The Minimum Wage and New Business Entries in China:
Estimates Based on a Refined Border Approach

Xiaoying Li, Dongbo Shi, Sifan Zhou

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Abstract: This paper studies the effects of minimum wage policies on new business entries in China using county-level minimum wage and firm registration data. We address endogeneity concerns regarding local minimum wage rates using a refined border approach which examines whether differential changes in minimum wage rates on both sides of a county border result in abrupt changes in business entries within short distances from the border. Our results suggest that a 10% increase in the minimum wage decreases new business entries by 2.38% and that this effect is magnified for industries that pay lower average salaries or employ a larger share of unskilled workers as well as in periods that feature stricter enforcement of minimum wage policies.

Key Words: Minimum Wage, County Border, New Business Entry

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2 Institute of Guangdong, Hong Kong and Macao Development Studies, Center for Studies of Hong Kong, Macao and Pearl River Delta, Sun Yat-sen University. Email: lixy36@mail.sysu.edu.cn

3 School of International and Public Affairs, SJTU. Email: shidongbo@sjtu.edu.cn

4 Department of Public Finance, School of Economics, Xiamen University, China; Wangyanan Institute for Economic Studies, Xiamen University, China. 422 South Siming Road, Xiamen, Fujian 361005, China. Email: zhou_sifan@xmu.edu.cn
1. Introduction

While minimum wage policies have been widely adopted as a tool for helping the most disadvantaged workers and reducing income disparities, many complain that raising the minimum wage increases labor costs and reduces profits for firms on which it is imposed. This tension between labor and capital is especially pervasive in developing countries such as China, where concerns over inequality have grown in tandem with rapid economic growth.

Existing literature on the effects of the minimum wage in China has focused mainly on its impacts on existing firms’ responses in connection with employment, capital-labor substitution, the adoption of robots, productivity, profitability, and firm survival (Mayneris, Poncet, and Zhang 2018; Hau, Huang, and Wang 2020; Fan, Hu, and Tang 2020). The extent to which the minimum wage affects new business entries in China has, however, not been examined. Startups and young businesses, although often small at inception, are powerful drivers in creating new jobs and economic growth (Haltiwanger, Jarmin, and Miranda 2013; Li et al. 2012). Therefore, evaluating its effects on new business entries plays an important role in a complete analysis of the effects of minimum wage policies.

We conduct such an analysis by applying a refined border approach using Chinese business registration data to identify the causal impact of county-level minimum wage rates on new business entries. We find that a 10% increase in the minimum wage decreases new business entries by 2.38%. This effect can be measured along three dimensions. First, the effect is magnified in industries that employ large shares of low-skilled workers or pay lower average salaries, as these industries face greater exposure to minimum wage policies. Second, the effects are stronger in policy periods when enforcement of minimum wage policies is stricter. Third, these negative effects are similar across the spectrum of new entries when sorted by size.
Any attempt at causal identification of the negative effects of the minimum wage on new business entries faces three primary challenges. First, it is important to account for unobserved time-varying area characteristics at a sufficiently fine geographic scale, as the agglomeration economies literature has documented that immediate area characteristics play a critical role in business location decisions (Rosenthal and Strange 2001). The second challenge is that the levels of minimum wages are endogenous to the state of economic development. In China, minimum wage rates vary at the county level. Counties that are more economically prosper tend to have both more entries and higher rates of minimum wage, leading to a positive correlation that disguises their causal relationship. Finally, governments may also implement other policies concurrently when adjusting the minimum wage, making it difficult to isolate the effects of the minimum wage on new business entries.

We tackle the first two challenges by adopting a refined border approach that exploits the differential changes in minimum wage rates between adjacent counties within the same prefecture to study the number of new business entries that appear within short distances of their county borders. By studying counties within the same prefecture, this border approach restricts the comparison to counties that are more likely to experience similar unobservable local shocks that drive new business entries (Holmes 1998; Dube, Lester, and Reich 2010; Rohlin 2011). We also depart from the existing literature that defines the county as the observational unit by using a Geographic Information System (GIS) process to create banded areas of varying widths that straddle county borders. By assuming that other factors such as the labor pool, the cost of living, access to markets and natural resources, and local economic vitality, which are all important factors for business entry location, vary continuously across county borders and are similar within the narrow banded areas around the borders, we can associate abrupt differences in new business entries with differential changes in minimum wage rates on both sides of a county border.
This refined border approach also partly addresses the third challenge that arises because governments can simultaneously enact other policies unrelated to the minimum wage at the prefecture or provincial level. We address the remaining endogeneity concerns regarding potential county-level policies by examining how the effects of minimum wage policies on new business entries vary along two dimensions. First, we compare the effects of the minimum wage on new business entries in industries that employ large shares of low-wage unskilled workers with the effects on industries that do not. By relying on the reasonable assumption that low-wage unskilled workers are more likely to be affected by changes in minimum wage laws, this comparison allows us to isolate the effects of the minimum wage from other government policies that may affect business entries across industries uniformly. Second, we show that the effects of minimum wage policies on business entries are more pronounced in policy periods when enforcement of minimum wage policies is stricter. To the extent that other county-level policies do not follow the same dynamic patterns, this comparison also strengthens our identification strategy.

The remainder of this article is organized as follows. In Section 2 we discuss the relevant literature. In Section 3 we discuss our identification strategy. In Section 4 we introduce the evolution of the minimum wage system in China and the Chinese business registration data that we use in our analysis. We report the main results in Section 5, offer robustness checks in Section 6, and conclude in Section 7.

2. Related Literature

This paper contributes to three strands of literature: studies of the economic effects of local minimum wage policies, studies of new business entry location decisions in China, and studies that use a border approach in evaluating policy.
The early literature on the minimum wage focused on developed countries such as the United States, with an emphasis on its employment effects. A simple economic model of a price floor predicts that, with a downward-sloping labor demand curve, an increase in a binding minimum wage will reduce employment. Consistent with this theoretical prediction, early empirical work using national-level time-series variations or cross-state variations in minimum wage rates in the U.S. found moderate disemployment effects of minimum wage hikes (Neumark and Wascher 1992). Later case studies, however, which compared neighboring areas with differing minimum wage rates around policy changes, found no such disemployment effects (Card and Krueger 1994; Dube, Naidu, and Reich 2007). This lack of disemployment effects of a higher minimum wage is not unique to the U.S., but has also been documented in other countries such as Britain (Dickens, Machin, and Manning 1999; Draca, Machin, and Van Reenen 2011) and Mexico (Bell 1997). These results, if taken at face value, suggest that minimum wage policy can increase the earnings of disadvantaged workers without loss of efficiency.

A focus on employment alone, however, could produce a myopic view of the effects of minimum wage policies. More recent studies have examined the effects of minimum wage rates on capital adjustments. Consider the case of fast-food establishments, a frequent subject of studies in the minimum wage literature, which commonly use a production technology whereby the worker-to-machine ratio is relatively fixed, at least in the short run (Borjas 2013). As a result, the short-run effects of increasing the minimum wage may not show up as an instant adjustment in employment among healthy existing establishments, but instead manifest in rising marginally profitable establishment closings as well as the discouragement of new entries. Orazem and Mattila (2002) studied minimum wage policy changes in the state of Iowa in the United States and found that a 10% increase in the minimum wage relative to the previous wage led on average to a 2.5% decline in the number of firms per year. Rohlin
(2011) also studied the U.S. market and found that a higher minimum wage decreased new entries in industries that rely heavily on minimum-wage-earning workers.

