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ABSTRACT

What Drives Spatial Clusters of Entrepreneurship in China? Evidence from Economic Census Data*

Since Chinese government initiated economic reform in the late 1970s, entrepreneurship and private sectors have emerged gradually and played an increasingly important role in promoting economic growth. However, entrepreneurship is distributed unevenly in China. Using micro data from 2008 economic census and 2005 population census, this paper explains spatial clusters of entrepreneurship for both manufacturing and services. For both sectors, entrepreneurship (measured by new private firms) tends to emerge in places with more relevant upstream and downstream firms. Moreover, Chinitz's (1961) theories are also supported for manufacturing: small upstream and downstream firms seem to be more important for manufacturing entrepreneurship. For both sectors, entrepreneurship is positively related to city size, the share of young adults and the elderly population, and foreign direct investment. More migrants are also found to promote service entrepreneurship. Our paper is the first to consider both manufacturing and service entrepreneurship in China and should be of interest to both local and national policymakers who plan to encourage entrepreneurship.

JEL Classification: L26, L60, L80, R10, R12

Keywords: new firm formation, entrepreneurship, Marshallian effect, Chinitz effect, China

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1 Introduction

Economists have long recognized the crucial role of entrepreneurship in economic growth. Indeed, more than eighty years ago, Schumpeter (1934) points out that entrepreneurship is an indispensable element for economic development by "carrying out new combinations". Recent empirical studies substantiate that entrepreneurship has a significant effect on local employment and economic growth (e.g., Glaeser et al. 2010; Li et al. 2012; Glaeser et al. 2015). Not surprisingly, however, the nature and effectiveness of entrepreneurial activities will vary significantly. For instance, regional variations in entrepreneurship have been documented in many countries and regions including Britain (Georgellis and Wall 2000), Europe (Bosma and Schutjens 2011), Germany (Audretsch and Fritsch 1994), India (Ghani et al. 2014) and the United States (Acs and Armington 2002, 2006; Glaeser and Kerr 2009). Nonetheless, more studies on the regional impacts of entrepreneurship are needed to direct local policies aimed at promoting more successful business ventures.[1]

This paper examines spatial clusters of entrepreneurship in China by employing a framework that formerly used to analyze analogous spatial clusters in the U.S. (Glaeser and Kerr 2009) and India (Ghani et al. 2014). To understand important regional differences in entrepreneurship, this investigation relies on a methodological foundation whereby specific metrics can be formulated to exploit the effects of local industrial conditions, such as the agglomeration forces emphasized by Marshall (1890): distance proximity to suppliers and customers, laborers and ideas. These metrics are constructed by combining establishment- or firm-level microdata with information from inter-industry relationships (e.g., an input-output table). This study utilizes economic census data from 2008 and population census data from 2005 to investigate Chinese entrepreneurship, which is defined herein as the creation of new private firms.

Our contributions to the literature are twofold. First, we examine the entry of manufacturing and services as separate entities in China.[2] There are three important rationale for treating manufacturing and services separately. One important rational is that the level of entrepreneurship varies greatly across industries. Consider, for example, that with the industrial shift from manufacturing to services in recent decades, manufacturing entry in the U.S. is considerably less active in comparison to the service side (Armington and Acs 2002; Glaeser and Kerr 2009). Another rational is that the entry of different sectors in a region may differ in their sensitivity to the local socioeconomic environments.

[1] Chatterji et al. (2014) provide a detailed literature review on the spatial concentration of entrepreneurship.

[2] A number of prior studies have distinguished among different types of industries to study the new firm formation in other countries (Audretsch and Fritsch 1999; Armington and Acs 2002, 2004; Nystrom 2007; Otsuka 2008; Glaeser and Kerr 2009; Jofre-Monseny et al. 2011; Ghani et al. 2014; Binet and Facchini 2015). However, few scholars consider the entry of services in China.

For example, many services (including entertainment and education) are likely to be more dependent on the skills and contributions of local workers, which can augment knowledge spillover. Moreover, Armington and Acs (2004) report that the local human capital is conducive to the entry of particular services. In contrast, Glaeser and Kerr (2009) argue that manufacturing firm entry is only weakly related to local human capital. Besides, researchers indicate that the regional unemployment rate may have a stronger impact on service start-ups in comparison to manufacturing start-ups (e.g., Armington and Acs 2002). The reason for this connection is that higher unemployment levels tend to provide cheaper workers for start-ups as well as encourages unemployed workers to start their own businesses which may benefit more labor-intensive sectors that require less capital. The third rationale for distinguishing manufacturing firm entry from services firm entry is that these two sectors may differ in their impacts on urban growth. For instance, over the past decades U.S. cities with higher shares of employment in manufacturing have tended to underperform economically.

Our second contribution to the literature is to utilize comprehensive micro data from the 2008 economic census, which covers all Chinese firms at this point in time.[3] Guo et al. (2016) examine clusters of manufacturing entrepreneurship from 2001 to 2007 in Chinese cities, but they rely on data from the Annual Survey of Industrial Firms (ASIF), which only includes manufacturing firms with sales revenues greater than five million yuan. The main advantages of utilizing the economic census data are threefold: first, it allows us to measure local industrial environments constructed by all industries; second, it enables us to investigate the Chinitz effect more accurately since the data includes both large and small firms; and third, it permits a more thorough examination of the entry of small firms which may create more jobs as compared to large firms. Indeed, based on our calculations from the 2008 economic census, 45 percent of new start-ups created in 2008 employ 40 employees or less, of which 18 percent employ 10 employees or fewer.

Our main empirical results are summarized as follows: to promote entrepreneurship in an industry, it is important that there are substantial number of existing firms in that industry. In contrast, the presence of more state-owned enterprises (SOEs) in a same industry appears to hinder the entry of new private service firms. Three Marshallian metrics are constructed to measure distance proximity to input suppliers, output customers, and firms that employ similar workers. Two Chinitz metrics are constructed to measure the average size of both suppliers and customers. Overall, our findings support the existence of the Marshallian effects for both sectors and the Chinitz effects for manufacturing. In short, new private firms tend to emerge in the locations where more relevant

[3]The National Bureau of Statistics has compiled three national economic census data: 2004, 2008, and 2013. We are fortunate to be able to access to both the 2004 and 2008 economic census data. To the best of our knowledge, the 2013 economic census micro data is not yet available to any scholars. Similarly, the ASIF micro data for 2009 is newest accessible data for most scholars.

upstream and downstream firms are concentrated, and where there are many small firms that provide inputs and purchase outputs. Findings also indicate that agglomeration externalities matter more for small private start-ups.

Among the general city traits that influence the entrance of private start-ups, it is found that for both manufacturing and services, burgeoning entrepreneurship tends to be higher in larger cities with more young adults and elderly people and with more foreign direct investment. We also confirm the influence of certain distinct entry patterns for these two sectors: high-density cities tend to encourage private manufacturing start-ups, but discourage private customers start-ups. In addition, the presence of migrants appears to be a more significant factor for private service start-ups in comparison to manufacturing start-ups. However, the quality of infrastructure appears to have a mixed impact for entrepreneurship.

The remainder of this paper is structured as follows: Section 2 provides a brief background on the Chinese economy. Section 3 describes our data and the measure of entrepreneurship, Section 4 discusses the determinants of entrepreneurship, while Sections 5 and 6 present the econometric models and report the empirical results. Section 7 summarizes this paper.

2 Background

It is worth noting the two key features of the Chinese economy related to this paper. The first is the evolution of private sector, and the second is the shift in the manufacturing and service sectors in China in terms of their relative importance since 1949. The first factor represents the development and re-emergence of entrepreneurship in China, and the second one highlights that the importance of studying both the manufacturing and service sectors.

After the end of Civil War, the evolution of entrepreneurship in modern China can be roughly divided into three distinct periods. The first period started with the establishment of the new China and lasted until the close of the Cultural Revolution. It is during this period that patterns of industrial development were shaped by a series of national political campaigns and mandates that sought to eradicate the capitalist class, private sector, and entrepreneurs. Instead of private entrepreneurship, central planning system became the foundation of Chinese economy. As a result, the private sector was almost vanished, so did entrepreneurship. During this era, state-owned enterprises (SOEs) and collective communes dominated Chinese economy.

The second period of Chinese economic activity, which began in the late 1970s and continued through the mid-1990s, is characterized by a series of government-led economic reforms that signaled the emergence of the private sector. Though the private sector ob-

tained its legal status in 1988, it grew quite slowly during this period. In sharp contrast to the slow growth of the private sector, this period also saw the rise of Township and Village Enterprises (TVEs) which provided an initial and unique soil to foster entrepreneurship (Xu 2011).[4]

Beginning in the 1990s, however, and continuing throughout the decade, the TVEs began to become partially or fully privatized, and by the late 1990s were all privately owned enterprises (Xu and Zhang 2009; Xu 2011). It was also during this third phase of the evolution of entrepreneurship in China that economic restructuring transformed numerous small and medium-sized SOEs into private-owned firms. The private sector experienced an unprecedented era of rapid growth. In fact, By 2014, the private sector accounted for roughly two-thirds of employment in urban China (*China Statistical Yearbook* 2014).

Along with the economic growth of China, which was sparked by China's economic reforms in 1978, the relative importance of manufacturing and service sectors began to shift. Consider, for example, that in 1978 the manufacturing and service sectors accounted for 17.3% and 12.2% of total employment in China, respectively. By 1994, however, the employment in the service sector surpassed employment in the manufacturing sector, and in 2008 the service sector accounted for 33.2% of total employment, while the manufacturing sector only accounted for 27.2%. At the same time, the share of GDP represented by manufacturing and service sectors followed a similar pattern. In 1978 the manufacturing and service sectors accounted for 47.6% and 24.5% of the GDP in China, respectively. In 2012 the GDP from the service sector reached 45.5%, thus surpassing the 45.0% portion of GDP from the manufacturing sector.

