0.031	0.031	0.013	-0.043	-0.047	-0.232	-0.210
	(-3.062)	(-1.368)	(-1.023)	(-0.258)	(0.172)	(0.597)	(0.225)	(-0.938)	(-0.947)	(-1.328)	(-1.155)
ln(Total CZ Wages)	0.058***	-0.017*	-0.025**	-0.003	-0.011	0.004	0.005**	0.002	0.002	-0.019**	-0.021**
	(3.667)	(-1.893)	(-2.465)	(-0.441)	(-1.420)	(1.512)	(1.968)	(0.822)	(0.929)	(-2.252)	(-2.365)
Constant	0.819***	-0.158	-0.257**	0.050	-0.062	0.028	0.051	0.019	0.024	-0.255**	-0.269**
	(4.214)	(-1.437)	(-2.061)	(0.549)	(-0.631)	(0.959)	(1.503)	(0.680)	(0.827)	(-2.451)	(-2.434)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,166	1,166	1,166	1,166	1,166	1,166	1,166	1,166	1,166	1,166	1,166
R-squared	0.302	0.353	0.340	0.083	0.043	0.023	0.005	0.026	0.025	0.192	0.191
F-Statistics	55.33										

Panel C: MSA-level, BDS Data, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.709***										
	(8.619)										
Income Growth		0.645***	1.263***	0.222***	0.404***	0.003	-0.000	0.004	-0.006	0.415***	0.865***
		(6.164)	(8.399)	(6.512)	(11.295)	(0.694)	(-0.008)	(1.087)	(-0.483)	(5.420)	(5.872)
ln(Total Laborforce)	-0.070***	-0.042***	-0.004	0.004	0.015**	-0.004*	-0.004*	0.000	-0.001	-0.042***	-0.014
	(-4.001)	(-2.853)	(-0.214)	(0.527)	(2.142)	(-1.876)	(-1.936)	(0.073)	(-0.311)	(-3.216)	(-0.909)
% Highschool Edu	-1.205***	-0.324	0.250	0.013	0.183	-0.018	-0.022	-0.020	-0.030	-0.299	0.119
	(-4.636)	(-0.929)	(0.789)	(0.086)	(1.409)	(-0.435)	(-0.516)	(-0.646)	(-0.917)	(-1.139)	(0.440)
ln(Total CZ Wages)	0.064***	0.039***	0.002	-0.003	-0.014**	0.004**	0.004**	0.000	0.001	0.038***	0.011
	(3.917)	(2.938)	(0.120)	(-0.495)	(-2.178)	(1.973)	(2.022)	(0.023)	(0.423)	(3.265)	(0.809)
Constant	0.878***	0.497***	-0.024	0.002	-0.143*	0.040*	0.038	-0.005	0.004	0.461***	0.077
	(4.524)	(2.948)	(-0.124)	(0.022)	(-1.829)	(1.654)	(1.539)	(-0.257)	(0.204)	(3.151)	(0.438)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384
R-squared	0.296	0.162	0.078	0.271	0.104	0.042	0.042	0.034	0.029	0.110	0.060
F-Statistics	74.28										

Table A.VIII: Job Creation and Investment Opportunities - Firm Age by Firm Size - Detail

