E. J. Ourso College of Business
Department of Economics

DEPARTMENT OF ECONOMICS WORKING PAPER SERIES

Effects of FDI on Entrepreneurial Activity: Evidence from Right-to-Work and Non-Right-to-Work States

Ozkan Eren
Louisiana State University

Masayuki Onda
Louisiana State University

Bulent Unel
Louisiana State University

Working Paper 2016-04
http://faculty.bus.lsu.edu/papers/pap16_04.pdf

Department of Economics
Louisiana State University
Baton Rouge, LA 70803-6306
http://www.bus.lsu.edu/economics/

Effects of FDI on Entrepreneurial Activity: Evidence from Right-to-Work and Non-Right-to-Work States*

Ozkan Eren Masayuki Onda Bulent Unel

April 2016

Abstract

This paper investigates the impact of Foreign Direct Investment (FDI) on entrepreneurial activity at the individual-owner level in U.S. states over 1996-2008. Our results indicate that FDI has no effect on entrepreneurial activity in Right-to-Work (RTW) states. In non-RTW states, however, we find that an increase in FDI decreases the average monthly rate of business creation and destruction. Specifically, a 10-percent increase in FDI decreases the average monthly rate of business creation and destruction by roughly 4 and 2.5 percent (relative to sample mean), respectively.

JEL Classification: L26, J24, J38, F21, F23

Keywords: Entrepreneurial Activity, FDI, Right-to-Work Laws, Self-employment

*Ozkan Eren, Masayuki Onda, and Bulent Unel: Department of Economics, Louisiana State University, Baton Rouge, LA 70803. E-mail: oeren@lsu.edu, monda@lsu.edu, and bunel@lsu.edu; Tel: (225)578-3900 (Eren), (225)578-3807 (Onda), and (225)578-3790 (Unel).

1 Introduction

Technological progress coupled with reductions in trade and investment barriers observed over the last decades have dramatically intensified Foreign Direct Investment (FDI) around the globe. The share of FDI in the world GDP steadily rose from about 0.5 percent in 1980 to about 2.6 percent in 2013 (World Development Indicators, 2015). The growing importance of FDI has also kindled a debate over its implications for economic growth, labor markets, and domestic entrepreneurial activity. The existing literature has extensively investigated the impact of FDI on growth, labor-market outcomes, and technology transfer (Alfaro, 2014). The relationship between FDI and entrepreneurial activity, however, has attracted little attention. Given that many academics and policy makers view entrepreneurial dynamism as a spur to innovation and growth, a route out of poverty and labor market discrimination, absence of a detailed and robust empirical analysis seems surprising.[1]

Existing literature on the interactions between FDI and entrepreneurial activity has been largely theoretical, and the conclusion from these studies is mixed.[2] The model developed in Grossman (1984) predicts that the inflow of foreign firms crowds out local entrepreneurship because higher earnings prospects in foreign firms induce individuals to choose waged employment. Rodriguez-Clare (1996) proposes a model relating foreign firms with domestic intermediate-good producers through linkages. His model predicts a positive impact of FDI on entrepreneurship when linkages are strong. Markusen and Venables (1999) also reach a similar conclusion. Results from these theoretical models coupled with limited empirical evidence call for a detailed investigation of the relationship between FDI and entrepreneurial activity.

[1]For example, Haltiwanger et al. (2013) find that small-business start-ups created about 3.5 million net new jobs in the U.S. private sector in 2005. See also Aghion et al. (2014), Hout and Rosen (2000), Fairlie and Robb (2008) and Hunt (2011) for a detailed discussion of entrepreneurial dynamism and its role in the economy.

[2]There are a few notable exceptions. For example, Barrios et al. (2005) find that FDI has a positive net impact on the creation of local firms in Ireland. Danakol et al. (2013), using business creation rates data across 70 countries over the 2000–2009 period, find a negative effect of FDI on entrepreneurship.

In this paper, we examine the effect of FDI on entrepreneurial activity at the individual-owner level by explicitly focusing on the right-to-work (RTW) status of U.S. states. This emphasis is motivated by remarkable differences between RTW and non-RTW states. In its simplest form, a RTW law bans the union shop, that is, a workplace where all employees are required to join the labor union. These laws are also generally associated with other business friendly policies including but not limited to lower hiring and firing regulations, lax environmental protection and lower taxes (Holmes, 1998). As discussed further below, differences in the local labor-market conditions across these two types of states may affect the opportunity cost associated with different occupational choices.