Regarding China, the literature has extensively studied the impact of minimum wage laws on employment and on various forms of capital adjustments. Mayneris, Poncet, and Zhang (2018) found that, while the minimum wage had nonsignificant effects on firm-level employment, it significantly increased wage costs and made it more difficult for firms to survive. Surviving firms respond to a higher minimum wage by increasing investment in capital to increase labor productivity and maintain profitability. Fan, Hu, and Tang (2020) find that a higher minimum wage boosts manufacturing firms’ adoption of robots. Hau, Huang, and Wang (2020) find that a higher minimum wage accelerates input substitution from labor to capital and total factor productivity growth. The capital adjustments resulting from higher minimum wage rates can also spread beyond a country’s border. Fan, Lin, and Tang (2018) find that increases in minimum wage rates drove Chinese manufacturing firms to conduct outward foreign direct investment in countries with lower labor costs. All these papers discuss how existing firms respond to hikes in the minimum wage, yet none has studied the impact of the minimum wage on new business entries in China. Our paper fills this gap.

This paper also contributes to the empirical literature on new business entry location decisions in China. It is among the first to use Chinese business registration data. Existing studies on business entry location decisions in China have relied mainly on China’s Annual Survey of Industrial Firms (ASIF). Although that source provides rich firm-level accounting measures, the ASIF covers only firms in the manufacturing sector with revenue of more than

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5 For example, consider studies on business entry location decisions in connection with tax treatments (Zhang and Shen 2020) and administrative approval reforms (Bi et al. 2018).
5 million yuan. As a result, firms may appear in the ASIF because of business expansion rather than as new entrants, making the data extremely noisy for studying entry behavior. In this paper, we overcome this challenge by using Chinese business registration data, which offers complete coverage of new business entries since 1985. Along with detailed descriptions of firms’ main business activities, this data source also enables us to go beyond the manufacturing sector and compare the effects of minimum wage rates on new business entries across sectors. While business registration data have been used extensively to study firm dynamics in developed countries (Guzman and Stern 2015, 2016), it has been largely under-utilized in China. Our paper serves as a pilot study of the use of Chinese business registration data in what we hope will lead to a new stream of research that does so as well.

This paper builds on the literature that uses a border approach to control for local time-varying heterogeneities. The border approach was pioneered by Holmes (1998), who compared manufacturing employment in counties on the “antibusiness” side of state borders with manufacturing employment in neighboring counties on the “probusiness” side and found that “probusiness” policies promote the manufacturing sector. This border approach was later extended by Dube, Lester, and Reich (2010) to study the effects of minimum wage laws on restaurant employment. Dube and colleagues collected county-level employment data for county pairs that straddle borders of states with differing levels of the minimum wage and found that there were no significant disemployment effects of the minimum wage. Rohlin (2011) applied this method to study the effects of the minimum wage on new establishment location decisions in the United States. Mindful that immediate area characteristics are important to business location decisions, Rohlin (2011) did not use the county as the unit of analysis, but rather constructed narrow pairs of adjacent areas on either side of a state border that were within 1, 5, and 10 miles of the border. Rohlin found that a higher minimum wage did deter new business entries in these areas. Note that in all three of these papers that apply
the border approach the policy variables differ at the state level and the borders at issue are state borders. In contrast, minimum wage policies in China are set according to local economic conditions, vary at the county level, and are updated frequently. Therefore, in this paper, we do not use the county as the unit of analysis. Instead, we modify the border approach by examining whether changes in the minimum wage on two sides of a county border result in abrupt changes in business entries within short distances from the county borders.

Note that the existing literature on minimum wage policies in China has focused mainly at the city level, neglecting within-city cross-county variations. This has resulted in part from data limitations, as systematic county-level minimum wage data were made available only recently (Hau, Huang, and Wang 2020). The effects of local changes in the minimum wage cannot be easily extrapolated based on prior literature that studies variations in the minimum wage at a higher, macro level. On the one hand, county borders may be more porous than prefectural or state borders. Distortions that are present to some extent at the macro level may be magnified at the county level. On the other hand, it is also possible that local minimum wage rates can reduce distortion if they are better tailored to local circumstances.

The existence of local variations in minimum wage rates is not unique to China. According to a thorough review by Tijdens and van Klaveren (2019), variations in minimum wage rates across cities or locally are also present in fifteen other countries, including Japan, Switzerland, Canada, India, Bangladesh, and Indonesia. Over the past decade, more cities in the United States are beginning to set their own minimum wage rates. In fact, the number of cities with their own minimum wage rates that exceed either state or federal standards has increased from a mere three in 2010 to 42 in 2020 (Dube and Lindner 2020). Given the rise in
local variations in the minimum wage, it is important to understand how such variations influence business location decisions. Our paper begins this undertaking by studying these effects in China.

3. Empirical Strategy

Our identification strategy exploits how varying changes in minimum wage rates between adjacent counties within the same prefecture affect the number of new business entries that appear within a short distance of their county borders. To see how this strategy works and how it relates to and differs from other approaches in the literature, we first express the determinants of the number of new business entries in the following form:

\[
\ln y_{it} = \alpha + \beta \ln (MW_{it}) + \Phi X_{it} + \gamma_t + \mu_t + \theta_{it} + u_{it}
\] (1)

where \(i\) indexes areas and \(t\) indexes years. In this equation, we group factors other than the minimum wage that also affect new business entries into three categories. First, area fixed effects, \(\gamma_i\), account for all observable and unobservable cross-area heterogeneities that are constant over time. Second, time fixed effects, \(\mu_t\), account for observable and unobservable time-varying factors that affect all areas in the same way. Lastly, time-varying area-specific factors are separated into observable variables \(X_{it}\) and unobservable shocks \(\theta_{it}\).

Early studies in the literature analyzed the effects of varying cross-state adjustments of the minimum wage (Neumark and Wascher 1992) by estimating the following regression:

\[
\ln y_{it} = \alpha + \beta \ln (MW_{it}) + \Phi X_{it} + \gamma_i + \mu_t + u_{it}
\] (2)

The identifying assumption is that, conditional on observables \(X_{it}\) and year fixed effects \(\mu_t\), area heterogeneities are constant over time. Nevertheless, local shocks could invalidate this identifying assumption. For example, using a county-level analysis to understand the effects of minimum wage hikes on earnings and employment in the United States, Dube, Lester, and
Reich (2010) show that, once state-level linear trends or time fixed effects by metropolitan statistical areas (MSAs) are added to regression (2), the coefficient of the minimum wage becomes nonsignificant, indicating the presence of unobserved time-varying heterogeneity. Indeed, the agglomeration economies literature has documented that immediate area characteristics play a critical role in business entry location. Sudden economic booms at the local level increase new business entries but also raise the cost of living, sometimes resulting in minimum wage hikes, as minimum wage rates in China vary by county and are set in accordance with local conditions. Without accounting for such local shocks, regression (2) might generate a spurious positive correlation between minimum wage hikes and new business entries that disguises their true causal relationship.

One approach to resolving this problem with unobservable time-varying heterogeneity is to restrict the control group to areas that are contiguous to a treated area and to adopt a case-study-style difference-in-differences approach. For example, Card and Krueger (1994, 2000) use this approach to compare minimum wage effects in New Jersey and Pennsylvania and Dube, Naidu, and Reich (2007) compare effects in San Francisco and the adjacent East Bay. Although this approach provides consistent point estimates in the presence of time-varying heterogeneity, these estimates vary from case to case and offer limited data for statistical inferences.

In this paper, we adopt a refined border approach to account for unobserved time-varying area characteristics. We explore variation between neighboring counties within the same prefecture that have unequal minimum wage rates. To the extent that a given county is more similar to its neighboring county within the same prefecture than to a randomly chosen county, neighboring counties within the same prefecture represent appropriate control groups.