A number of significant regional differences in the manufacturing and service sectors must be noted. For example, in 2008, 73.2% of GDP in Beijing came from the service sector in comparison to only 25.7% of GDP from the manufacturing sector; Conversely, analogous figures from Henan Province indicate that only 28.6% of GDP came from the service sector, while as much as 56.9% of GDP is linked to manufacturing.

A growing body of literature has proposed different theories to explain the emerging entrepreneurship and private sectors in China.[5] One body of scholarship emphasizes the importance of the relaxation of formal institutional regulations that eliminated a number of constraints for entrepreneurship (Lu and Tao 2010; Zhou 2011; Atherton and Newman 2016; Du and Mickiewicz 2016). For example, Zhou (2011) confirms that regional deregulation promotes entrepreneurship, while Du and Mickiewicz (2016) recently report that

[4]Although all the people in the township or village *de jure* collectively own their TVEs, township or village governments sign the management responsibility contract with managers. As a result, these managers are *de facto* managers for these TVEs and are regarded as the first-generation entrepreneurs in new China.

[5]See Ahlstrom and Ding (2014) and Su et al. (2015) for recent reviews of entrepreneurship in China.

rent seeking (uneven distribution of subsidies) will decrease firm profitability. Another impetus for the rise in entrepreneurship in China is attributed to informal institutions such as strong social capital and the influence of Guanxi networks (Yueh 2009; Zhang and Zhao 2015), as well as close political connections to government entities (Li et al. 2008; Guo et al. 2014). Other novel determinants for the rise in entrepreneurship in Chinese contexts include local industrial conditions (Guo et al. 2016), housing market reform (Wang 2012), and the sex ratio imbalance (Wei and Zhang 2011), to name a few.

3 Data and Measuring Entrepreneurship

Despite the proliferation of studies targeting entrepreneurship, researchers have not reached a consensus on the best approach for measuring it. Two commonly used measures are the self-employment rate (e.g., Evans and Leighton 1989; Georgellis and Wall 2000) and the average firm size (e.g., Glaeser 2007; Glaeser et al. 2015). One major concern in using either of these two measures, however, is that they fail to capture the dynamic nature of entrepreneurship. For example, the existence of a sizable number of self-employed businesses or small family-run businesses, which employ the same number of employees for many years, tends to make a somewhat limited contribution to economic growth. Haltiwangar et al. (2012), for instance, find that firm size has no effect on employment growth after controlling for firm age.

As an alternative for assessing entrepreneurship, this paper follows a body of recent literature that measures entrepreneurship in terms of new firms (Acs and Armington 2002; Glaeser and Kerr 2009; Delgado et al. 2010; Ghani et al. 2014; Guo et al. 2016). In particular, this measure emphasizes the role of start-ups in creating more jobs. Moreover, this approach may be more consistent with the spirit of Schumpeter (1934), who emphasizes that "*everyone is an entrepreneur only when he actually carries out new combinations, and loses that character as soon as he has built up this business, when he settles down to running it as other people run their business.*" This measurement approach is also quite relevant to current economic slowdown in China, where job creation and employment have become a top priority.

One distinctive feature of the Chinese economy is the coexistence of multiple ownership models, including state-owned enterprises (SOEs), collectively-owned enterprises, private enterprises, foreign enterprises, and mixed ownership enterprises.[6] From a conventional standpoint, private enterprises should be the focus because these entrepreneurs are *de facto* owners of their individual businesses and are willing to take risks to seek

[6]Individuals are allowed to set up four types of private enterprises: sole ownership, a partnership enterprise, a limited liability company, and a corporation, according to different laws (e.g., the Company Law).

entrepreneurial profits. However, this definition of entrepreneurship is somewhat narrow and conservative. Entrepreneurship in this paper is defined as the number of workers employed by new private enterprises that are less than one year old.[7]

To measure entrepreneurship and local industrial conditions, the primary data for this study are drawn from the second economic census of China carried out by the National Bureau of Statistics of China (NBS) in 2008. The economic census data for this study cover all firms in all sectors that were engaged in economic activities at the end of 2008.[8] For each firm, the data provide a wide range of firm characteristics including firm location, type of industry, type of ownership, total employees, year of entry, etc. One caveat of this firm-level data is that all employees in the multi-unit firms are assigned to the location of their headquarters which may cause a measurement error. Nonetheless, since the number of these multi-unit firms account for about three percent of the total, this issue should not have a significant effect on the final results.

Importantly, our analyses are conducted separately for manufacturing and services. The sample consists of 287 cities (specifically, 283 prefecture-level cities and 4 municipalities), 160 three-digit manufacturing industries and 163 three-digit service industries.[9] In total, this study assesses 45,920 and 46,781 city-industry pairs for manufacturing and services, respectively. While the focus is on new private firms, this analysis covers a large number of all new firms. Specifically, of those firms created in the last 12 months (as of 2008), private firms account for about 70% of the employment in manufacturing firms and for about 60% of the employment in service firms.

Tables 1a and 1b show the regional variation in entry rate across cities for manufacturing and services. The entry rate measures the ratio of a city's employment in new private firms to employment in existing firms. More specifically, these tables list both the top 15 cities with the highest entry rate and the bottom 15 cities with the lowest entry rate. The 2008 economic census shows that the average entry rates across cities are 3.40% for manufacturing and 3.94% for services. For the top and bottom 15 cities, the average manufacturing entry rates are 9.76% and 0.92% respectively; whereas the average service entry rates are 8.52% and 1.41%, respectively. In general, the correlation coefficient between the manufacturing and service entry rate is small, with a correlation coefficient of 0.13. This finding suggests that the places that facilitate manufacturing firm entry may not encourage service firm entry. Table 2 summarizes all variables used in this paper for manufacturing and services and reports data resources. On average,

[7]The terms "firm" and "enterprise" are used interchangeably.

[8]According to the NBS, China's economy is divided into three sectors. The primary sector consists of agriculture, forestry, animal, husbandry and fishery. The secondary sector consists of mining, manufacturing, construction, and production and supply of electricity, gas and water. The tertiary sector, i.e., service sector, includes all other industries not included in the primary and secondary sectors.

[9]The prefecture-level city contains a city proper and its surrounding rural areas.

employment size in new private firms in a city-industry pair is 56 for manufacturing and 43 for services.

4 Explaining Entrepreneurship

This section discusses the determinants that may contribute to clusters of entrepreneurship in China. The determinants are categorized into two groups: city-industry characteristics and city-level characteristics.

4.1 City-Industry Characteristics

City-industry characteristics vary across industries and cities. As such, this investigation controls for employment size of the total number of incumbent firms in their own industry and city. This factor is important because new businesses are likely to take advantage of ideas and resources from existing firms, such as the provision of technology and know-how. The next control is the employment size of incumbent SOEs in their own industry and city, which may not reflect *a priori* knowledge. The existence of local SOEs may hold back the development of private firms because of unfair competition for financial supports and investment opportunities (Haggard and Huang 2008). On the other hand, new private firms may survive and flourish, for example, if they serve as input providers for the SOEs.

4.1.1 Customer and Supplier Strength

In his theories pertaining to the localization of industries, Marshall (1890) emphasizes three advantages of agglomeration in transporting goods, people and ideas. The first advantages of agglomeration is that firms are likely to benefit from a reduction in shipping costs by locating near suppliers and customers. In accordance with Glaeser and Kerr (2009), two Marshallian agglomeration metrics are constructed herein to measure the strength of proximity to inputs (suppliers) and outputs (customers). Specifically, we utilize the 2007 benchmark input-output table published by the National Bureau of Statistics to construct these metrics. The input-output table classifies economic activities into 135 product sectors, each of which consists of one or several three-digit industries.[10] Hence $Input_{i \leftarrow j}$ represents the share of industry $i's$ inputs provided by industry j, and $Output_{i \rightarrow j}$ represents the share of industry $i's$ outputs that go to industry j. These shares range from zero (no dependence on inputs or outputs) to one (complete dependence).[11]

[10]The 135 product sectors contain 5 primary sectors, 90 secondary sectors (including 81 manufacturing sectors), and 40 service sectors.

[11]These shares are measured using all inputs (including intermediate inputs and value added) and outputs (including intermediate and final use) in the 2007 input-output Table of China.

By way of illustration, the most dependent industry in terms of inputs is Grinding of Grains (Chinese Standard Industrial Classification or CSIC 131), of which 79% is supplied by Farming (CSIC 011–019). Analogously, the most dependent industry in terms of outputs is Manufacture of Brick, Stone and Other Building Materials (CSIC 303), of which 81% goes to Construction (CSIC 470–509).

The variable $Marshall_{ic}^{Input}$ measures the extent to which city c provides suitable upstream firms for industry i:

$$Marshall_{ic}^{Input} = -\sum_{j=1,\ldots,J} \left| Input_{i \leftarrow j} - \frac{E_{jc}}{E_c} \right|,$$

where J represents the industries, E_{jc} is the incumbent employment in industry j and city c, and E_c is the incumbent employment in city c. This metric is equal to the sum of absolute differences between industry i's ideal input requirement and city c's actual employment composition across all industries. A negative value is taken to make this metric range from negative two to zero, with higher values indicating that the local industrial environment could provide more suitable inputs. Table 2 shows that the average value of this metric is -1.539 for manufacturing and -1.468 for services. The variable $Marshall_{ic}^{Output}$ measures the extent to which city c provides suitable downstream firms for industry i:

$$Marshall_{ic}^{Output} = \sum_{j=1,\ldots,J} Output_{i \rightarrow j} \frac{E_{jc}}{E_j},$$

where E_j represents the incumbent employment throughout the country for industry j. $Output_{i \rightarrow j} \frac{E_{jc}}{E_j}$ is the share of industry i's outputs that go to industry j, weighted by the share of industry j's incumbent employment who work in city c. By aggregating over all industries, this metric measures the extent to which local market absorbs industry i's outputs.