There are two main empirical challenges to estimating the causal effect of FDI on business creation and destruction. First, the identification of entrepreneurial activity at any level is a difficult task. The main problem stems from the distinction between employer and non-employer firms. For example, Business Employment Dynamics (complied by the U.S. Bureau of Labor Statistics) focuses only on the former and measures entrepreneurial activity by employer establishment birth and death rates. However, employer-based counts represent only a small share of all entrepreneurial activity (Fairlie, 2014). In this paper, we use Fairlie's (2014) Kauffman Entrepreneurship micro-data files, which cover both employer and non-employer firms. More precisely, we measure entrepreneurial activity at the individual-owner level as the average monthly rate of non-business owners becoming entrepreneurs (business creation rate), and as the average monthly rate of entrepreneurs exiting from business ownership (business destruction rate).

Second, unobserved variables that may affect the level of FDI may also be correlated with entrepreneurial activity. As such, in order to identify the causal effect, it is imperative to consider arguably exogenous variation in the flow of FDI. Our empirical analysis uses state-level data and our estimates are based on regression specifications that control for state level fixed effects, state-specific time trends, and year fixed effects. Under the assumption that unobservable variables related to entrepreneurial activity do not deviate from a state's trend when FDI deviates from trend, we can uncover the causal effect of

FDI on business creation and destruction. Falsification tests presented throughout the text provide supportive evidence for the validity of our identifying assumption.

Using data from several sources over the 1996-2008 period, we reach the following empirical conclusions. The results from the full sample do not indicate any significant effect of FDI on either average monthly business creation or destruction rates. When we restrict the sample to RTW states, we continue to observe no effect of FDI on entrepreneurial activity. In non-RTW states, however, an increase in FDI decreases the average monthly business creation rate. Surprisingly, at the same time, it lowers the monthly business destruction rate as well. Specifically, we find that a 10 percent increase in FDI decreases average monthly rate of business creation and destruction by roughly 4 and 2.5 percent (relative to sample mean), respectively. Our estimates further imply that the net impact of FDI on entrepreneurial activity in non-RTW states is positive. For example, using population numbers from the 2010 CPS-ORG, we show that a 10 percent increase in FDI let about 17,500 entrepreneurs stay in business. We propose an explanation related to differences in the opportunity costs of occupational choices in RTW and non-RTW states for our findings. Several robustness checks support the baseline results of the paper.

This paper is related to a large literature on entrepreneurship. Several studies have analyzed the determinants of business formation.[3] We contribute to this literature by examining the existence of a causal link between FDI and entrepreneurship. This paper also relates to a large empirical literature on FDI and its effects on economic outcomes.[4] We show that the effect of FDI on entrepreneurial activity depends on local labor market conditions. Finally, this paper complements the literature on RTW laws and their role in state economies.[5] Our findings may shed light on legislative decisions in states where the debate over RTW laws is currently intense (e.g., West Virginia).

[3]Among many others, see Holtz-Eakin et al. (1994), Blanchflower and Oswald (1998), Fairlie (19999), Hout and Rosen (2000), Cullen and Gordon (2007), Hall and Woodward (2010), and Dinopoulos and Unel (2015).

[4]This literature is vast, see Yeaple (2013) and Alfaro (2014) for comprehensive reviews.

[5]See, for example, Hirsch (1980), Ellwood and Fine (1987), Holmes (1998), Farber (2005), and Eren and Ozbeklik (2016).

The rest of the paper is organized as follows. The next section reviews RTW laws and compares main economic characteristics across states. Section 3 discusses the data and Section 4 describes the details of the econometric methodology used in the paper. Section 5 presents the results, provides a discussion of potential channels leading to our findings, and presents several robustness checks. Section 6 concludes.

2 Right-to-Work Laws

In 1935, with the passage of the Wagner Act, the U.S. Congress granted organized labor statutory sanction to fire employees for refusal to join a union. The law gave rise to a movement to curb the additional power bestowed upon unions at the state level. The 1947 Taft-Hartley amendments to the 1935 Wagner Act granted states the power to ban the union shop (the so-called Right-to-Work laws), a contract provision that requires all employees to join and pay dues to the union. By the time of the Taft-Hartley Act, five states had already passed such laws (Arkansas and Florida in 1944, and Arizona, Nebraska and South Dakota in 1946). Since then and until the most recent cases of Indiana and Michigan in 2012 and Wisconsin in 2015, twenty-two states have passed RTW laws.[6]

RTW states are perceived as pro-business because of their attitudes towards labor unions as well as their other business friendly policies such as lax environmental regulations and lower taxes (Holmes 1998). There are striking differences between RTW and non-RTW states in terms of economic progress. For example, relative to non-RTW states, RTW states annually grew by 0.6 percentage points faster over the last three decades. RTW states have also generated higher growth in employment, and have generally experienced lower unemployment rate.[7] Holmes (1998) shows that, on average, manufacturing activity

[6]These states are Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, and Wyoming. Figure A.1 in the appendix shows all RTW states and the years these laws were enacted.