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6 See Rosenthal and Strange (2001) for a review.
for estimating minimum wage effects. Furthermore, in our baseline specification we restrict
the area for comparison to two-kilometer bands along county borders, with one-kilometer
bands on each side of the borders. While factors such as the cost of living, access to labor and
output markets, access to natural resources, and distance to industrial clusters differ across
counties, these factors are likely to be distributed continuously and smoothly in space,
making them comparable contemporaneously between areas within short distances from one
another. We also investigate how estimates change as we expand the areas for comparison
where the cost of living and economic prosperity are less comparable.

We implement this approach by organizing our data at the county-pair-year level. For
a county with \( p \) neighboring counties, \( p \) county pairs will appear in the sample every year.
We run the following regression:

\[
\Delta \ln y_{ij,t} = \beta \Delta \ln (MW_{ij,t}) + \Phi \Delta X_{ij,t} + \gamma_{ij} + \epsilon_{ij,t}
\]  

(3)

where \( \Delta \ln y_{ij,t} \) is the contemporaneous difference in log entries between each neighboring
county pair, \( \ln y_{it} - \ln y_{jt} \), \( \Delta \ln (MW_{ij,t}) \) is the contemporaneous difference in the log
minimum wage between each neighboring county pair, \( \ln (MW_{it}) - \ln (MW_{jt}) \), \( \Delta X_{ij,t} \) are
contemporaneous differences in control variables between each neighboring county pair, and
\( \gamma_{ij} \) is county-specific fixed effects. Note that year fixed effects, \( \mu_{t} \), are naturally dropped
after such differencing. Adding year fixed effects on the right-hand side of estimation
equation (3) does not affect our results. The identification assumption is now relaxed from

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7 For any pair of neighboring counties \( i \) and \( j \), we take the difference from Equation (1) and get: \( \ln y_{it} - \ln y_{jt} = \beta (\ln (MW_{it}) - \ln (MW_{jt})) + \Phi (X_{it} - X_{jt}) + (\gamma_{i} - \gamma_{j}) + (\theta_{it} - \theta_{jt}) + (\mu_{it} - \mu_{jt}) \). Time-specific
shocks that are common to all counties, \( \mu_{t} \), drop from the differencing. The identification assumption is now
relaxed from requiring common trends across all counties to requiring common trends only for contiguous
areas; in other words, \( E(\theta_{it} - \theta_{jt} | \Delta \ln (MW_{ij,t}), \Delta X_{ij,t}, \gamma_{ij}) = 0 \) for any neighboring counties \( i \) and \( j \). The
interpretation of \( \beta \) still comes from structural equation (1) instead of from this estimation equation.
requiring common trends across all counties for regression (2) to requiring common trends only for neighboring areas.

This approach is equivalent to the implementation by Dube, Lester, and Reich (2010), who organize their data at the county-year level, stack neighboring counties, allow a county to appear multiple times as a neighbor of other counties, and estimate regression (2) together with county-pair-year fixed effects. The equivalence of these two implementations resembles the identity of fixed-effects and first-difference models in a two-dimensional panel dataset where $T=2$, except that in our setting we first take spatial differences rather than time differences. We use robust standard errors clustered at the county-pair level to allow for arbitrary forms of heteroskedasticity and both spatial correlation across county pairs and serial correlation across years. Compared with traditional specifications, our approach uses neighboring counties instead of randomly chosen areas as the control group. Compared with the case-study-style difference-in-differences approach, our approach also takes full advantage of all minimum wage differences between pairs of neighboring counties. What is more, following Fan, Lin, and Tang (2018), we further strengthen our identification by showing that the new-business-deterring effects of minimum wage are stronger in industries that are exposed to minimum wages more directly and in policy periods that feature stricter enforcement.

4. Data and Sample
4.1 Minimum wage policies in China

The evolution of minimum wage policies in China played out over three stages marked by increasingly strict enforcement. These three policy stages occurred from 1994 to 2004, 2004 to 2008, and in a post-2008 stage. Early implementation of minimum wage policies began in 1989 in Zhuhai in Guangdong province, followed by Guangzhou, Jiangmen, and Shenzhen in the same year. These coastal cities, which are located in southeastern China, were at the
frontier of China’s market transition and were among the first to experience labor–capital conflicts. In 1993, the first national Minimum Wage Regulations in China were introduced and were later written into the 1994 version of the Chinese Labor Law (Lin and Yun 2016). According to the 1994 legislation, each province, municipality, and autonomous region is required to set and adjust its own minimum wage based on comprehensive consideration of the following five factors: (1) the minimum cost of living and the number of dependents an average worker supports, (2) average local wages, (3) labor productivity, (4) local employment conditions, and (5) economic development at the local level. These requirements reflect the inherent tradeoff that governments face, where a minimum wage that is too low relative to the local cost of living will be insufficient, while a minimum wage that is too high relative to the local stage of economic development may deter domestic and foreign investment (Frost 2002).

In 2004, concern grew that minimum wage rates were rising too slowly and inequality both within and across cities in tandem was worsening in the midst of China’s rapid economic growth. In response to this concern, the Ministry of Labor and Social Security of China reformed the “Minimum Wage Regulations” by introducing an hourly minimum wage for part-time workers, requiring the minimum wage to be updated at least once every two years, and increasing penalties for violators fivefold, from an interval ranging between 20% and 100% of wages to an interval ranging between 100% and 500% of wages. In addition, the 2004 Regulations clarified that workers in privately owned entities and sole-proprietorships would also be covered by minimum wage policies. Moreover, overtime pay and legally required supplementary income could not be included by firms seeking to meet minimum wage requirements. Later in the same year, the State Council of China also promulgated the

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8 http://www.lawinfochina.com/display.aspx?id=705&lib=law#menu4
Decree of Labour Inspection, which strengthened the enforcement of minimum-wage rules (Mayneris, Ponce, and Zhang 2018).

In 2008, China’s Labor Contract Law came into effect, which significantly increased the percentage of workers with formal labor contracts (Freeman and Li 2015; Gallagher et al. 2014) and contributed to more consistent enforcement of labor regulations across Chinese cities (Huang, Loungani, and Wang 2014). In the absence of a mature mechanism for negotiations between labor and capital, many firms use the local minimum wage as their reference point in setting wage levels. According to a survey administered in Guangdong province, about 28.5% of firms and 37% of workers have the local minimum wage written directly into their labor contracts as their base pay (Sun, Liu, and Fan 2019).

We obtain minimum wage data from the Ministry of Human Resources and Social Security (MOHRSS) and the China Academy of Labor and Social Security. The data cover all adjustments of the minimum wage at the county level between 1992 and 2012. Among the 2,858 county-level units in mainland China, 2,670 maintained the minimum wage data every year between 1997 and 2012. In Figure 1, Panels (A) and (B), we display the county-level monthly nominal minimum wage in China in 1997 and 2012, respectively. We use the monthly minimum wage in this paper, as the hourly minimum wage is usually set as a monthly minimum wage divided by the monthly working hours of full-time workers (Hau, Huang, and Wang 2020). In Figure 2, we show that the average nominal minimum wage rose

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9 The number of counties that maintain minimum wage data throughout the sample period falls slightly short of the number of counties in the 2014 version of administrative divisions, for two reasons. First, there are minor changes across distinct versions of administrative divisions as a result of (1) upgrading of some counties to county-level cities or municipal districts, (2) the merging of two districts or two counties into one, and (3) dividing prefectural cities into county-level subdivisions. The first scenario is associated with county name changes while the latter two scenarios decrease or increase the number of counties. From the sample we used for our analysis, we drop counties or districts related to the latter two scenarios. For the remaining counties, county borders remain stable over time. Second, among counties that exist in all versions of administrative divisions, some did not impose a county-level minimum wage in the early years of the sample period. These counties are mostly rural and agricultural, with few employed workers during the early years, becoming urbanized only later. We keep the sample balanced by not including those counties in our analysis.
from 190 yuan in 1997 to 936 yuan in 2012. The minimum wage equaled more than 42% of provincial average manufacturing salaries in 1997. This ratio dropped to about 30% by 2012. The ratio may appear low relative to that in developed countries. Note, however, that overtime pay and other legally required income supplements are calculated as multiples of base pay in China, especially after the 2008 Labor Contract Law. With base pay often set at the local minimum wage rate, a large portion of workers’ monthly payments is tied to the local minimum wage, even if actual monthly pay is higher than the minimum wage (Ye, Li, and Yang 2016).