4.1.2 Labor Market Strength

The second advantage espoused by Marshall (1890) is that the agglomeration of firms provide a thick labor market with abundant specialized workers. This labor market effect may be crucial for entrepreneurs who require suitable workers to start their businesses. On the flip side, business rivals who then have to compete for specialized workers may have a negative effect for newcomers. As a result, the net effect is ambiguous. Following the work of prior researchers (e.g., Glaeser and Kerr 2009; Jofre-Monseny et al. 2011), a metric is developed to measure the extent to which incumbent firms provide suitable workers for new firms. To do this, occupation similarity among industries is used as a proxy for labor similarity. The data are drawn from the 2005 1% population census

to construct occupation similarity.[12] In total, the 2005 census classifies workers into 73 two-digit occupations and 95 two-digit industries.[13] The variable LS_{ij} measures the occupation similarity between industries i and j:

$$LS_{ij} = \frac{1}{\frac{1}{2}\sum_o |L_{io} - L_{jo}|},$$

where L_{io} is the share of industry i's employment that occupation o accounts for. This index LS_{ij} is an inverse of a dissimilarity index, which aggregates absolute deviation in occupation composition between two industries. This index LS_{ij} is greater than one, with a higher value indicating a higher level of occupation similarity between two industries.

Using the occupation similarity index as a weight, the variable $Marshall_{ic}^{labor}$ measures the degree to which incumbent firms employ similar workers as industry i in city c:

$$Marshall_{ic}^{labor} = \sum_{j=1,...,J} (LS_{ij} \frac{E_{jc}}{E_j}).$$

The resulting mean values for this variable is 0.428 for manufacturing and 0.415 for services. A higher value indicates that incumbent firms employ more similar workers. The third Marshallian advantage of interest is that the agglomeration of firms may facilitate the flow of ideas. To quantify this mechanism, a number of prior studies rely on patent data to measure the similarity in technologies between industries (e.g., Glaeser and Kerr 2009; Ellison et al 2010). However, such patent data is unavailable for our study, which must be noted as a potential limitation.

In addition to Marshall's agglomeration theories, Chinitz (1961) asserts that the existence of many small firms is crucial for regional development, especially for the creation of new businesses. For example, relative to large dominant industries in an area, a significant number of small firms may be more willing to provide a variety of goods and services that are needed for newcomers. Following Glaeser and Kerr (2009), two Chinitz metrics are defined as:

$$Chinitz_{ic}^{Input} = \sum_{j=1,...,J} \frac{Firms_{jc}}{E_{jc}} \frac{E_{jc}}{E_c} Input_{i \leftarrow j} = \sum_{j=1,...,J} \frac{Firms_{jc}}{E_c} Input_{i \leftarrow j}$$

and

[12] Although the full sample of the one-percent 2005 population census is not available, this paper (as well as most of prior studies) employs a one-fifth random subsample containing about 2.5 million population.

[13] Persons aged 15 and above are required to report their occupations and industries where they work. We proceed as follows: (1) drop missing and miscoded data on industry and occupation; (2) For each industry. we calculate the share of employment in each occupation.

$$Chinitz_{ic}^{Output} = \sum_{j=1,...,J} \frac{Firms_{jc}}{E_{jc}} \frac{E_{jc}}{E_c} Output_{i \to j} = \sum_{j=1,...,J} \frac{Firms_{jc}}{E_c} Output_{i \to j},$$

where $Firms_{jc}$ is the number of total incumbent firms in industry j and city c. These two metrics measure the average firm size of input suppliers and output customers for industry i in city c, with a larger value indicating a smaller firm size of suppliers and customers.

4.2 City-Level Characteristics

City-level characteristics vary across cities. The basic determinant, however, is a city's population, which may contribute to the formation of a new firm in a number of ways. For example, a larger city population is likely to result in a larger local demand (especially for service businesses) and more family and social connections that facilitate entrepreneurship through financial supports. Expanding that basic characteristic are population density and age structure. The former has been shown to have a mixed impact on entrepreneurship. On the one hand, high population density may serve as a proxy for spillover effects that facilitate information and knowledge flow (e.g., Acs and Armington 2002). On the other hand, high density is associated with higher costs—particularly involving higher wage rates and land rents—both of which could discourage new firm entry. As a result, the net effect of population density remain ambiguous. In terms of age structure, the probability of having more entrepreneurs appears to be positively associated with age, since older people have been found to have higher rates of self-employment (e.g., Evans and Leighton 1989).

Another important control is the local human capital level, which is measured as the share of adults aged 25 or above with a college degree. Interestingly, prior studies have shown an ambiguous effect of education on entrepreneurship, although this effect may differ by industry and country. Glaeser and Kerr (2009) identify a weak link between the educational attainment of workers and new U.S. manufacturing firm formation; in contrast, Acs and Armington (2004) document a strong positive impact of human capital on service start-ups in the U.S. Furthermore, in their study of Indian businesses, Ghani et al. (2014) determine that cities with a well-educated workforce tend to be associated with a higher rate of new organized manufacturing and service firm formation. This study described herein also controls for the share of migrants living in the area because there is evidence from developed countries that immigrants are more likely to be entrepreneurs than native-born residents (e.g., Hunt 2011).[14] China's labor market has a huge number

[14]This paper defines migrants as people whose *hukou* is not in their current residential county as of the survey time. In China, a *hukou* is a registration record that identifies a person's residential status. Without a local *hukou*, a person is not eligible for many social welfare benefits in that area such as education and health care.

of migrants who move from rural areas to the city or from city to city. The impact of these migrations is multifaceted: First, migrants may be more included to engage in entrepreneurial activities because they are not able to secure jobs in non-private sectors—likely due to individual characteristics or discrimination in the labor market. And second, they may provide necessary and relatively cheap labor for entrepreneurs.[15]

Additional controls are also incorporated in this investigation: city's economic attributes, including gross domestic product (GDP) per capita, the share of GDP in secondary and tertiary sectors and foreign direct investment (FDI) per capita. These factors are useful in capturing a city's overall economic development level and structure. Finally, the quality of a city's infrastructure is measured using three variables: water use per capita, electricity use per capita, and paved road per capita. Interestingly, while infrastructure investment is one of the most commonly discussed public policies to boost local economic growth, the importance of infrastructure has been scantily addressed in prior studies (Chatterji et al. 2014). To reiterate, in this study, the 2005 one-percent population census of China is utilized to characterize age profile, human capital and share of migrants. Furthermore, we gather data from the 2006, 2007, and 2008 *Urban Statistical Yearbooks* to calculate three-year averages for population size, population density, economic attributes and infrastructure.

It must be noted, however, that several factors are absent from our controls. For example, variables that measure the local policy environment toward the private sector are not included—although it is well known that an inhospitable policy environment is a likely obstacle to the growth of the private sector. Another determinant not taken into account herein is whether a city has a healthy financial system, which can foster an environment for private sector growth.

5 Empirical Model

To explain spatial clusters of entrepreneurship, we estimate the following model:

$$\ln(Entry_{ic}) = \alpha_0 + X_{ic}\alpha_x + Z_c\alpha_z + \lambda_i + \epsilon_{ic}, \tag{1}$$

where $\ln(Entry_{ic})$ represents the log employment in new private firms in industry i and city c; X_{ic} is a vector of city-industry characteristics; Z_c is a vector of city-level characteristics; λ_i represents industry fixed effects that control for other differences in industry

[15]Prior studies have documented that a large number of migrants are self-employed, but a clear explanation for this trend has not emerged. For example, Giulietti et al. (2012) show that the self-employment rate is about 25% for rural-to-urban migrants using the 2005 population census of China. Further, they find that institutional obstacles in the labor market have little impact on the self-employment choices of migrants.

sizes, industry-specific policies and advantages for new firm formation, and so forth; α_0, α_x and α_z are regression coefficients; and ϵ_{ic} is the error term that accounts for unobserved factors (such as idiosyncratic shocks to new firm formation).

Since many industries are simply not present in one city, roughly two-thirds of city-industry pairs have zero new entrants. To address this issue, equation (1) is estimated using a Tobit model to account for the censoring of zero employment.[16] In a robust analysis, the results are compared using ordinary least squares (OLS). To deal with the correlation across industries within a city, standard errors are clustered at the city level. Non-log variables are normalized to have unit standard deviation to aid interpretation.

6 Empirical Results

This section reports our empirical results. Entrepreneurship initially is related to all the determinants discussed above separately for manufacturing and services. Secondarily, the causal effects of local industrial conditions on entrepreneurship are considered. Finally, heterogeneous agglomeration effects are explored.

6.1 Results for Manufacturing

Tables 3 and 4 report the empirical results estimated from equation (1) for manufacturing and services, respectively. With respect to results related to manufacturing, we investigate several specifications in which the common controls include employment structure in their own industry, city-level variables and industry fixed effects. To investigate the connections between the Marshallian and Chinitz metrics, these variables are added one by one.

Overall, the results confirm that more incumbent own-industry employment significantly promote the entry of new private manufacturing firms in that industry. Specifically, a 10% increase in total incumbent employment raises the entrepreneurial employment in manufacturing by approximately 7%.[17] In contrast, more SOEs in own industry seem to be unrelated to the entry of new private manufacturing firms.

With respect to the impact of the three Marshallian factors, our findings indicate that higher levels of manufacturing entrepreneurship tend to emerge in the places where more upstream and downstream firms are concentrated. Moreover, this agglomeration force

[16]The Tobit model is a common approach to deal with the problem of zero employment in many city-industry pairs. For details, see Rosenthal and Strange (2003).