[7]These statistics are obtained using data from the U.S. Bureau of Economic Analysis and Current Population Survey monthly files.

(measured by its share of total employment) increases abruptly by about one-third when one crosses the border from a non-RTW state to a RTW state.

Particularly important for our study are the labor market flexibility and wage structures (which together determine the opportunity cost of becoming an entrepreneur) that prevailed in RTW and non-RTW states. Figure 1 displays the average-market flexibility index over our sample analysis period (1996-2008) and it measures the intensity of hiring and firing regulations, centralized collective bargaining, minimum wages, working hours regulations, etc. (Stansel et al., 2015). Higher values of the index indicate more flexible labor markets; as such, labor markets have always been more flexible in RTW states.

Figure 2 plots the real hourly wages (in 2009 dollars) over the same period obtained from micro-level data (Current Population Survey files) after having purged out the effects of individual characteristics (i.e., age, race, gender and educational attainment) and time.[8] As shown in the figure, average wages have always been higher in non-RTW states. Among several other factors, stronger labor unions and more rigid local labor market conditions arguably have played an important role in these wage differentials (Holmes 1998, Eren and Ozbeklik 2016).[9]

3 Data and Descriptive Statistics

The data used in this study are taken from several publicly available sources covering a time span from 1996 to 2008. Entrepreneurial activity is measured by (i) the rate of business creation, and (ii) the rate of business destruction, both of which are at the individual-owner level. The data for business creation are drawn from Fairlie's (2014) Kauffman Entrepreneurship Micro-Data Files (1996 and onwards), which are constructed using the Current Population Survey Outgoing Rotation Group (CPS-ORG) monthly files.[10] The

[8] Raw data trends are very similar to those presented in the text and are available upon request.

[9] See also Hirsch (1980), Ellwood and Fine (1987) and Farber (2005) for detailed investigation of RTW laws and state economies.

[10] Due to revisions in the household identifiers implemented to protect the confidentiality of survey respondents, a matching algorithm cannot be performed to several earlier years (e.g., 1985, 1994 and 1995)

data for each year covers more than 650,000 observations from the U.S. adult population ages 20 to 64 years old and includes basic demographic information (i.e., gender, race and age), educational background, and labor market information (i.e., employment status, worker class, hours worked per week, etc.).

Self-employed individuals who own a business as their main job and work at least 15 hours per week are considered entrepreneurs in the CPS-ORG data.[11] To identify business creation (or destruction) at the individual-owner level, individuals must be tracked over time. The CPS is a household survey and unfortunately it does not include individual identifiers. However, respondents in the CPS-ORG data are surveyed on a monthly basis for four consecutive months.[12] Exploiting this feature of the data, Fairlie (2014) matches individuals over two consecutive months using information on household ID, household number, record lines, survey month, sex, race, and age.[13] He then identifies new entrepreneurs as those individuals who do not own a business as their main job in one survey month but become a business owner in the subsequent month. In a similar fashion, we also identify exiting entrepreneurs as those individuals who are entrepreneurs in one survey month but become a non-business owner in the next month.

For each state and year, we then calculate the average business creation rate as the weighted monthly fraction of non-business owners who created new businesses, and the average business destruction rate as the weighted monthly fraction of entrepreneurs who became non-business owners. In all calculations CPS weights are used. It is important to emphasize that we are able to replicate the business creation rate, the so-called Kauffmann Entrepreneurial Activity Index reported in Fairlie (2014). Our ability to precisely replicate Kauffman Entrepreneurial Activity Index for each year and state provides valid-

of the CPS-ORG data (Madrian and Lefgren, 1999; Fairlie, 2014).

[11]Individuals with imputed information on worker class (i.e., self-employed or not) and hours of work are excluded. The results presented in the paper remain unchanged if we do not exclude imputed observations (which constitutes less than 3.5 percent of the effective sample).

[12]Each household is resurveyed for another four consecutive months a year later and then leaves the sample permanently.