Since the inception of a minimum wage in China, minimum wage rates have been set to vary at the county and district levels (the top three levels of administrative divisions are provinces, prefectural cities, and counties). On average, a province administers twelve prefectural cities within its boundaries and a prefectural city administers eight counties or municipal districts within its boundaries.10 Provincial governments typically establish three to five levels of minimum wage rates and allow each municipal district and county to choose the appropriate level for its minimum wage based on local conditions. The adjustment date of a county’s minimum wage can differ from the dates on which its neighboring counties within the same province adjust their rates (Fang and Lin 2020). What is more, both the range of minimum wage rates and the number of levels in a prefectural city can vary over time.11 As a

10 We use the 2014 version of the administrative divisions of the People’s Republic of China as our benchmark list of counties in China. As of 2014, mainland China was to be divided into four municipalities (Beijing, Tianjin, Shanghai, and Chongqing) and 27 provinces, the latter of which are divided into 333 prefectures. Municipalities and prefectures are further divided into 2,858 county-level units, including both municipal districts and counties. In the remainder of this paper, we treat urban districts and counties equivalently and refer to both as counties, except when these distinctions are explicitly investigated in the robustness section.

11 An example of this time variation can be found in Chongqing. In 1997, there were four minimum wage rates: 210 yuan per month in seven counties, 190 yuan in seven counties, 170 yuan in 17 counties, and 150 yuan in five counties. Two counties were excluded from the 1997 Chongqing minimum wage policy document because they were dominated by agriculture and minimum-wage-eligible employment was too low to be relevant. In 2012, there were three minimum wage rates: 1,050 yuan per month in 21 counties, 950 yuan per month in 15 counties, and 750 yuan per month in two counties.
result, there are rich variations in minimum wage rates across counties and districts within the same prefecture.

Our identification strategy relies on within-prefecture cross-county variations in minimum wage rates. In Figure 3, we show that Chongqing and 173 prefectures exhibit cross-county variation every year over our sample period. Tianjin and 81 prefectures exhibit cross-county variation in at least one year over our sample period. Beijing, Shanghai, and the remaining 78 prefectures have maintained uniform minimum wage rates across counties. These prefectures are concentrated in four provinces: Tibet, Qinghai, Heilongjiang, and Jilin. The former two are located in western China and feature low population density, while the latter two are located in northeastern China. In Figure 4 we show that there were more than two thousand contiguous county pairs within the same prefecture that imposed varying minimum wage rates. Among these county pairs, the average difference in their nominal minimum wage rates increased from 30 yuan in 1997 to 126 yuan in 2012, whereas the percentage difference, calculated as the difference divided by the lower of the minimum wage rates between the two counties, fluctuated between 14% and 18%. These rich within-prefecture cross-county variations in minimum wage rates makes our refined border approach feasible.

4.2 China’s Business Registration Database

We obtain business entry data from the National Enterprise Credit Information Publicity System (NECIPS).\textsuperscript{12} In China, all firms are required by the Company Law and the Partnership Law to register with the State Administration of Market Regulation (SAMR) annually to renew their business licenses and update any business or ownership changes.

\textsuperscript{12} http://gsxt.gdgs.gov.cn
SAMR releases these business registration records through the NECIPS for the convenience of law enforcement and to enable the public to search and verify firms’ legal status.

As a result of their administrative origin, the registration data cover the entire population of business entries that have occurred in China since 1985. These data include each firm's name, legal status (active, deceased, or merged), ownership type (e.g., individual proprietorship, privately owned firm, state- or collectively owned enterprise, foreign-invested enterprise), one-digit industry category, detailed descriptions of the scope of business activities, amount of registered capital, incorporation date, address, and equity owner list. Using registration addresses, we are able to obtain firms’ latitude and longitude coordinates, which we use to geolocate firms in relation to counties and county boundaries.

4.3 Sample and Summary Statistics

We organize our sample at the county-pair-year level. We impose three restrictions on the baseline sample of neighboring county pairs: (1) each of the two counties must have implemented a minimum wage over the entire sample period, (2) each of the two counties must include at least one business entry over the sample period, and (3) both counties must be located in the same prefecture. In this baseline sample, we treat municipal districts and counties equivalently and refer to all county-level administrative units as counties. For counties that experience entries in some years but no entries in others, we fill the rare no-entry observations with zeroes. This procedure results in a balanced panel of 7,384 distinct same-prefecture neighboring county pairs consisting of 2,526 counties observed every year between 1997 and 2012. 13 In our robustness checks we distinguish between municipal districts and counties.

13 There are 11 prefectural cities in Hunan Province together with Shenyang (in Liaoning Province) that did not maintain minimum wage information before 2000. Ziyang (in Sichuan Province) began imposing a minimum
We report summary statistics in Table 1. Among the 2,526 counties that comprise our sample, a county experiences on average about 682 new entries per year and coexists with three neighboring counties within the same prefecture. The one-kilometer band near a county’s border with a neighboring county within the same prefecture accounts for 3.6% of the county’s new entries. This ratio increases to 7.6%, 11.2%, and 14.6% when we expand the bordering area to 2 km, 3 km, and 4 km respectively. The cross-border differences in new entries within 1 km of a border ranges between 0 and 17,241, with an average of 42 new entries. Some 31.4% of the county-pair-year cells impose different minimum wage rates. Among these county-pair-year cells, the cross-border difference in minimum wage rates is on average 61 yuan, which is about 14.5% relative to the mean of the minimum wage rates on both sides of a county border.

5. Results
5.1 Baseline

In Table 2 we report the baseline results as specified in estimation equation (3). For column (1) we restrict the sample area to the one-kilometer band on each side of a county border among neighboring counties within the same prefecture. The narrowness of the bands ensures that the cost of living, local market access, and local supply chains are similar on both sides of a county border. We find that raising the minimum wage by 10% decreases the entry of new business establishments by 2.38% and that this effect is statistically significant at the 1% level.

Minimum wage rates are higher in counties that are more developed economically and more economically active. When it is infeasible to control for these local prosperity wage in 2002. As of 2014, four prefectural cities had not been further divided into counties or districts and thus do not form within-city neighboring county pairs (Dongguan, Zhongshan, Jiayuguan, and Sanya). Foshan maintains minimum wage information for only one of its five districts. Suqian (in Jiangsu Province) includes five county-level units, among which four imposed a minimum wage only in 2006. These prefectures are thus dropped from the dataset to construct the balanced panel.
dynamics, an endogeneity issue arises that produces an underestimation of the negative effects of a minimum wage on new business entry and, in some cases, a positive coefficient. To obtain the results reported in column (2) through (4) we gradually enlarge the sample area from a two-kilometer band to a four-kilometer band on each side of a county border. We find that, as comparability in local prosperity on both sides of a county border decreases, both the size and statistical significance of the minimum wage coefficient decreases, although the sign remains negative.