[17]The agglomeration literature suggests that there are differences in examining localization economics and the specific mechanisms of Marshallian agglomeration economics. The general approach for identifying localization economics is to see whether a firm's outcome (e.g., productivity) is positively related to other firms in the same industry locally (e.g., Henderson 2003). For this study, the number of incumbent employment in own industry is controlled, and this variable captures the localization economics. This variable is significant and suggests the presence of localization economics. However, this variable does not enable us to determine specific agglomeration mechanisms.

contributes to the birth of industrial clustering in China. For example, Zhili Township in Zhejiang province is initially a production center for children's garments. However, as garment industry expands, this region begins to attract a number of related industries such as button and zipper production, repair stores, and packaging services. As a result, Zhili Township becomes a significantly larger and more diversified industrial clustering after many years of development (Fleisher et al. 2010).

Another finding from this investigation is that the presence of abundant workers with similar skills seems to be unrelated to the birth of new private manufacturing firms. The coefficients for Chinitz measures are significant and show that small upstream and downstream firms can lead to higher levels of manufacturing entrepreneurship. To illustrate the magnitude of these effects, a one-standard-deviation decrease in the size of relevant upstream firms raises entrepreneurial employment in manufacturing by approximately 20%. The impact of geographic proximity to upstream and downstream firms on entrepreneurship decreases slightly after controlling for the size of these firms.

As for the influence of city characteristics, the coefficients for city population and population density are positive and statistically significant. For example, a 10% increase in population raises entrepreneurial employment in manufacturing by about 9%. With respect to age-related impacts, we note positive and significant coefficients for the share of people aged 20 to 39 and people aged 60 and over, which seems to indicate that the presence of more young adults and elderly people may contribute to higher levels of manufacturing entrepreneurship.[18] As a comparison, Glaeser and Kerr (2009) find that the number of elderly people in an area has a relatively insignificant impact on U.S. manufacturing entrepreneurship. In this study, higher levels of human capital and a higher share of migrants appear to be unrelated to private manufacturing start-ups. The coefficients for per capita FDI are found to be positive and significant, suggesting that FDI inflows may facilitate manufacturing entrepreneurship (perhaps as a result of the import of management experience and marketing channels). The effects of local infrastructures are mixed and vary in sign and significance. Specifically, manufacturing entrepreneurship appears to be unrelated to water use, but it is negatively associated with electricity use and positively associated with the availability of paved roads.

6.2 Results for Services

Table 4 is organized similarly to table 3 and presents the results for services. Total incumbent firms in their own industry exert a positive and significant influence on private service start-ups, whereas the impact from incumbent SOEs is negative and significant. Unlike manufacturing, the coefficients for the Marshallian input and output metrics are

[18]The omitted category is the people aged 40 to 59.

not statistically significant, whereas the coefficients for the Chinitz metrics are positive and significant. In addition, the labor market effect of agglomeration is found to be negative and significant.

The coefficients for city population are positive and significant and slightly smaller in magnitude than that of manufacturing. In contrast, the coefficients for population density are negative and significant. The effect of age structure exhibits similar patterns for manufacturing and services—namely, that the presence of young adults and elderly people presents an important influence on service entrepreneurship. The coefficients for human capital are significant in some specification.[19] The results concerning migration reveal some distinct differences: the entry of new private service firms is positively correlated with the proportion of migrants in an area. One possible explanation for these findings is that migrants are more likely to be entrepreneurs in services or to provide labor for service start-ups that may have crowded out the creation of manufacturing start-ups (for example, due to competition for limited production inputs). Of course, there may be other unobserved city attributes. For example, cities like Beijing have policies that encourage the development of the service sector which may attract migrants.

In contrast with manufacturing, the coefficients for the share of GDP in the secondary and tertiary sectors are found to be both positive and significant, showing that the growth of the local secondary and tertiary sectors may facilitate new private service firm formation. Moreover, cities with higher per capita FDI tend to be more entrepreneurial in the service sector. The quality of infrastructure seems to have no impact on the service start-ups except that electricity use is negatively linked with service entrepreneurship.

6.3 Results with City Fixed Effects

After determining results from estimating equation (1), we examine the causal effects of local industrial conditions. The causal link between specific mechanisms of agglomeration forces and entrepreneurship has received much attention in recent studies (e.g., Rosenthal and Strange 2003; Glaeser and Kerr 2009; Delgado et al. 2010; Ghani et al. 2014). Several sources may bias the estimates. For instance, there may be unobserved characteristics that are correlated with local industrial conditions and new firm formation. Reserve causality is another concern, in that existing firms may locate in a particular place where more entrepreneurial activities are expected, thus leading to more business opportunities. To further address the endogeneity issues, the results that control for city fixed effects are presented.

[19]These results on human capital should be interpreted with caution. In unreported results that estimate equation (1) using the ordinary least squares method, having a higher proportion of college graduates in an area is negatively associated with manufacturing entrepreneurship and positively associated with service entrepreneurship. All these coefficients are significant.

We estimate an alternative Tobit model that controls for city fixed effects in equation (1). As a result, city-level characteristics are omitted in the estimation. City fixed effects are included as controls for any unobserved and immeasurable city-invariant effects such as geographic factors and unchanged local policies. Table 5 presents the results for manufacturing (columns 1–5) and services (columns 6–10). For both manufacturing and services, the coefficients for total incumbents are strongly significant and almost unchanged in magnitude across different specifications. Similar to previously reported results, more SOEs in their own industry do not impact manufacturing entry to any significant degree, but seems to discourage service entry. For manufacturing, the presence of suppliers and customers continues to be important, while the labor metric is not significant. Additionally, the Chinitz effects continue to be strong. For example, a one-standard-deviation decrease in the size of relevant upstream firms will increase entrepreneurial employment in manufacturing by approximately 26%. In contrast, the results for services are not sufficiently robust enough to adding city fixed effects. The coefficients for the Marshallian input and output metrics are positive and statistically significant, whereas the coefficients for the Marshallian labor metrics and Chinitz metrics lose significance. Consequently, we place more faith in the estimates that control for city fixed effects.

The agglomeration effects for services become significant after adding city fixed effects, indicating that the concentration of incumbent firms may be positively (or negatively) correlated with unobserved factors that hinder (or encourage) new private service firm entry. There are several possible reasons for this finding. First, service firms tend to locate in central cities; thus, an increasing concentration of incumbent service firms may boost rental costs in central cities. However, manufacturing firms often choose to locate in more suburban areas or even rural areas where land is more plentiful and rental costs are lower. Second, incumbent firms may create high entry barriers to block new comers. For example, incumbent firms may create brand royalties and provide products with lower prices to prevent new entrants from attracting customers (e.g., Geroski 1995). Third, new and incumbent firms may compete for workers and financial resources. Overall, service firms are more labor-intensive and may suffer more from the competition in hiring workers.

Four points are worthy of further discussion. First, this paper relates the birth of new private firms to a city's overall industrial environment; however, local districts or clusters at a lower geographic unit may play a more important role in generating the benefits of firm agglomeration and facilitating new firm formation. The existing literature has explored this heterogeneous effect and suggests that any gains from agglomeration may diminish across firm location. For example, Rosenthal and Strange (2008) show that wage premiums of workers are more strongly impacted by nearby workers within five miles in comparison to workers beyond that five-mile limit. Moreover, the flow of knowledge spillover operates locally, and entrepreneurship capital is locally bounded (Audretsch

and Keilbach 2007). Prompted by economic reforms initiated in the late 1970s, Chinese governments have established a number of industrial clusters that contribute to rapid industrialization and economic growth (Ganne and Lecler 2009; Wang and Mei 2009; Bellandi and Lombardi 2012). Whether Marshallian agglomeration advantages also play a role in the success of these industrial clusters should be examined in future work. Nevertheless, this paper has found significant Marshallian and Chinitz effects at the prefecture city level, and we would expect that these effects may be stronger at the local cluster level.

Second, in addition to Marshall's theories of explaining the benefits from industrial clustering, lowering the capital barriers of firm entry is another novel theory—particularly in the Chinese context (Ruan and Zhang 2009; Long and Zhang 2011). Over the lengthy process of industrialization in China, financial constraints have been a long-standing problem that has hindered the growth of privately-owned small and medium-sized firms. In particular, state-owned financial institutions are blamed for their implementation of discriminative loan policies against private firms. Long and Zhang (2011) have shown that industrial clustering provides an alternative solution that could mitigate the financial burden of firm entry. They argue that the production processes of an industry are often disaggregated into many small steps. In such cases, each firm could engage in one small production step, thereby requiring fewer start-up or operating capital for each site. This financial effect of industrial clustering has contributed to rapid industrialization in China.

Third, a particular deviation from Glaeser and Kerr (2009) is that the Marshallian and Chinitz metrics are constructed using incumbent firms with different ownership types. Prior studies suggest that the interaction of upstream and downstream firms may differ by firm ownership. In particular, it has been found that in China there is a limited input-output linkage between foreign firms or FDI and local domestic firms. For example, Girma and Gong (2008) find weak vertical spillover from foreign firms to state-owned enterprises. Debaere et al. (2010) find that South Korean investments in China are strongly linked with the presence of upstream and downstream South Korean firms in a particular place, but not linked with the total number of downstream and upstream firms regardless of nationality. Our study shows that the Marshallian and Chinitz agglomeration forces built on a variety of ownerships are able to promote the entry of private manufacturing and service firms.

Fourth, although data utilized herein are drawn from the 2008 economic census, we argue that our results provide useful policy implications for present-day China. For example, findings show that proximity to upstream and downstream firms encourages new firm formation, which implies that the shipping costs of inputs and outputs play an important role in the establishment of new firms. The policy implications, therefore, of improving infrastructure in order to reduce transport costs are likely to be economically

advantageous. Additionally, small incumbent firms are known to facilitate firm entry. With regard to policy formation, supporting small firms may indirectly encourage the births of new firms and create more jobs. Policy makers, therefore, should be cautious with respect to formulating policies directed at subsidizing large SOEs. We also confirm that bigger cities with more FDI are more entrepreneurial. This effect may contribute to regional disparities because entrepreneurship is positively related to economic growth. In contrast, underdeveloped regions with few FDI should encourage the development of policies aimed at providing adequate funds and exploiting marketing channels for entrepreneurs.