[13]The success rate of this matching procedure from 1996 and onwards is roughly 95 percent (Fairlie, 2014).

ity to our construction of the business destruction index. Finally, we do not distinguish between the creation of high-growth potential businesses (i.e., opportunity entrepreneurship) and individuals starting businesses because of limited job opportunities (i.e., necessity entrepreneurship) in our construction of a business creation index. Dropping new entrepreneurs coming out of unemployment and limiting our attention to only opportunity entrepreneurship do not affect the estimated effects presented throughout the text. All these results are available upon request.

Table 1 reports the basic summary statistics of entrepreneurial activity for all states (Column 1) and by RTW status (Columns 2 and 3, respectively) over the sample period. The first row presents the average number of entrepreneurs per 1,000 adults, and note that roughly more than 8 percent of the adult population is entrepreneurs. Looking at the second row of Table 1, we see that the average monthly rate of business creation per 1,000 non-business owners is 3 adults (0.3 percent). This fraction is slightly higher in the RTW states. Specifically, 3.1 and 2.8 adults out of 1,000 non-business owners created new businesses each month in the RTW and non-RTW states, respectively. We also see that about 80 out of 1,000 entrepreneurs (8 percent) shut down their businesses each month over the sample period (Row 3, Table 1).

Figure 3.a displays the data trends in the average monthly rate of business creation from 1996 to 2008. We do not observe any discernible patterns in trends across states. That being said, the average business creation rate is almost always higher in RTW states than that in non-RTW states. Turning to time series for business destruction, we observe an upward trend in these rates (Figure 3.b). As such, the average business destruction rate increased more than 30 percent from 1996 to 2008 for both RTW and non-RTW states.[14]

Annual data on Foreign Direct Investment (FDI) inflows come from the U.S. Bureau of Economic Analysis (BEA), and cover the financial structure and operations of non-bank

[14]We calculated entrepreneurial activity up to 2013. The average business creation rate shows a sharp decline beginning in mid-2009 for both RTW and non-RTW states. The average business destruction rate has been somewhat stable for RTW states from 2009 and onwards, while it showed a reversal trend in non-RTW states following the years after the Great Recession.

U.S. affiliates of foreign direct investors.[15] FDI data are measured by the total value of foreign investment in property, plant, and equipment, and are available at state level over the 1977–2007 period. We use state-level GDP deflators (from the BEA) to convert nominal values into millions of chained 2009 dollars.[16] The last row of Table 1 presents the basic summary measures and Figure 4 displays the log average real FDI separately for RTW and non-RTW states. FDI inflows exhibit similar trends across the states and it is interesting to note that non-RTW states attracted more FDI than RTW states.[17]

In some of the estimations reported below, we also control for a variety of time-variant state characteristics obtained from various sources. Specifically, our regression specifications control for log real gross domestic product, log population, unemployment rate, real minimum wage, and lag value of percent of adult population that were self-employed. State economic variables are obtained from the BEA, while the fraction of entrepreneurs comes from Fairlie (2014). We also include the percent of the state's adult population that are white, male, and college graduates, as well as the private sector unionization rates, all of which are extracted from CPS-ORG files. Finally, a composite-tax index from Stansel et al. (2015) is added to our specifications. The index measures the intensity of takings and discriminatory taxes at the state level constructed from data on tax revenue as a percentage of state GDP, top marginal income tax rate, indirect tax revenue as a percentage of state GDP, and sales taxes collected as a percentage of state GDP.[18]

[15] A U.S. affiliate is a business enterprise in which foreign investors have 10 percent or more of the voting securities or an equivalent interest.

[16] The results of the paper remain the same if we instead use the aggregate price index for fixed non-residential investment to convert nominal values into real terms.

[17] The sharp decline in FDI observed between 2000 and 2002 mainly reflects the 2000 stock market crash and the recession following it. During our sample period, California and New York are the top two non-RTW states that attracted most of the FDI, while Texas was ranked the top across RTW states.

[18] Using the Panel Study of Income Dynamics for the 1978-1993 period, Gentry and Hubbard (2000) estimate the effects of tax system on the likelihood of becoming self-employed. They find that progressive marginal tax rates discourage entry into self-employment and business ownership. In another study, Desai et al. (2011) investigate the extent to which tax deferral policies affect U.S. direct investment abroad, and find that, over the 1982–2010 period, these policies made foreign investment dynamically inefficient.