This table shows regressions of net employment creation at the Metropolitan Statistical Area (MSA) level on local income growth (this is a detailed version of Table XII). Regressions are run for the aggregate change in employment in each of the 4 different age categories and 3 size categories. Panel A focuses on the firms with less than 20 employees, Panel B analyzes the firms with 20-100 employees while Panel C focuses on larger firms with more than 100 employees. The dependent variable is the net change in employment in all sectors over the previous two years created in firms of each age-size category, and this variable is scaled by the total non-tradable employment in the MSA as of 2000. Income growth is the 2-year growth of total wages and salaries in the MSA. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in the MSA. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. In each panel, Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of net employment change in the MSA on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as columns (2) and (3) for firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by MSA. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel A: Employee<20, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.709***										
	(8.619)										
Income Growth		0.120***	0.150***	0.173***	0.310***	-0.031***	-0.058***	-0.010***	-0.031***	-0.011***	-0.071***
		(6.145)	(8.443)	(6.506)	(9.896)	(-5.686)	(-5.382)	(-4.008)	(-4.488)	(-2.825)	(-5.921)
ln(Total Laborforce)	-0.070***	-0.000	0.002	-0.002	0.006	-0.000	-0.002	0.000	-0.001	0.002	-0.002
	(-4.001)	(-0.140)	(0.720)	(-0.471)	(1.150)	(-0.147)	(-1.096)	(0.388)	(-0.893)	(1.021)	(-0.791)
% Highschool Edu	-1.205***	0.099*	0.127***	0.106	0.233**	0.012	-0.012	0.016	-0.003	-0.035	-0.091**
	(-4.636)	(1.862)	(2.657)	(0.847)	(2.165)	(0.327)	(-0.354)	(0.890)	(-0.188)	(-0.803)	(-2.157)
ln(Total CZ Wages)	0.064***	-0.001	-0.003	-0.001	-0.010**	0.001	0.002	-0.000	0.001	-0.000	0.004*
	(3.917)	(-0.458)	(-1.256)	(-0.306)	(-1.960)	(0.473)	(1.475)	(-0.108)	(1.257)	(-0.018)	(1.783)
Constant	0.878***	-0.004	-0.032	0.053	-0.057	-0.009	0.012	-0.010	0.006	-0.037	0.007
	(4.524)	(-0.209)	(-1.248)	(0.909)	(-0.954)	(-0.458)	(0.619)	(-0.949)	(0.577)	(-1.648)	(0.295)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384
R-squared	0.296	0.268	0.253	0.312	0.156	0.108	0.059	0.066	-0.033	0.120	-0.043
F-Statistics	74.28										

Panel B: Employee between 20 and 100, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.709***										
	(8.619)										
Income Growth		0.117***	0.185***	0.040***	0.079***	0.025***	0.036***	0.008***	0.015	0.043***	0.055***
		(5.829)	(7.190)	(5.817)	(6.726)	(4.921)	(3.379)	(2.623)	(1.445)	(4.207)	(3.063)
ln(Total Laborforce)	-0.070***	-0.011***	-0.007**	0.005**	0.007***	-0.005***	-0.005***	0.000	0.001	-0.011***	-0.010***
	(-4.001)	(-3.453)	(-2.057)	(2.314)	(3.366)	(-3.342)	(-2.865)	(0.280)	(0.622)	(-4.399)	(-4.028)
% Highschool Edu	-1.205***	-0.154**	-0.091	-0.047	-0.011	-0.048	-0.038	0.020	0.026	-0.079	-0.068
	(-4.636)	(-2.501)	(-1.549)	(-1.231)	(-0.317)	(-1.497)	(-1.202)	(0.602)	(0.812)	(-1.532)	(-1.306)
ln(Total CZ Wages)	0.064***	0.009***	0.005	-0.002	-0.005**	0.003**	0.003*	-0.001	-0.001	0.008***	0.007***
	(3.917)	(3.005)	(1.525)	(-1.202)	(-2.317)	(2.446)	(1.953)	(-0.525)	(-0.866)	(3.483)	(3.094)
Constant	0.878***	0.134***	0.074**	-0.042*	-0.071***	0.065***	0.054***	-0.005	-0.011	0.116***	0.102***
	(4.524)	(3.769)	(1.987)	(-1.779)	(-2.947)	(3.739)	(3.011)	(-0.346)	(-0.751)	(4.180)	(3.574)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384
R-squared	0.296	0.145	0.108	0.209	0.141	0.112	0.106	0.033	0.029	0.072	0.070
F-Statistics	74.28										