6.4 Robustness

Tables 6 and 7 present robust analyses for manufacturing and services, respectively. Column 1 in each table replicates the baseline results obtained from table 5. Column 2 in each table shows results when four province-level municipalities directly under the central government are omitted (specifically, Beijing, Tianjin, Shanghai and Chongqing), due to the fact that these places may have particular policies toward local industrial conditions and new firm creation. Column 3 lists results when the city-industry pairs with zero level of entrepreneurial employment are recoded to have one employment. The results are more or less robust to these changes.

It is well known that nonlinear models with fixed effects can lead to biased and inconsistent estimates due to incidental parameter problems when the length of the panel is fixed (Chamberlain 1984; Maddala 1987). We implement several strategies to deal with this issue. First, column 4 in each table provides estimated random effect Tobit models that unobserved industry effects are assumed to be random. Overall, the Marshallian and Chinitz estimates using fixed effect and random effect Tobits remain qualitatively similar except for the labor and Chinitz metrics for services. Second, column 5 estimates OLS models. The OLS estimates using censored data are also biased. Therefore, the magnitudes of the OLS and Tobit estimates may not be comparable, although most of these estimates are qualitatively similar. We are more confident about the agglomeration effects of upstream and downstream firms which remain significant after using OLS.

Holding all other variables constant, larger new firms may tend to emerge in larger cities, presumably as a result of more readily available human and financial resources. To control this effect, column 6 in each table employs the ratio of the number of workers in new private firms to city population as an alternative dependent variable. Overall, the results for manufacturing are qualitatively similar to our baseline results, while the results for services indicate that the Marshallian effects are not significant. This finding suggests that there may be omitted effects of population on the birth of new service firms.

In column 7, the number of new private firms is used as an alternative measurement of entrepreneurship. Even with this modification, our principal results are more or less robust.

One concern indicates that we should consider the entry of SOEs as a placebo test. However, we argue that such an approach would ultimately not satisfy a placebo test because the results for the entry of SOEs may not be *a priori* knowledge. On the one hand, SOEs (much like private firms) may operate as profit-maximizing firms and therefore tend to emerge in locations with a favorable industrial environment. On the other hand, SOEs may be established by central and local governments in a particular location for multiple purposes; hence, these SOEs may have tenuous connections to local markets and industries. In other words, the results for the entry of SOEs are somewhat ambiguous. Nevertheless, we would like to empirically examine whether the entry of SOEs is suitable for a placebo test. The model to examine SOEs entry is specified as follows:

$$\ln(Entry_{ic}^{soe}) = \beta_0 + X_{ic}\beta_x + \mu_i + \theta_c + \nu_{ic}, \tag{2}$$

where $\ln(Entry_{ic}^{soe})$ represents the log employment in new SOEs in industry i and city c; X_{ic} is a vector of city-industry characteristics; μ_i and θ_c represent industry and city fixed effects respectively; β_0 and β_x are regression coefficients; and ν_{ic} is the error term. As shown in columns 8 of tables 6 and 7, results show that the entry of new manufacturing SOEs is unrelated to incumbent upstream and downstream firms, while the entry of new service SOEs is significantly correlated with incumbent upstream and downstream firms. One possible rationale for this finding is that SOEs account for a large proportion of service firms in China. Moreover, new service SOEs may have close production relationships with the other incumbent service SOEs. Nonetheless, more evidence is needed from additional research studies to clarify this relationship.

Another concern is that there may be unobserved policies and resources that contribute to the concentration of particular industries in one location. To deal with this issue, a first-difference regression is estimated using the 2004 and 2008 economic census data for manufacturing:[20]

$$\Delta \ln(Entry_{ic}) = \alpha_0' + \Delta X_{ic}\alpha_x' + \eta_i + \gamma_c + \varepsilon_{ic}, \tag{3}$$

where $\Delta \ln(Entry_{ic}) = \ln(Entry_{ic2008}) - \ln(Entry_{ic2004})$; X_{ic} represents city-industry characteristics; η_i and γ_c represent industry and city fixed effects respectively; α_0' and α_x' refer

[20]Only manufacturing data are available for the 2004 economic census. For this exercise, the Marshallian and Chinitz metrics are remeasured using the 2004 and 2008 manufacturing data. The summary statistics are available on request.

to regression coefficients; and ε_{ic} is the error term. Taking first difference eliminates the time-invariant city-industry fixed effects that may lead to the linkage between local industrial conditions and entrepreneurship. Equation (3) is estimated using OLS, and table 8 presents the results.[21] Industry and city fixed effects are added in each column. Overall, the total incumbent firms in their own industry continue to be a significant factor for new private manufacturing firms, although the magnitudes of these coefficients drop substantially. Again, the effects of incumbent SOEs again are not statistically significant. The results for the Marshallian and Chinitz metrics are encouraging. Specifically, positive and significant coefficients for these metrics across different specifications are identified—except for the Marshallian labor metric and Chinitz metric for small output customers.

6.5 Heterogeneous Effects

6.5.1 Small Firm Entry vs Large Firm Entry

One goal of this investigation was to determine whether small firm entry is different from large firm entry. To address this question, the Tobit models in columns 5 and 10 in table 5 are estimated after adding (a) firm size dummy variables, and (b) firm size dummy variables that interacted with the Marshallian and Chinitz metrics. Firm size dummy variables are constructed where 1 indicates that new private firms employ 41 or more workers and 0 if otherwise.

Table 9 presents the results. Let's focus on the interaction terms that examine whether the Marshallian agglomeration and Chinitz effects are stronger for small private start-ups. Overall, proximity to a suitable industrial environment seems to matter more for small private start-ups in comparison to larger enterprises. For manufacturing, three out of five coefficients for the interaction terms are negative and significant, while for services, two out of five coefficients for the interaction terms are negative and significant. Proximity to upstream firms matters more for small private service start-ups. Small input suppliers are found to be more important for both small private manufacturing and service start-ups, while small output customers are more important for small private manufacturing start-ups.

6.5.2 Eastern Region vs Other Regions

Economic regional disparities in China represent a long-standing phenomenon. The most pronounced economic fault line in terms of economic development and openness is the one

[21] The number of observations in the first-difference estimation become smaller because the number of industries is different in the 2004 and 2008 economic censuses.

that divides the more advanced eastern coastal regions from the economically disadvantaged central and western inland regions. The historical evolution of regional imbalance can be divided into two phrases. The first phrase, which begins with the reform period and lasts until the late 1990s, features a rising regional disparity with central governments giving policy priority to coastal regions with their inherent comparative advantages in historical conditions, geographic proximity to foreign markets, etc. Moreover, the regional industrial structure in China is distinctive in that labor intensive and new technology industries (e.g., electronics and electrical machinery) are heavily concentrated in coastal regions. In contrast, inland regions with their abundant natural resources tend to specialize in industries such as mining, energy and public utilities (Sarcina et al. 2014; Lemoine et al. 2015). Adding to the widening regional disparity is that infrastructure investment is more heavily concentrated in eastern coastal regions (Demurger 2001). Furthermore, such disparities in local and regional characteristics are reported to have significant impact on firm performance (e.g., Barbieri et al. 2013).

The second phase takes hold in the mid-2000s and continues in the present-day China. Over the past ten years or so, regional convergence in the industrial structure and in labor productivity has emerged (Lemoine et al. 2015). In particular, industrial production begins to move from the East to the West due to factors such as rising labor costs in more economically advanced regions, favorable policies toward formerly disadvantaged regions, and a number of other economic trends.

Exploring regional differences represents another intriguing avenue of investigation. Specifically, we were interested in determining if a suitable industrial environment matters more in certain places in comparison to others. To ascertain the influence of geographic placement, we group new private firms into four regions: East, Central, Northeast and West. Table 10 shows the results. The Tobit models in columns 5 and 10 in table 5 are estimated after adding regional dummy variables that interacted with the Marshallian and Chinitz metrics. The omitted group is the eastern region. Overall, regional differences in terms of inherent advantages from local industrial conditions are not very strong. Moreover, most of the coefficients for the interaction terms are not statistically significant. In particular, proximity to upstream firms seems to matter more for manufacturing entrepreneurship in the eastern region in comparison to the other regions. Smaller input suppliers appear to promote higher entry of manufacturing entrepreneurship in the northeastern region, but do not matter for the entry of service entrepreneurship in this region.

7 Conclusion

This paper examines a variety of determinants that may explain the formation of clusters of entrepreneurship in China. Our first series of findings relate to local industrial conditions. To promote new firm formation in a particular location, a key variable is the presence of a significant number of incumbent same-industry firms within that region. While there has been continuing debate over whether SOEs are good or bad for private firms, this paper provides quantitative evidence of the negative effects of SOEs on the establishment of new private service firms. However, caution is warranted as these effects may not be evidence of a causal link. More importantly, our results seem to support significant Marshallian effects for manufacturing and services—namely, proximity to inputs and outputs appears to facilitate new firm formation in a particular location. Furthermore, this study finds significant Chinitz effects for manufacturing. In other words, the level of manufacturing entrepreneurship may be higher in places where there are many small firms relative to larger dominant firms that provide inputs and purchase outputs.

Our second finding pertains to the influence of city characteristics. Specifically, the level of manufacturing entrepreneurship tend to be higher in larger and high-density cities with more young adults and elderly people and more FDI inflows. In contrast, the level of service entrepreneurship tend to be higher in larger and low-density cities with more young adults and elderly people, more migrants and more FDI inflows. The specific underlying causal mechanisms that link city attributes and entrepreneurship will require further study.