4 Empirical Methodology

To obtain the effects of FDI on entrepreneurial activity, we estimate a regression of the following form

$$E_{st} = \sum_{j=1}^{2} \beta_j FDI_{st-j} + \alpha_t + \alpha_s + \alpha_s t + X'_{st}\lambda + \varepsilon_{st} \tag{1}$$

where E_{st} is the the rate of business creation or destruction (i.e., entrepreneurial activity) expressed per 1,000 adults in state s and year t, FDI_{st-j} denotes lag values (up to two lags) of log FDI, α_t are year fixed effects to capture changes occurring across all states, α_s are state fixed effects to control for time-invariant state characteristics, $\alpha_s t$ are state-specific time trends to control for linearly trending state characteristics, X_{st} is the set of time-varying control variables and ε_{st} is the error term. We opt out of using contemporaneous FDI to circumvent concerns stemming from reverse causality. Besides, FDI may take time to manifest itself.

The key identifying assumption underlying this framework is that unobservable variables that are related to the outcome do not deviate from a state's trend when its lagged FDI deviates from trend. Under this assumption, the coefficient estimates of $\beta_j s$ can be interpreted as the causal impact of FDI on entrepreneurial activity. We provide several sensitivity checks (e.g., falsification test) throughout the text regarding the validity of this assumption.

To minimize any potential contamination in inference procedure that may arise due to a small number of clusters (22 RTW and 28 non-RTW states), we obtain $p-$values associated with test of significance for each coefficient estimate using the wild bootstrap t-procedure clustered at the state level (Cameron et al., (2008)).

5 Empirical Results

5.1 Baseline Results

We report the effects of FDI on the average monthly business creation rate in Table 2. We present the results for all states and by RTW status of the states. Columns 1-3 provide the results by only including state and year fixed effects and state-specific time trends, while Columns 4-6 report the results by adding time-variant state controls. In Columns 1 and 4, we report the effects of FDI using only lag one, while we use lag two in Columns 2 and 5, and finally, we include lag one and two at the same time in Columns 3 and 6. The $p-$values obtained from 999 wild bootstrap repetitions clustered at the state level are reported beneath each coefficient estimate.

Focusing first on all states, we do not find any strong effect of FDI on business creation rate (Panel A, Table 2). The reported coefficients are all negative but they are not different from zero at the 5 percent level. Similar to full sample results, we continue to observe no effect of FDI in RTW states with generally positive point estimates (Panel B). As for non-RTW states, however, the coefficients (in absolute value) are considerably larger in magnitude and the estimate on lag two is highly significant (Column 2, Panel C). The effect size is -1.1, which implies that a 10 percent increase in FDI decreases the average monthly rate of business creation by 4 percent, relative to its sample mean. Including both lags has virtually no impact on the estimated effects (Column 3).

Columns 4-6 provide the same set of estimates but this time additionally including all the time-variant state characteristics described in Section 3. Note that the point estimates are very similar in magnitude to those reported in Columns 1-3. The insensitivity of our coefficient estimates to the inclusion of a relatively rich set of covariates provides some assurance to our identifying assumption.

Our next set of results pertain to average monthly rate of business destruction. Table 3 presents the estimated effects of FDI. We do not observe any impact of FDI on business destruction when we consider all states (Panel A) or only RTW states (Panel B). Turning

to non-RTW states, however, we once again observe statistically significant and non-negligible effects of FDI. It appears that both the first and second lags are precisely estimated when entered one at a time, while it is only the first lag of FDI that yields a statistically significant coefficient estimate when we add them at the same time to the model specification. The effect size from lag one is -19.968 (Column 3, Panel C, Table 3). This implies that a 10 percent increase in FDI decreases the average monthly rate of business destruction by roughly 2.5 percent, relative to its sample mean. Controlling for state characteristics has little effect on the estimated effects of FDI on business destruction (Columns 4-6).

Combining the estimates of the effects of FDI from average monthly business creation and destruction specifications in non-RTW states, our calculations imply that the net impact of FDI on the *level* of entrepreneurial activity is *positive*. To see this, let P_t denote the adult population (in 1,000) of non-RTW states in period t, and e_t the fraction of entrepreneurs in the population. Using our estimates, a 10 percent increase in FDI decreases the number of businesses created and the number of business destroyed by $1.1(1-e_t)P_t$ and $20e_tP_t$, respectively. The net effect of FDI on entrepreneurial activity then is $20e_tP_t - 1.1(1-e_t)P_t = (21.1e_t - 1.1)P_t$, and note that this effect is always positive as long as $e_t \geqslant 0.052$. That is, an increase in FDI has a net positive impact on the level of entrepreneurial activity if entrepreneurs constitute at least 5.2 percent of the adult population in non-RTW states. The average share of entrepreneurs in non-RTW states is always above 8 percent (see the first row in Table 1).