In column (5), we report results obtained using total entries in an entire county instead of entries near the border as our dependent variable. The results suggest, perhaps surprisingly, that counties that impose higher minimum wages attract more new business entries. The differences between the results reported in column (5) and those reported in column (1) confirm that ignoring the endogeneity issue associated with minimum wage rates will lead to a biased estimate of the minimum wage effects on business entries.

5.2 By Exposure to the Minimum Wage

In this subsection, we examine how the effects of increasing minimum wage on new business entries vary across industries with differential exposure to a minimum wage. Because our identification strategy relies on comparisons between counties within the same prefecture, policies varying at the prefecture or provincial level do not affect our baseline identification. We address the remaining concerns regarding policies that may vary at the county level by comparing the effects of a minimum wage on new entries of businesses that operate in industries that employ large shares of low-wage unskilled workers with the effects of a minimum wage on industries that do not. Given that low-wage and unskilled workers are more likely to be affected by minimum wage policies, this comparison enables us to isolate the effects of the minimum wage from the effects of other government policies.
We run the specification that corresponds to column (1) of Table 2 by industry and uncover cross-industry heterogeneities that are consistent with what has been previously documented in the literature. Minimum wage changes significantly influence the manufacturing sector as well as the food and accommodations service industries. Such changes do not, however, matter as much for highly paid service industries such as the finance, information, and real estate industries. In Figure 5 we report these regression results by industry. In Figure 5(A), the vertical axis indicates the effects of increasing minimum wage on industry-specific entries located within one kilometer of a county border from our baseline specification and the horizontal axis indicates industry average annual salaries in 2004. We obtain these industry-level average salary data from CEIC.\textsuperscript{14} The results shown in Figure 5(A) suggest that, the higher the industry average annual salary the lower the coefficient of minimum wage. In Figure 5(B), the horizontal axis indicates the share of workers who advanced educationally no further than primary school. We obtain educational achievement and job industries from the Fifth National Population Census of China.\textsuperscript{15} The results shown in Figure 5(B) suggest that, the greater the share of unskilled workers employed in an industry the larger the effect of increasing minimum wage on new business entries in that same industry. To the extent that the effects of other county-level policies do not vary systematically with the industry-level share of low-wage and unskilled workers, it is the difference in minimum wage rates that cause the abrupt changes in the number of new entries across the county borders.

5.3 By Strictness of Enforcement

We now consider the effects of minimum wage rates on new business entries across varying policy periods. As discussed in Section 3, the Ministry of Labor and Social Security

\textsuperscript{14} \url{www.ceicdata.com}
\textsuperscript{15} \url{international.ipums.org}
reformed China’s national minimum wage system in 2004 (Mayneris, Poncet, and Zhang 2018) and, in 2008, a new Labor Contract Law was introduced (Du et al. 2016, Gallaghre et al. 2015). We expect the effects of minimum wage rates on business entries to be progressively larger after the 2004 and 2008 policy changes because of the increasingly strict enforcement of minimum wage policies.

We examine the effects of minimum wage rates across policy periods and report the results in Table 3. For column (1), we interact the cross-border difference in the log minimum wage with a “Pre-2004” dummy and a “Post-2004” dummy. We find that the effects of minimum wage rates on new entry is negative in both periods. The coefficient, however, is twice as large and has a much larger t-statistic after 2004 than before, although the difference between the two coefficients is not statistically significant. A 10% increase in a county’s minimum wage is associated with a decline in new business entries of 1.71% before 2004 and this effect is significant at the 10% level. After 2004, this coefficient increases to 3.5% and is significant at the 1% level.

For column (2), we further decompose the post-2004 period into two sub-periods, 2004–2008, and 2009–2012, and interact the log minimum wage with all three period-indicating dummies. The effect of a minimum wage is significant at the 10% level for the pre-2004 period and significant at the 1% level for the two post-2004 periods, with the coefficient largest in the 2009–2012 period. In summary, the entry-deterring effects of minimum wage are magnified as the enforcement of minimum wage policies becomes stricter.

5.4 By the Scale of New Entries

Policymakers care not only about the count of new businesses but also about the size of businesses launching operations in their jurisdictions. For example, if small entries are
footloose enterprises that can easily cross county borders in response to changes in the minimum wage while larger entries are less flexible, then the elasticity of new jobs created to the minimum wage will be smaller than the elasticity of the number of new businesses to the minimum wage. The literature commonly uses employment or revenues to measure the size of a business. Unfortunately, these variables are not available from the registration database. We use the amount of registered capital to proxy for the size of entries. In Appendix A we discuss the legal requirements regarding registered capital in China and show that a 10% increase in registered capital is associated with 3.42% higher employment and 2.54% more total revenue.

In Table 4 we report results reflecting how minimum wage rates influence new business entries of varying sizes. In all specifications, the dependent variable is the cross-border difference in the logged one plus the number of entries within one kilometer of a county border. The dependent variables in these specifications differ regarding the specific number of entries used. For Column (1), the dependent variable is constructed using the number of total entries weighted by their registered capital, which is equivalent to the aggregated registered capital among new entries. The results show that a 10% increase in the minimum wage reduces aggregated registered capital by 6.05%. If we take the correlation between registered capital and employment at face value, this coefficient implies a 2.07% reduction in the employment that could have been created by new entries. This effect is statistically significant at the 5% level. This coefficient is more than twice the size of the coefficient reported in column (1) of Table 2, although the difference is not statistically significant.

We construct the dependent variable for Column (2) using the number of entries that rank in the top decile in terms of registered capital among entries reporting non-zero
registered capital in the same year. The top decile of registered capital is 10 million yuan in most of the years covered by our sample period. The results reported in column (2) show that a 10% increase in the minimum wage significantly reduces the number of large entries by 2.26%. We construct the dependent variable for column (3) using the number of entries that rank in the bottom decile in terms of registered capital among entries in the same year. Registered capital in this sample ranges between 0.1 and 0.3 million yuan and is 0.1 million yuan in most of the sample years. The coefficient of the minimum wage drops to 0.199 and remains statistically significant at the 1% level. Note that there are no minimal requirements imposed on registered capital for sole-proprietorship entries. On average, among the average 51 new entries per year that a county experiences within a one-kilometer band from a neighboring county in the same prefecture, about 23 are sole proprietorships. In column (4), we show that 10% increase in the minimum wage is associated with 3.6% fewer sole-proprietorship entries.

In summary, the results reported in Table 4 suggest that the deterrent effects of minimum wage laws on entries are strong for both large entries and sole proprietorships, the smallest type of entry. Yet, we note that none of the differences between any two coefficients reported in Table 5 is statistically significant. This comparison suggests that the entry-deterring effects of minimum wage are relatively uniform across the spectrum of entry sizes.