In terms of the policy outcomes of this investigation, our results point to the importance of industrial clustering as a strategy for encouraging entrepreneurship. Beginning with the establishment of specialized economic development zones (SEZ) in South China in the 1980s, regional governments have initiated a number of industrial development programs across the country. However, quantitative evidence for the effectiveness of industrial clustering remains limited. Barbieri et al. (2012) report a significant correlation between industrial development programs and industrial performance in Guangdong province. However, more research is required to determine the impacts of regional industrial clustering, as well as the specific mechanisms for promoting entrepreneurship. Such an investigation could be carried out by utilizing big data that describes more detailed connections among firms. Furthermore, policy makers at various levels of government must be prepared and adept at instituting and assessing innovative strategies and tactics to promote entrepreneurship and economic reform (Zhu 2013).

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Table 1a: Spatial Variation of New Private Firm Entry Rate across Cities for Manufacturing

Cities	Provinces	Employment in new private firms	Total incumbent employment	Entry rate (%)
Top 15 Cities				
Guangyuan	Sichuan	4,494	28,767	15.62
Longnan	Gansu	2,260	16,236	13.92
Chizhou	Anhui	5,700	46,659	12.22
Huaibei	Anhui	5,911	53,720	11.00
Ankang	Shanxi	2,595	24,364	10.65
Kaifeng	Henan	31,158	300,919	10.35
Suzhou	Anhui	9,546	97,927	9.75
Shangqiu	Henan	20,388	241,282	8.45
Panjin	Liaoning	7,615	90,885	8.38
Shuangshan	Anhui	3,965	49,307	8.04
Zhumadian	Henan	23,097	294,039	7.86
Xuancheng	Anhui	11,706	152,628	7.67
Fuyang	Anhui	11,554	152,014	7.60
Chaohu	Anhui	9,685	127,695	7.58
Xinyang	Henan	14,501	198,408	7.31
Bottom 15 Cities				
Urumqi	Xinjiang	1,676	144,616	1.16
Sanya	Hainan	84	7,365	1.14
Lanzhou	Gansu	2,277	205,496	1.11
Shantou	Guangdong	5,369	481,582	1.11
Yuncheng	Shanxi	2,813	255,617	1.10
Wuxi	Jiangsu	18,902	1,760,192	1.07
Taiyuan	Shanxi	3,147	297,251	1.06
Chaozhou	Guangdong	2,776	268,300	1.03
Baotou	Inner Mongolia	2,010	201,924	1.00
Wuhai	Inner Mongolia	291	33,242	0.88
Guiyang	Guizhou	1,505	200,610	0.75
Jiayuguan	Gansu	341	46,470	0.73
Kelamayi	Xinjiang	195	31,892	0.61
Beijing	Beijing	7,176	1,280,638	0.56
Zhuhai	Guangdong	2,257	487,485	0.46

Notes: The entry rate measures the ratio of employment in new private firms to employment in incumbent firms. New firms are defined as those created in the last 12 months. The data come from the 2008 economic census.

Table 1b: Spatial Variation of New Private Firm Entry Rate across Cities for Services

Cities	Provinces	Employment in new private firms	Total incumbent employment	Entry rate (%)
Top 15 Cities				
Jiayuguan	Gansu	2,322	14,163	16.39
Yulin	Shanxi	9,574	94,110	10.17
Yingkou	Liaoning	10,024	103,525	9.68
Chaoyang	Liaoning	5,085	58,786	8.65
Panzhihua	Sichuan	4,640	54,974	8.44
Ningde	Fujian	6,713	82,357	8.15
Fangcheng Port	Guangxi	2,214	28,043	7.90
Binzhou	Shandong	10,727	136,665	7.85
Jinmen	Hubei	4,456	58,400	7.63
Jinzhou	Liaoning	7,621	100,610	7.57
Liupanshui	Guizhou	2,047	27,938	7.33
Suqian	Jiangsu	7,106	97,996	7.25
Sanming	Fujian	6,097	84,371	7.23
Guigang	Guangxi	2,870	42,438	6.76
Huangshan	Anhui	3,068	45,474	6.75
Bottom 15 Cities				
Zhongshan	Guangdong	3,494	207,801	1.68
Songyuan	Jilin	1,288	80,617	1.60
Haikou	Hainan	3,048	191,192	1.59
Sanya	Hainan	798	50,641	1.58
Bazhong	Sichuan	369	25,296	1.46
Jiaozuo	Henan	1,599	109,423	1.46
Jieyang	Guangdong	1,008	69,767	1.44
Chaozhou	Guangdong	614	42,649	1.44
Baicheng	Jilin	623	45,566	1.37
Hegang	Heilongjiang	431	31,715	1.36
Yunfu	Guangdong	451	33,812	1.33
Shantou	Guangdong	1,992	152,819	1.30
Maoming	Guangdong	1,591	124,968	1.27
Shanwei	Guangdong	428	34,013	1.26
Puyang	Henan	768	72,509	1.06

Notes: See Table 1a

Table 2: Summary Statistics

Variables	Mean	Std. Dev.	Sources
City-industry characteristics for manufacturing			
Employment in new private firms	56	249	(1)
Total incumbent employment	2,111	9,375	(1)
Incumbent employment in SOEs	69	932	(1)
Inputs/supplier strength metric	-1.539	0.136	(1)
Outputs/customer strength metric (×1000)	2.139	4.643	(1)
Labor market strength metric	0.428	0.714	(1)
Chinitz measure of small suppliers (×1000)	0.279	0.130	(1)
Chinitz measure of small customers (×1000)	0.174	0.193	(1)
City-industry characteristics for services			
Employment in new private firms	43	246	(1)
Total incumbent employment	1,755	7,053	(1)
Incumbent employment in SOEs	158	1,075	(1)
Inputs/supplier strength metric	-1.468	0.135	(1)
Outputs/customer strength metric (×1000)	1.708	3.533	(1)
Labor market strength metric	0.415	0.724	(1)
Chinitz measure of small suppliers (×1000)	0.364	0.173	(1)
Chinitz measure of small customers (×1000)	0.295	0.292	(1)
City characteristics			
Population (in thousands)	4,184	2,946	(3)
Population density (persons per km^2)	411	314	(3)
Share of population aged 19 or younger	0.286	0.055	(2)
Share of population aged 20-39	0.313	0.052	(2)
Share of population aged 60 or older	0.123	0.025	(2)
Share of population with a college degree	0.016	0.017	(2)
Share of population without a local Hukou	0.066	0.099	(2)
Per capita GDP (renminbi)	18,404	14,392	(3)
Share of GDP in secondary sector	0.472	0.119	(3)
Share of GDP in tertiary sector	0.362	0.081	(3)
Per capita FDI (US dollars)	84.323	171.603	(3)
Per capita water use (ton)	50.076	26.477	(3)
Per capita electricity use (kilowatt hour)	399.454	303.937	(3)
Per capita paved roads (m^2)	8.508	5.392	(3)

Notes: (1) 2008 economic census; (2) 2005 one-percent population census; (3) 2006, 2007, and 2008 *Urban Statistical Yearbook*. All values are in 2008 renminbis or U.S. dollars.

Table 3: Estimation for Manufacturing

	DV: ln(Employment in new private firms)				
	(1)	(2)	(3)	(4)	(5)
ln(Total Incumbent	0.728***	0.723***	0.721***	0.713***	0.711***
employment)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)
ln(Incumbent employment	-0.012	-0.015	-0.014	-0.016	-0.017
in SOEs)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)
Inputs/supplier	0.360***	0.361***	0.357***	0.205***	0.220***
strength metric	(0.040)	(0.040)	(0.040)	(0.047)	(0.047)
Outputs/customer		0.092***	0.112***	0.100***	0.084***
strength metric		(0.032)	(0.022)	(0.021)	(0.022)
Labor market			-0.086	-0.101	-0.090
strength metric			(0.068)	(0.072)	(0.072)
Chinitz measure of				0.256***	0.216***
small suppliers				(0.042)	(0.043)
Chinitz measure of					0.131***
small customers					(0.035)
ln(Population)	0.903***	0.858***	0.913***	0.921***	0.921***
	(0.085)	(0.083)	(0.095)	(0.096)	(0.096)
ln(Population density)	0.190***	0.191***	0.191***	0.217***	0.209***
	(0.071)	(0.070)	(0.071)	(0.071)	(0.071)
Share of population aged	-0.114	-0.105	-0.115	-0.114	-0.104
19 and younger	(0.085)	(0.085)	(0.085)	(0.084)	(0.084)
Share of population aged	0.349***	0.356***	0.342**	0.354***	0.361***
20-39	(0.135)	(0.136)	(0.134)	(0.134)	(0.134)
Share of population aged	0.312***	0.314***	0.309***	0.309***	0.313***
60 and older	(0.093)	(0.093)	(0.092)	(0.091)	(0.091)
Share of population with	-0.093	-0.096	-0.064	-0.078	-0.080
a college degree	(0.067)	(0.070)	(0.065)	(0.065)	(0.065)
Share of population without	0.022	-0.024	0.011	0.032	0.033
a local Hukou	(0.090)	(0.090)	(0.097)	(0.098)	(0.098)
ln(Per capita GDP)	-0.224	-0.246	-0.225	-0.329*	-0.320
	(0.191)	(0.191)	(0.194)	(0.196)	(0.195)
Share of GDP in	-0.029	-0.026	-0.032	0.002	0.005
secondary sector	(0.109)	(0.109)	(0.109)	(0.107)	(0.107)
Share of GDP in	-0.105	-0.103	-0.105	-0.146*	-0.152*
tertiary sector	(0.087)	(0.086)	(0.087)	(0.088)	(0.088)
ln(Per capita FDI)	0.200***	0.199***	0.200***	0.217***	0.214***
	(0.048)	(0.048)	(0.049)	(0.048)	(0.049)
ln(Per capita water use)	0.089	0.092	0.085	0.090	0.090
	(0.092)	(0.092)	(0.091)	(0.090)	(0.091)
ln(Per capita electricity use)	-0.365***	-0.353***	-0.363***	-0.349***	-0.339***
	(0.116)	(0.116)	(0.117)	(0.116)	(0.116)
ln(Per capita paved roads)	0.319***	0.317***	0.314***	0.324***	0.320***
	(0.108)	(0.108)	(0.108)	(0.108)	(0.108)
Constant	-6.022**	-5.595**	-6.022**	-7.624***	-7.608***
	(2.557)	(2.554)	(2.591)	(2.643)	(2.641)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.228	0.228	0.228	0.229	0.229
Log likelihood	-53629	-53616	-53611	-53542	-53533
Censored observations	28038	28038	28038	28038	28038
Observations	45920	45920	45920	45920	45920