Panel C: Employee>100, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.709***										
	(8.619)										
Income Growth		0.408***	0.928***	0.008**	0.015***	0.009***	0.022***	0.007**	0.010	0.384***	0.881***
		(5.447)	(6.639)	(2.404)	(2.750)	(3.037)	(3.008)	(2.359)	(1.491)	(5.372)	(6.290)
ln(Total Laborforce)	-0.070***	-0.031**	0.001	0.001	0.002*	0.002	0.002**	-0.001	-0.000	-0.033***	-0.002
	(-4.001)	(-2.464)	(0.096)	(1.364)	(1.815)	(1.513)	(2.113)	(-0.648)	(-0.408)	(-2.663)	(-0.138)
% Highschool Edu	-1.205***	-0.269	0.214	-0.045*	-0.039*	0.017	0.029	-0.056***	-0.053**	-0.185	0.277
	(-4.636)	(-0.921)	(0.754)	(-1.898)	(-1.791)	(0.616)	(1.093)	(-2.645)	(-2.544)	(-0.644)	(0.982)
ln(Total CZ Wages)	0.064***	0.031***	-0.000	0.001	0.000	-0.001	-0.001	0.001	0.001	0.030***	0.000
	(3.917)	(2.758)	(-0.009)	(0.871)	(0.322)	(-0.545)	(-1.232)	(0.829)	(0.564)	(2.720)	(0.028)
Constant	0.878***	0.367**	-0.066	-0.009	-0.014	-0.016	-0.028**	0.011	0.008	0.382***	-0.032
	(4.524)	(2.563)	(-0.381)	(-0.972)	(-1.480)	(-1.411)	(-2.311)	(1.047)	(0.771)	(2.695)	(-0.186)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384
R-squared	0.296	0.113	0.045	0.203	0.197	0.081	0.067	0.029	0.028	0.105	0.042
F-Statistics	74.28										

Table A.IX: Job Creation and Investment Opportunities (Gross Job Creation)

This table shows regressions of gross employment creation at the Metropolitan Statistical Area (MSA) level on local income growth. The dependent variable is the gross job creation in all sectors over the previous two years created in firms of each age category, and this variable is scaled by the total non-tradable employment in the MSA as of 2000. Income growth is the 2-year growth of total wages and salaries in the MSA. We instrument for this variable using the Bartik manufacturing shock, which interacts changes in nationwide employment in the manufacturing sector with the preexisting manufacturing composition in the MSA. The analysis is performed on a "non-overlapping" sample of years 2001, 2003, 2005 and 2007. Column (1) reports the first stage regression of income growth on the Bartik instrument. Column (2) is the OLS regression of gross job creation in the MSA on local income growth, and column (3) is the 2SLS regression with instrumented income growth. Columns (4) to (11) perform similar regressions as columns (2) and (3) for firms of different ages. Control variables are extracted from the 2000 Census and the Bureau of Labor Statistics. All regressions include year fixed effects. T-statistics are shown in parenthesis and standard errors are clustered by MSA. *, **, *** denote statistical significance at the 10, 5 and 1% levels, respectively.

Panel: MSA-level, BDS Data, Non-overlapping Sample (01, 03, 05, 07)

		Aggregate		0-1 year-olds		2-3 year-olds		4-5 year-olds		6+ year-olds	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	1st Stage	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Manuf. Employment Bartik	1.709***										
	(8.619)										
Income Growth		0.816***	1.643***	0.251***	0.471***	0.088***	0.156***	0.057***	0.121***	0.420***	0.895***
		(7.076)	(12.003)	(6.314)	(11.366)	(6.441)	(9.739)	(6.849)	(11.788)	(7.114)	(9.763)
ln(Total Laborforce)	-0.070***	-0.051**	0.001	0.005	0.019**	-0.001	0.003	0.000	0.004**	-0.055***	-0.025
	(-4.001)	(-2.004)	(0.024)	(0.612)	(2.299)	(-0.409)	(1.062)	(0.088)	(2.006)	(-3.416)	(-1.471)
% Highschool Edu	-1.205***	-1.605***	-0.836*	-0.007	0.198	-0.084	-0.021	-0.053	0.007	-1.461***	-1.020***
	(-4.636)	(-2.798)	(-1.718)	(-0.038)	(1.316)	(-1.314)	(-0.378)	(-1.062)	(0.171)	(-4.059)	(-3.049)
ln(Total CZ Wages)	0.064***	0.057**	0.008	-0.004	-0.017**	0.002	-0.002	0.000	-0.003*	0.059***	0.031**
	(3.917)	(2.503)	(0.327)	(-0.569)	(-2.329)	(0.757)	(-0.779)	(0.242)	(-1.759)	(4.122)	(1.991)
Constant	0.878***	0.934***	0.277	-0.003	-0.177*	0.038	-0.022	0.013	-0.039*	0.887***	0.515***
	(4.524)	(3.239)	(0.910)	(-0.037)	(-1.951)	(1.193)	(-0.669)	(0.586)	(-1.703)	(4.852)	(2.640)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384	1,384
R-squared	0.296	0.343	0.090	0.269	0.082	0.296	0.163	0.267	0.016	0.308	0.105
F-Statistics	74.28										