6. Robustness Checks
6.1 By Border Type

A typical prefectural city consists of an urban core that is divided into multiple municipal districts surrounded by counties. Counties also include urban components but these components typically are less economically developed than municipal districts. To achieve causal identification using our refined border approach, areas on both sides of a border segment must be similar and subject to common shocks. Mindful of this identification
assumption, it is natural to be concerned about the comparability of municipal districts and neighboring counties. In our baseline results, we treat municipal districts and counties equivalently and use a sample of neighboring counties or districts where both sides of county-level borders are located in the same prefecture. We now split the baseline sample into three subsamples: (1) one where both sides of a border are municipal districts, (2) one where both sides of a border are counties, and (3) one where one side of a border is a municipal district and the other side is a county. The results reported in Table 5 column (1) show that a 10% increase in the minimum wage in a municipal district reduces new business entries by 4.08% relative to what occurs in its neighboring municipal district. This coefficient is significant at the 10% level. In column (2) the results show that a 10% increase in the minimum wage in one county will reduce new business entries by 4.04% relative to what occurs in its neighboring county. This coefficient is significant at the 1% level. The two coefficients are very similar. In column (3) the results we report show that, when one side of a county border is a municipal district and the other side is a county, a 10% increase in the minimum wage will reduce new business entries by 0.3%. This coefficient is less than one-tenth of the prior two coefficients and is statistically nonsignificant. This is not surprising, as municipal districts tend to be more economically advanced than counties, driving both the minimum wage and more active business entries, thus obscuring the causal relationship between the two. The first two subsamples, where both sides of a border are occupied by administrative divisions of the same type, are the most likely to satisfy our identification assumption and show strong entry-deterring effects of higher minimum wage.

6.2 Controlling for Macroeconomic Variables

In this subsection we show that our baseline results are not sensitive to the inclusion of macroeconomic variables that may also affect the locations of new business entries. We obtain county-level macroeconomic variables from the China County Statistical Yearbook.
We use the population, the value-added of the agriculture sector, and the value-added of the manufacturing sector as proxies for the size, degree of urbanization, and prosperity of a given county. Note that these variables are available for counties beginning only in 1999 and are not available for municipal districts. Most official statistical publications report urban data at the city level but not at the district level. A city typically comprises multiple municipal districts. As a result, pairs consisting of two municipal districts and pairs consisting of one municipal district and one county are not included in the samples discussed in this subsection. Sample years before 1999 are also dropped.

For columns (1) through (5) in Panel (A) of Table 6, we replicate the specifications associated with Table 2. The results reported in Panel (A) follow the same pattern as those reported in Table 2. The negative effects of higher minimum wage on new business entries are magnified when we restrict the sample area to only one kilometer on either side of a county border. As we broaden the banded area along county borders, the effects of increasing minimum wage diminish and switch signs. Compared with those reported in Table 2, the coefficients here are slightly larger. These are result from the sample selection which is consistent with what we showed in Table 5—the entry-deterring effects of minimum wage are stronger among county–county pairs than among county–district pairs. For Panel (B) we use the same sample as for Panel (A) and control for macroeconomic variables. The estimates barely change, suggesting that our results are not sensitive to the inclusion of macroeconomic variables. Selecting areas that cross county borders but fall within narrow bands along those borders provides sufficiently comparable controls.

7. Conclusion

The minimum wage is a source of controversy that is rich with economic implications. In this study we focus on minimum wage policy in China using county-level
minimum wage data in combination with firm registration data and adopt a refined border approach to account for unobserved local shocks. In our core finding we show that a 10% increase in a locality’s minimum wage reduces new business entries by 2.38%. To our surprise, we find that the size of this effect is closely aligned with estimates reported by Orazem and Mattila (2002) in the U.S. context. We further show that this effect is especially strong in industries that are particularly exposed to minimum wage policies and in periods during which enforcement of minimum wage policies is stricter.

Our analysis ventures into new territory. The prior literature on minimum wage policies in China has discussed the effects of minimum wage laws on capital adjustments at the intensive margin, as they investigate how existing firms respond to hikes in the minimum wage. In this paper, we complete the evaluation regarding the effects of minimum wage policies in China by studying the impacts of these policies on capital adjustments at the extensive margin in the form of new business entries. This last piece of the puzzle is important, especially given the critical role that new businesses play in job creation and economic growth.

As noted above, we also contribute to the minimum wage literature more broadly by causally identifying the effects of local minimum wage policies. The vast literature on minimum wage policies has focused on policy environments where minimum wage rates vary macro-geographically, for example at the state level in the United States. Local minimum wage policies tailored to local economic environments had been implemented only rarely but have become more common recently. In Appendix B we show that differences in minimum wage rates across prefectural borders in China do not significantly influence new business entries and differences in minimum wage rates across provincial borders tend to drive new business entries to the side of a border with a lower minimum wage, although this
effect is much smaller and less significant than the effect involving county borders. We should bear in mind that our identification assumption may not hold for prefectural or provincial borders, and the entry-deterring effects of higher minimum wage might be underestimated in light of the remaining endogeneity issue. If taken at face value, though, this pattern suggests that distortions that are present with respect to city-level or provincial minimum wage policies are much larger for minimum wage changes restricted to counties.

In summary, holding all other things equal, higher minimum wage rates do discourage new business entries in local economies that are adjacent to areas featuring lower minimum wages. Still, locations with higher minimum wage rates tend to offer other advantages as well that attract new businesses.
References


Orazem, Peter F, and J Peter Mattila. 2002. 'Minimum wage effects on hours, employment, and number of firms: The Iowa case', Journal of Labor Research, 23: 3.
Figure 1(A): County-Level Monthly Nominal Minimum Wage in 1997

Figure 1(B): County-Level Monthly Nominal Minimum Wage in 2012

Notes: Sample limited to the 2,670 counties for which minimum wage information for every year from 1997 through 2012 is available.
Notes: We obtain average wages in the manufacturing sector by province from 1997 through 2012 from the China Statistical Year Book. We then calculate the ratio of the county-level minimum wage to the provincial average manufacturing wage and take average of this ratio across counties by year. The lack of any change in the minimum wage level and the dip in the minimum wage-to-manufacturing wage ratio between 2008 and 2009 was the result of an announcement made by China’s Ministry of Human Resources and Social Security to temporarily freeze adjustments in the minimum wage in response to the international financial crisis.
Figure 3: Frequency of Cross-County Variation in the Minimum Wage

Notes: Each delineated area in mainland China indicates a prefecture. Chongqing and 172 prefectures exhibit cross-county variation every year over our sample period. Tianjin and 80 prefectures exhibit cross-county variation in at least one year over our sample period. Beijing, Shanghai, and 81 prefectures have kept the same minimum wage level across counties.
Figure 4: Number of Same-City Neighboring County Pairs with Minimum Wage Differentials and Average Minimum Wage Differentials.
Figure 5 (A): Entry Effects of Minimum Wage Policies near County Borders: Decreases in Industry Average Salaries

Figure 5(B): Entry Effects of Minimum Wage Policies near County Borders: Increases in Share of Unskilled Workers

Notes: The centroid of each circle corresponds to a separate regression, specified from equation (3) with the dependent variable constructed using the number of industry-specific entries within a one-kilometer band near a county border. Data on industry-level GDP and average salaries in 2004 are obtained from www.ceicdata.com. Data on industry-level education is aggregated from the 2000 Population Census and is obtained from international.ipums.org. We define “low education” as having not completed higher than a primary-school-level education. The size of each circle indicates the relative GDP of the labeled industry in 2004, in reference to which the linear fitted lines are weighted. The slope of the fitted line in Figure 5(A) is 0.034, with a p-value of 0.071. The slope of the fitted line in Figure 5(B) is -0.062, with a p-value of 0.138.
Table 1: Summary Statistics

Sample Period: 1997-2012

Panel (A) Summary Statistics at the City-Year Level
Number of Cities: 317
Number of City-Year Cells: 5072
Share of city-year cells with uniform minimum wage: 34.7%

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Counties per City</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>Minimum Wage Range</td>
<td>47.9</td>
<td>53.3</td>
<td>0</td>
<td>370</td>
</tr>
</tbody>
</table>