Notes: Standard errors clustered by city are reported in parentheses. Non-log variables are transformed to have unit standard deviation. The dependent variable is the log employment in new private firms by industry-city. Estimations use Tobit models.
* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Table 4: Estimation for Services

	DV: ln(Employment in new private firms)				
	(1)	(2)	(3)	(4)	(5)
ln(Total Incumbent	0.580***	0.581***	0.580***	0.575***	0.575***
employment)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
ln(Incumbent employment	-0.020**	-0.020**	-0.018*	-0.017*	-0.018*
in SOEs)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Inputs/supplier	0.056	0.055	0.052	-0.065	-0.056
strength metric	(0.045)	(0.045)	(0.046)	(0.052)	(0.052)
Outputs/customer		-0.028	0.028	0.032	0.025
strength metric		(0.028)	(0.021)	(0.021)	(0.022)
Labor market			-0.117***	-0.139***	-0.131***
strength metric			(0.040)	(0.040)	(0.040)
Chinitz measure of				0.198***	0.167***
small suppliers				(0.051)	(0.047)
Chinitz measure of					0.080**
small customers					(0.037)
ln(Population)	0.679***	0.696***	0.749***	0.781***	0.776***
	(0.065)	(0.067)	(0.076)	(0.073)	(0.073)
ln(Population density)	-0.134**	-0.134**	-0.136**	-0.120**	-0.119**
	(0.053)	(0.053)	(0.053)	(0.052)	(0.052)
Share of population aged	0.003	-0.001	-0.008	-0.008	-0.004
19 and younger	(0.070)	(0.070)	(0.070)	(0.067)	(0.067)
Share of population aged	0.199**	0.195**	0.181*	0.182**	0.187**
20-39	(0.094)	(0.094)	(0.094)	(0.091)	(0.091)
Share of population aged	0.261***	0.260***	0.255***	0.249***	0.254***
60 and older	(0.065)	(0.065)	(0.065)	(0.063)	(0.063)
Share of population with	0.072	0.080	0.113**	0.092*	0.087*
a college degree	(0.057)	(0.053)	(0.050)	(0.049)	(0.049)
Share of population without	0.111*	0.123*	0.157**	0.178***	0.179***
a local Hukou	(0.062)	(0.063)	(0.067)	(0.066)	(0.066)
ln(Per capita GDP)	0.207	0.213	0.237	0.173	0.168
	(0.154)	(0.155)	(0.158)	(0.155)	(0.156)
Share of GDP in	0.311***	0.308***	0.301***	0.312***	0.312***
secondary sector	(0.076)	(0.077)	(0.078)	(0.073)	(0.073)
Share of GDP in	0.271***	0.270***	0.269***	0.225***	0.222***
tertiary sector	(0.066)	(0.067)	(0.067)	(0.067)	(0.067)
ln(Per capita FDI)	0.067*	0.067*	0.067*	0.080**	0.081**
	(0.037)	(0.037)	(0.038)	(0.037)	(0.037)
ln(Per capita water use)	0.053	0.051	0.045	0.043	0.044
	(0.075)	(0.074)	(0.074)	(0.072)	(0.072)
ln(Per capita electricity use)	-0.164*	-0.169*	-0.179*	-0.156*	-0.151
	(0.093)	(0.093)	(0.093)	(0.094)	(0.094)
ln(Per capita paved roads)	0.031	0.032	0.027	0.044	0.042
	(0.085)	(0.085)	(0.085)	(0.082)	(0.082)
Constant	-16.053***	-16.143***	-16.596***	-17.887***	-17.976***
	(1.943)	(1.960)	(1.995)	(1.988)	(2.004)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.330	0.330	0.330	0.331	0.331
Log likelihood	-43568	-43566	-43553	-43513	-43509
Censored observations	30220	30220	30220	30220	30220
Observations	46781	46781	46781	46781	46781

Notes: See Table 3

Table 5: Estimation with City Fixed Effects for Manufacturing and Services

	Manufacturing					Services				
	DV: ln(Employment in new private firms)					DV: ln(Employment in new private firms)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ln(Total Incumbent	0.690***	0.683***	0.683***	0.669***	0.667***	0.545***	0.544***	0.544***	0.544***	0.544***
employment)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
ln(Incumbent employment	0.015	0.013	0.012	0.011	0.011	-0.018**	-0.018**	-0.018**	-0.018**	-0.018**
in SOEs)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Inputs/supplier	0.431***	0.427***	0.417***	0.254***	0.262***	0.080**	0.078**	0.079**	0.072*	0.076*
strength metric	(0.033)	(0.033)	(0.032)	(0.036)	(0.037)	(0.035)	(0.034)	(0.034)	(0.039)	(0.040)
Outputs/customer		0.116***	0.117***	0.102***	0.086***		0.024**	0.026**	0.026**	0.023*
strength metric		(0.023)	(0.023)	(0.022)	(0.023)		(0.012)	(0.012)	(0.012)	(0.012)
Labor market			0.377*	0.302	0.330			-0.052	-0.049	-0.063
strength metric			(0.218)	(0.226)	(0.225)			(0.068)	(0.069)	(0.069)
Chinitz measure of				0.292***	0.264***				0.013	0.013
small suppliers				(0.039)	(0.040)				(0.040)	(0.040)
Chinitz measure of					0.125***					0.035
small customers					(0.033)					(0.034)
Constant	3.406***	2.953***	-0.867	-2.959	-3.074	-2.403***	-2.640***	-2.111**	-2.256**	-2.184**
	(0.517)	(0.512)	(2.290)	(2.378)	(2.368)	(0.579)	(0.568)	(0.894)	(1.027)	(1.030)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.243	0.243	0.243	0.244	0.244	0.345	0.345	0.345	0.345	0.345
Log likelihood	-52567	-52548	-52545	-52494	-52486	-42562	-42561	-42561	-42561	-42560
Censored observations	28038	28038	28038	28038	28038	30220	30220	30220	30220	30220
Observations	45920	45920	45920	45920	45920	46781	46781	46781	46781	46781

Notes: Standard errors clustered by city are reported in parentheses. Non-log variables are transformed to have unit standard deviation. The dependent variable is the log employment in new private firms by industry-city. Estimations use Tobit models.
* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Table 6: Robust Analysis for Manufacturing

	Base estimation (1)	Dropping four municipalities (2)	Recording zero employment (3)	RE Tobit (4)	OLS regression (5)	Entry ratio as DV (6)	NO. of firms as DV (7)	New SOEs as DV (8)
ln(Total incumbent	0.667***	0.668***	0.678***	0.888***	0.214***	0.981***	0.251***	1.973***
employment)	(0.015)	(0.015)	(0.015)	(0.01)	(0.008)	(0.022)	(0.01)	(0.269)
ln(Incumbent employment	0.011	0.008	0.009	-0.036***	0.066***	-0.009	0.018***	0.335***
In SOE)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.013)	(0.004)	(0.116)
Inputs/supplier	0.262***	0.258***	0.265***	0.297***	0.075***	0.389***	0.084***	-0.147
strength metric	(0.037)	(0.037)	(0.037)	(0.027)	(0.018)	(0.056)	(0.015)	(0.612)
Outputs/customer	0.086***	0.117***	0.082***	0.130***	0.133***	0.080**	0.083***	0.107
strength metric	(0.023)	(0.019)	(0.023)	(0.019)	(0.025)	(0.032)	(0.014)	(0.164)
Labor market	0.330	0.856***	0.361	0.139***	0.365*	0.432	0.129	0.766
strength metric	(0.225)	(0.210)	(0.232)	(0.019)	(0.190)	(0.312)	(0.149)	(1.798)
Chinitz measure of	0.264***	0.258***	0.261***	0.066***	0.250***	0.328***	0.170***	0.505
small suppliers	(0.040)	(0.041)	(0.041)	(0.023)	(0.025)	(0.060)	(0.020)	(0.519)
Chinitz measure of	0.125***	0.132***	0.129***	0.186***	0.133***	0.156***	0.087***	0.247
small customers	(0.033)	(0.034)	(0.033)	(0.030)	(0.022)	(0.050)	(0.013)	(0.330)
Constant	-3.074	-1.062*	-3.423	-2.094***	-2.798	-14.213***	-1.666	-45.279**
	(2.368)	(0.570)	(2.442)	(0.354)	(1.962)	(3.319)	(1.560)	(21.235)
Industry fixed effects	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.244	0.242	0.244			0.204	0.417	0.317
Adjusted R^2					0.529			
Log likelihood	-52486	-51319	-52196	-54688		-60833	-29103	-1166
Censored observations	28038	27924	28275	28038		28038	28038	45723
Observations	45920	45280	45920	45920	45920	45920	45920	45920

Notes: Column 1 is drawn from column 5 in table 5. Column 2 drops four municipalities: Beijing, Tianjin, Shanghai, and Chongqing. Column 3 recodes the city-industry pairs with zero level of entrepreneurial employment to have one employment. Column 4 estimates random effect Tobit models that omitted industry effects are assumed to be random. Column 5 estimates OLS model. The dependent variable in columns 1-5 is the log employment in new private manufacturing firms by industry-city. Columns 6-8 use alternative dependent variables: the ratio of employment in new private manufacturing firms to city population (column 6), the log number of new private manufacturing firms (column 7), and the log employment in new manufacturing SOEs (column 8). Standard errors clustered by city are reported in parentheses except for random effect Tobit model. Non-log variables are transformed to have unit standard deviation.

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Table 7: Robust Analysis for Services

	Base estimation (1)	Dropping four municipalities (2)	Recording zero employment (3)	RE Tobit (4)	OLS regression (5)	Entry ratio as DV (6)	NO. of firms as DV (7)	New SOEs as DV (8)
ln(Total incumbent	0.544***	0.544***	0.551***	0.771***	0.175***	0.848***	0.261***	0.863***
employment)	(0.014)	(0.014)	(0.014)	(0.010)	(0.006)	(0.023)	(0.009)	(0.001)
ln(Incumbent employment	-0.018**	-0.024***	-0.018**	-0.021***	0.048***	-0.073***	0.015***	0.177***
in SOE)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.012)	(0.004)	(0.002)
Inputs/supplier	0.076*	0.087**	0.074*	0.123***	0.080***	0.076	0.096***	0.054***
strength metric	(0.040)	(0.040)	(0.040)	(0.024)	(0.022)	(0.067)	(0.024)	(0.001)
Outputs/customer	0.023*	0.045**	0.023**	0.037*	0.090***	-0.031	0.049**	0.196***
strength metric	(0.012)	(0.023)	(0.012)	(0.019)	(0.030)	(0.023)	(0.025)	(0.003)
Labor market	-0.063	0.086	-0.054	0.201***	-0.128**	-0.040	-0.118***	0.253***
strength metric	(0.069)	(0.192)	(0.070)	(0.020)	(0.060)	(0.124)	(0.045)	(0.003)
Chinitz measure of	0.013	0.022	0.016	0.093***	0.097***	-0.047	0.066**	-0.079***
small suppliers	(0.040)	(0.043)	(0.040)	(0.023)	(0.022)	(0.069)	(0.027)	(0.002)
Chinitz measure of	0.035	0.042	0.038	0.095***	0.094***	0.022	0.041***	-0.141***
small customers	(0.034)	(0.036)	(0.034)	(0.028)	(0.018)	(0.056)	(0.016)	(0.007)
Constant	-2.184**	-5.162***	-2.506**	-3.097***	2.058***	15.221***	0.447	-41.001***
	(1.030)	(0.691)	(1.058)	(0.329)	(0.646)	(1.720)	(0.621)	(0.004)
Industry fixed effects	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Pseudo R^2	0.345	0.342	0.344			0.285	0.495	0.287
Adjusted R^2					0.660			
Log likelihood	-42560	-41589	-42373	-44651		-51643	-26452	-6543
Censored observations	30220	30041	30415	30220	30220	30220	30220	45364
Observations	46781	46129	46781	46781	46781	46781	46781	46781

Notes: Column 1 is drawn from column 10 in table 5. Column 2 drops four municipalities: Beijing, Tianjin, Shanghai, and Chongqing. Column 3 recodes the city-industry pairs with zero level of entrepreneurial employment to have one employment. Column 4 estimates random effect Tobit models that omitted industry effects are assumed to be random. Column 5 estimates OLS models. The dependent variable in columns 1-5 is the log employment in new private service firms by industry-city. Columns 6-8 use alternative dependent variables: the ratio of employment in new private service firms to city population (column 6), the log number of new private service firms (column 7), and the log employment in new service SOEs (column 8). Standard errors clustered by city are reported in parentheses except for random effect Tobit model. Non-log variables are transformed to have unit standard deviation.

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Table 8: First Difference Estimation for Manufacturing

	DV: Δln(Employment in new private firms)				
	(1)	(2)	(3)	(4)	(5)
Δln(Total incumbent employment)	0.039***	0.038***	0.038***	0.038***	0.038***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Δln(Incumbent employment in SOEs)	0.001	0.001	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
ΔInputs/supplier strength metric	0.090***	0.078***	0.078***	0.067***	0.066***
	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
ΔOutputs/customer strength metric		0.273***	0.272***	0.268***	0.274***
		(0.092)	(0.092)	(0.092)	(0.092)
ΔLabor market strength metric			-0.070	-0.071	-0.094
			(0.587)	(0.587)	(0.585)
ΔChinitz measure of small suppliers				0.026	0.041*
				(0.019)	(0.021)
ΔChinitz measure of small customers					-0.061
					(0.048)
Constant	-1.123***	-0.958***	-0.983***	-0.986***	-0.985***
	(0.106)	(0.117)	(0.224)	(0.224)	(0.224)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
City fixed effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.053	0.054	0.054	0.054	0.054
Observations	45633	45633	45633	45633	45633

Notes: Standard errors clustered by city are reported in parentheses. Non-log variables are transformed to have unit standard deviation. The dependent variable is the difference in the log employment in new private firms by industry-city between 2004 and 2008. The models are estimated using OLS.
* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Table 9: Heterogeneity by Firm Size

	Manufacturing	Services
	DV: ln(Employment in new private firms)	
	(1)	(2)
ln(Incumbent employment)	0.347***	0.382***
	(0.010)	(0.010)
ln(Incumbent employment	-0.005	-0.032***
in SOEs)	(0.006)	(0.006)
Inputs/supplier	0.128***	0.079**
strength metric	(0.028)	(0.035)
Inputs/supplier	-0.008	-0.111***
strength metric*firm size	(0.031)	(0.034)
Outputs/customer	0.059**	0.022
strength metric	(0.023)	(0.024)
Outputs/customer	-0.035	-0.049
strength metric*firm size	(0.023)	(0.039)
Labor market	0.150	-0.086
strength metric	(0.189)	(0.058)
Labor market	-0.221***	-0.001
strength metric*firm size	(0.067)	(0.031)
Chinitz measure of	0.189***	0.060*
small suppliers	(0.029)	(0.035)
Chinitz measure of	-0.167***	-0.149***
small suppliers*firm size	(0.034)	(0.036)
Chinitz measure of	0.145***	-0.011
small customers	(0.027)	(0.031)
Chinitz measure of	-0.163***	0.028
small customers*firm size	(0.024)	(0.022)
Firm size	4.362***	1.651***
	(0.412)	(0.425)
Constant	-1.106	-0.702
	(1.855)	(0.813)
Industry fixed effects	Yes	Yes
City fixed effects	Yes	Yes
Pseudo R^2	0.338	0.390
Log likelihood	-45968	-39641
Censored observations	28038	30220
Observations	45920	46781

Notes: Standard errors clustered by city are reported in parentheses. The Marshallian and Chintz metrics are transformed to have unit standard deviation. The dependent variable is the log employment in new private firms by industry-city. Estimations use Tobit models. Firm size is a dummy variable where 1 indicates that new private firms employ 41 or more workers and 0 if otherwise.
* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.

Table 10: Heterogeneity by Region

	Manufacturing	Services
	DV: ln(Employment in new private firms)	
	(1)	(2)
ln(Total incumbent	0.663***	0.542***
employment)	(0.015)	(0.014)
ln(Incumbent employment	0.012	-0.018**
in SOEs)	(0.009)	(0.008)
Inputs/supplier	0.407***	0.067
strength metric	(0.050)	(0.046)
Inputs/supplier	-0.197***	0.004
strength metric*Central	(0.059)	(0.054)
Inputs/supplier	-0.319***	0.045
strength metric*Northeast	(0.070)	(0.048)
Inputs/supplier	-0.262***	0.015
strength metric*West	(0.068)	(0.064)
Outputs/customer	0.091***	0.028*
strength metric	(0.027)	(0.015)
Outputs/customer	0.013	-0.061*
strength metric*Central	(0.131)	(0.036)
Outputs/customer	-0.037	-0.047
strength metric*Northeast	(0.085)	(0.054)
Outputs/customer	0.006	-0.159*
strength metric*West	(0.050)	(0.088)
Labor market	0.262	-0.071
strength metric	(0.224)	(0.069)
Labor market	-0.589	-1.036*
strength metric*Central	(0.859)	(0.538)
Labor market	-0.668*	0.281
strength metric*Northeast	(0.405)	(0.236)
Labor market	2.716***	1.879***
strength metric*West	(0.943)	(0.650)
Chinitz measure of	0.173***	0.043
small suppliers	(0.054)	(0.047)
Chinitz measure of	0.092	0.064
small suppliers*Central	(0.068)	(0.081)
Chinitz measure of	0.308***	-0.079
small suppliers*Northeast	(0.086)	(0.050)
Chinitz measure of	0.116	-0.050
small suppliers*West	(0.096)	(0.067)
Chinitz measure of	0.139***	0.054
small customers	(0.034)	(0.037)
Chinitz measure of	-0.036	-0.003
small customers*Central	(0.040)	(0.036)
Chinitz measure of	0.026	-0.001
small customers*Northeast	(0.038)	(0.034)
Chinitz measure of	-0.006	-0.069*
small customers*West	(0.046)	(0.040)
Constant	-0.362	-2.400**
	(2.469)	(1.137)
Industry fixed effects	Yes	Yes
City fixed effects	Yes	Yes
Pseudo R^2	0.245	0.346
Log likelihood	-52458	-42543
Censored observations	28038	30220
Observations	45920	46781

Notes: Standard errors clustered by city are reported in parentheses. The Marshallian and Chinitz metrics are transformed to have unit standard deviation. The dependent variable is the log employment in new private firms by industry-city. Estimations use Tobit models. The regional dummy is 1 if new private firms are located in that region and 0 if otherwise. The omitted region is the eastern region.

* $p < 0.10$, ** $p < 0.05$, *** $p < .01$.