Panel (B) Summary Statistics at the County-Year Level
Number of Counties: 2,526
Number of County-Year Cells: 40,416
Share of County-Year Cells with zero entries: 1.87%

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Minimum Wage</td>
<td>448</td>
<td>249</td>
<td>130</td>
<td>1,500</td>
</tr>
<tr>
<td>Number of New Entry</td>
<td>682</td>
<td>1,141</td>
<td>0</td>
<td>44,074</td>
</tr>
<tr>
<td>Number of Same-Prefecture Neighboring Counties</td>
<td>3</td>
<td>1.4</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

Panel (C) Summary Statistics at the County-Pair-Year Level, Neighboring County Pairs within Same Prefecture.
Number of County Pairs: 7,384
Number of County-Pair-Year Cell: 118,144
Share of County-Pair-Year Cells with Different Minimum Wages: 31.4%

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-Border Difference in Minimum Wage¹</td>
<td>19</td>
<td>37</td>
<td>0</td>
<td>370</td>
</tr>
<tr>
<td>Cross-Border Difference in Entries¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>within a 1km band on each side of the border</td>
<td>41</td>
<td>354</td>
<td>0</td>
<td>17,241</td>
</tr>
<tr>
<td>within a 2km band on each side of the border</td>
<td>76</td>
<td>432</td>
<td>0</td>
<td>17,887</td>
</tr>
<tr>
<td>within a 3km band on each side of the border</td>
<td>114</td>
<td>550</td>
<td>0</td>
<td>18,570</td>
</tr>
<tr>
<td>within a 4km band on each side of the border</td>
<td>150</td>
<td>654</td>
<td>0</td>
<td>19,246</td>
</tr>
<tr>
<td>county total</td>
<td>615</td>
<td>1,502</td>
<td>0</td>
<td>44,063</td>
</tr>
<tr>
<td>Share of New Entries Near Border²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>within a 1km band near the border</td>
<td>0.036</td>
<td>0.103</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>within a 2km band near the border</td>
<td>0.076</td>
<td>0.175</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>within a 3km band near the border</td>
<td>0.112</td>
<td>0.222</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>within a 4km band near the border</td>
<td>0.146</td>
<td>0.257</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: ¹ In absolute values. ² There are 1,990 pair-year observations with zero county total entries and these observations were not used to calculate the share of new entries.
<table>
<thead>
<tr>
<th>Dep. Var.</th>
<th>Cross-Border Differences in Log (number of entries + 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1km</td>
</tr>
<tr>
<td>Cross-Border Differences in Log (Min. Wage)</td>
<td>-0.238***</td>
</tr>
<tr>
<td></td>
<td>(0.0786)</td>
</tr>
<tr>
<td>Observations</td>
<td>118,144</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.753</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors clustered at the county level are shown in parentheses: *** p<0.01, ** p<0.05, *p<0.1. The sample includes all the same-prefecture neighboring county pairs that satisfy the following two requirements: (1) minimum wage information is available for both counties throughout the period running from 1997 through 2012; (2) there is at least one business entry in either county of the county pair over the sample period from running 1997 through 2012. Note that we treat municipal districts as equivalent to counties. Therefore, pairs of geographic units that consist of two neighboring municipal districts and those that consist of one municipal district and one neighboring county are also included. The dependent variable for column (1) is the cross-border difference in logged one plus the number of entries within one kilometer of the county border. The dependent variables used to obtain the results reported in columns (2), (3), and (4) are constructed similarly, except we enlarge the sample area from a two-kilometer band to a four-kilometer band on each side of a county border. The dependent variable for column (5) is constructed using total entries in the entire county instead of entries near the border.
<table>
<thead>
<tr>
<th>Dep. Var.:</th>
<th>Cross-Border Differences in Log (number of entries within 1km band + 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Cross-Border Differences in Log (Min. Wage) X</td>
<td></td>
</tr>
<tr>
<td>1997–2003</td>
<td>-0.171** (0.0864)</td>
</tr>
<tr>
<td>2004–2012</td>
<td>-0.350*** (0.0870)</td>
</tr>
<tr>
<td>2004–2008</td>
<td>-0.289*** (0.0833)</td>
</tr>
<tr>
<td>2009–2012</td>
<td>-0.428*** (0.110)</td>
</tr>
<tr>
<td>Year FE</td>
<td>Y</td>
</tr>
<tr>
<td>County Pair FE</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>118,144</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.753</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors clustered at the county level shown in parentheses: *** p<0.01, ** p<0.05, *p<0.1. The sample includes all the same-prefecture neighboring county pairs that satisfy the following two requirements: (1) minimum wage information is available for both counties throughout the period running from 1997 through 2012; (2) there is at least one business entry in either county of the county pair over the sample period running from 1997 through 2012. Note that municipal districts are treated as equivalent to counties. Therefore, pairs of geographic units that consist of two neighboring municipal districts and those that consist of one municipal district and one neighboring county are also included.
Table 4: Effects of Minimum Wage and Entry Size

<table>
<thead>
<tr>
<th>Dep. Var.</th>
<th>Cross-Border Differences in Log (number of entries + 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entries Weighted by Registered Capital</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Cross-Border Differences in Log (Min. Wage)</td>
<td>-0.605**</td>
</tr>
<tr>
<td></td>
<td>(0.265)</td>
</tr>
<tr>
<td>Observations</td>
<td>115,616</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.462</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors clustered at the county level are shown in parentheses: *** p<0.01, ** p<0.05, *p<0.1. The sample consists of all the same-prefecture neighboring county pairs that satisfy the following two requirements: (1) minimum wage information is available for both counties throughout the period running from 1997 through 2012; (2) there is at least one business entry in either county of the county pair over the sample period running from 1997 through 2012. Note that municipal districts are treated as equivalent to counties. Therefore, pairs of geographic units that consist of two neighboring municipal districts and those that consist of one municipal district and one neighboring county are also included. In all specifications, the dependent variable is the cross-difference in logged one plus the number of entries within one kilometer of a county border. The dependent variable in these specifications differ regarding the specific number of entries used. The dependent variable for Column (1) is constructed using the number of total entries weighted by their registered capital. The dependent variable for Column (2) is constructed using the number of entries that rank in the top decile in terms of registered capital among entries in the same year. The dependent variable for Column (3) is constructed using the number of entries that rank in the bottom decile in terms of registered capital among entries in the same year. Note that sole-proprietorships do not require registered capital and thus such entries are not counted in constructing the dependent variable used for this table. The dependent variable for Column (4) is constructed using the number of sole-proprietorship entries.
Table 5: Effects of the Minimum Wage on Entry, by Type of Border

<table>
<thead>
<tr>
<th>Sample</th>
<th>Dep. Var.: Cross-Border Differences in Log (number of entries + 1)</th>
<th>Same Prefecture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>District-District (1)</td>
<td>District-District (2)</td>
</tr>
<tr>
<td>Cross-Border Diff. in</td>
<td>-0.408*</td>
<td>-0.404***</td>
</tr>
<tr>
<td>Log (Min. Wage)</td>
<td>-0.238</td>
<td>-0.118</td>
</tr>
<tr>
<td>Observations</td>
<td>24,576</td>
<td>62,752</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.906</td>
<td>0.55</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors clustered at the county level are shown in parentheses: *** p<0.01, ** p<0.05, *p<0.1. For column (1) we restrict the sample to within-prefecture neighboring municipal district pairs. For column (2) we restrict the sample to neighboring geographic unit pairs consisting of one municipal district and one county within the same prefecture. For column (3) we restrict the sample to within-prefecture neighboring county pairs. The samples for these three columns pooled together are equivalent to the baseline sample used for column (1) of Table 2.
Table 6: The results are not sensitive to including macroeconomic controls.

<table>
<thead>
<tr>
<th>Dep. Var:</th>
<th>Cross-Border Difference in Log (number of entries + 1)</th>
<th>1km</th>
<th>2km</th>
<th>3km</th>
<th>4km</th>
<th>County Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>Panel A: No Macroeconomic Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-Border Diff. in Log (Min. Wage)</td>
<td>-0.366***</td>
<td>-0.229**</td>
<td>-0.0256</td>
<td>-0.149</td>
<td>0.218*</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.606</td>
<td>0.629</td>
<td>0.659</td>
<td>0.682</td>
<td>0.749</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Panel B: Macroeconomic Variables Controlled For</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross-Border Diff. in Log (Min. Wage)</td>
<td>-0.372***</td>
<td>-0.229**</td>
<td>-0.0232</td>
<td>-0.144</td>
<td>0.201</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.606</td>
<td>0.629</td>
<td>0.659</td>
<td>0.682</td>
<td>0.749</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>57,800</td>
<td>57,800</td>
<td>57,800</td>
<td>57,800</td>
<td>57,800</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Robust standard errors clustered at the county level shown in parentheses: *** p<0.01, ** p<0.05, *p<0.1. The results reported in column (1) – (5) and columns (8) – (12) are estimated using the same sample that is restricted to pairs of neighboring counties within the same prefecture. The dependent variable for column (1) is the cross-border difference in logged one plus the number of entries within one kilometer of the border. The dependent variables used for columns (2), (3), and (4) are constructed similarly, except in these cases we enlarge the sample area from a two-kilometer band to a four-kilometer band on each side of a county border. The dependent variable for column (5) is constructed using the total number of entries in an entire county instead of entries near the border. The macroeconomic variables controlled for in Panel B include population, the value-added of the agriculture sector, and the value-added of the manufacturing sector at the county-year level.
Appendix A: Registered Capital and Firm Size

During our sample period, which runs from 1997 through 2012, the Company Law of the People’s Republic of China requires registered capital to be paid-in capital. Minimal requirements for registered capital vary, by business type and policy period. For example, between 1999 and 2004, the minimal requirement for registered capital in limited-liability firms was 500,000 yuan for those that operate mainly production or wholesale businesses, 300,000 yuan for retail firms, and only 100,000 yuan for those that provide scientific and technological R&D services. Sole proprietorships and partnerships face no such minimal requirements and these firms all report zero registered capital. The 2005 amendment to the Company Law lowered these minimal requirements for registered capital. Although bunching around these thresholds occurs depending on specific types of registration, many firms exceed the minimal requirements and choose to carry larger amounts of registered capital.

The magnitude of a firm’s registered capital are positively correlated with employment and revenue. On the one hand, carrying more registered capital gives a firm a better chance on the credit market. On the other hand, more registered capital implies a greater responsibility to pay back a firm’s debts if it declares bankruptcy. The tradeoff between these two concerns incentivizes firm to gauge their registered capital to fit their actual sizes. To quantify the correlation between a firm’s size and its registered capital, we match the 1998–2013 waves of the Annual Survey of Industrial Firms (ASIF), which contains information on revenue and employment, to our business registration data. Of these 4.25 ASIF million records, we are able to find 60% in the business registration data merely using firm names. In appendix table A1, we show that, controlling for industry fixed effects, city fixed effects, and entry-year fixed effects, a 10% increase in registered capital is associated with 3.42% higher employment and 2.54% higher total revenue. This gives us confidence that we can use registered capital to proxy for the size of new business entries.
Table A1: Registered capital is positively correlated with firm size.

<table>
<thead>
<tr>
<th>Dep. Var.</th>
<th>Log (Revenue)</th>
<th>Log (Employment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>Log (Registered Capital)</td>
<td>0.342***</td>
<td>0.254***</td>
</tr>
<tr>
<td>(0.001)</td>
<td>(0.0004)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>2,697,020</td>
<td>2,697,020</td>
</tr>
<tr>
<td>R²</td>
<td>0.37</td>
<td>0.362</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors are shown in parentheses: *** p<0.01, ** p<0.05, * p<0.1. The sample consists of firms that were included in the 1998–2013 waves of the Annual Survey of Industrial Firms (ASIF) matched to business registration data based on firm names. In both specifications, we include entry-year fixed effects, industry fixed effects, and city fixed effects.
Appendix B: City Borders and Provincial Borders

In our baseline results we focus on the sample of neighboring county pairs that belong to the same prefecture, as this is the sample that is most likely to satisfy our identifying assumption. To examine whether county borders are more or less porous than prefectural or provincial borders, we now turn to consider neighboring county pairs that straddle prefectural or provincial borders. For column (1) of Table A2 we use the sample of neighboring county pairs that straddle prefecture borders. The results suggest that differences in minimum wage rates across prefecture borders do not significantly influence new business entries. For column (2) we use the sample of neighboring county pairs that straddle provincial borders and show that differences in minimum wage rates across provincial borders tend to drive new business entries to the side of the border that imposes lower minimum wage rates, although this effect is much smaller and less significant than in the baseline sample.

We restrict the samples used for Panel (B) and Panel (C) to a subsample that includes such macroeconomic variables as county-level population, value-added of the agriculture sector, and value-added of the manufacturing sector for which data on both sides of the borders are available. These variables are obtained from the County Statistical Yearbook in China, but no data are available prior to 1999 and no data are available for individual municipal districts. A comparison of the results reported in Panel (B) and Panel (C) indicate that our results are not sensitive to including macroeconomic variables.

We should bear in mind that the identification assumption may not hold for prefectural or provincial borders, and the entry-deterring effects of minimum wage laws might be underestimated as a result of the remaining endogeneity issue. If taken at face value, however, this pattern suggests that the distortions that are present for city-level or provincial minimum wage rates are much more severe for minimum wage changes restricted to counties.
Table A2: Prefecture Borders and Provincial Borders

<table>
<thead>
<tr>
<th>Sample:</th>
<th>Within Province Cross-Prefecture Neighboring County Pairs</th>
<th>Cross-Province Neighboring County Pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Panel A: Full Sample</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Cross-Border Diff. in Log (Min. Wage)</td>
<td>0.0313</td>
<td>-0.0945***</td>
</tr>
<tr>
<td>Observations</td>
<td>57,696</td>
<td>25,120</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.608</td>
<td>0.646</td>
</tr>
<tr>
<td></td>
<td>Panel B: With Macroeconomic Variables Available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Cross-Border Diff. in Log (Min. Wage)</td>
<td>0.0484</td>
<td>-0.0748**</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.588</td>
<td>0.576</td>
</tr>
<tr>
<td>Observations</td>
<td>36,468</td>
<td>18,162</td>
</tr>
<tr>
<td></td>
<td>Panel C: Controlling for Macroeconomic Variables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>Cross-Border Diff. in Log (Min. Wage)</td>
<td>0.0426</td>
<td>-0.0803**</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.588</td>
<td>0.576</td>
</tr>
<tr>
<td>Observations</td>
<td>36,468</td>
<td>18,162</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors clustered at the county level are shown in parentheses: *** p<0.01, ** p<0.05, *p<0.1. For Panel (A) we use all the neighboring county pairs that straddle prefectural borders and satisfy the following two requirements: (1) minimum wage information is available for both counties throughout the period running from 1997 through 2012; (2) there is at least one business entry in either county of the county pair over the sample period running from 1997 through 2012. We restrict the samples used for Panel (B) and Panel (C) to a subsample where macroeconomic variables are available on both sides of the prefectural borders.