For example, using data on business and non-business owners population from the 2010 CPS-ORG, we find that a 10 percent increase in FDI translates into roughly 10,500 fewer businesses created and 13,000 fewer business destroyed each month during the year.[19] Consequently, a 10 percent increase in FDI saved about 17,500 entrepreneurs in non-RTW

[19]The business and non-business owner populations in non-RTW states in 2010 were roughly 93.5 and 6.5 million, respectively. Multiplying these population numbers with the corresponding estimated effects of FDI (Column 3 of Panel C in Tables 2 and 3), we obtained the monthly estimates.

states during 2010.[20]

It is important to emphasize that FDI reduced both business creation and destruction rates in non-RTW states, which might have undesirable economic consequences in these states. Lower business creation may slow down innovation, growth, and job creation driven by new entrepreneurs, and lower business destruction may induce inefficient entrepreneurs to stay in the market.

5.2 Potential Channels

Stepping back and viewing the complete set of results, we have two main findings. First, there is no effect of FDI on entrepreneurial activity at the individual-owner level in RTW states. Second, our results indicate that an increase in FDI in non-RTW states decreases the average monthly business creation and destruction rates. In this section, partly borrowing from various theoretical models, we shall try to explain the mechanism underlying our findings.

One potential explanation pertains to market stealing effects, which may stem from an increase in product market competition.[21] Foreign firms, on average, are larger and more productive than domestic firms, and thus can strategically charge lower prices which in turn potentially deter new startups.[22] This explanation is not entirely convincing on two accounts. First, more intense product market competition should also lead to displacement of existing entrepreneurs. However, we do not see such a pattern. Second, given the pro-business nature of RTW states, one would expect at least similar effects in RTW states as well.

Another potential explanation is related to the differences in composition of FDI across

[20] As noted in Fairlie (2014), annual estimates are not twelve times monthly estimates because individuals can potentially become entrepreneurs multiple times within the same year. He suggests that annual rates are about 6 to 8 times monthly ones. In our calculation of the number of entrepreneurs saved during 2010, we multiply the average number of entrepreneurs saved each month (2,500) by 7.

[21] Tirole (1988) reviews various strategic actions (such as capacity expansion, advertising, learning-by-doing, etc.) through which firms affect competitive conditions and deter entry into markets.

[22] In an influential paper, Helpman et al. (2004), using U.S. exports and affiliate sales data that cover 52 manufacturing sectors and 38 countries, show that only the most productive firms engage in FDI activity.

states. It is conceivable to argue that RTW states predominantly attract FDI where the nature of inflows are not highly correlated with business activity at the individual level. In this case, it may not be surprising to observe a null effect of aggregate FDI on business creation and destruction in RTW states. To further explore this hypothesis, we disaggregate total FDI into two parts: manufacturing FDI (FDI_m) and non-manufacturing FDI (FDI_o). Our choice of disaggregation is driven by data restrictions, and given that manufacturing FDI plays a more important role in RTW states (48 and 43 percent of total FDI in RTW and non-RTW states, respectively), our crude disaggregation may still provide insights.[23] As such, if our results are driven by differences in composition, one would expect similar effects of manufacturing FDI on entrepreneurial activity across these states. Table 4 reports the results from a slightly modified version of equation (1) where we include manufacturing and non-manufacturing FDI separately. The points estimates on manufacturing FDI for RTW states continue to be imprecisely estimated (Panel A), whereas the estimated effects for non-RTW states are consonant with those presented from Tables 2 and 3 (Panel B). Taking this analysis one step further and excluding states where the nature of manufacturing FDI is potentially different than the rest of the nation (California, New York, and Massachusetts) does not alter the findings (Columns 3 and 4).

A more plausible and convincing explanation for our results comes from a mechanism operating through differences in local labor market conditions in RTW and non-RTW states, and thereby in the opportunity costs associated with different occupational choices (Lucas, 1978; Kihlstrom and Laffont, 1979). Recall that labor markets are less flexible and average wages are always higher in non-RTW states (Figures 1 and 2). The extent of job security coupled with better average pay implies higher expected opportunity cost for an agent to choose entrepreneurship over wage work. FDI inflows create new job opportunities for individuals, and these jobs pay higher wages and provide more job security in non-RTW states, which in turn may induce individuals (risk-averse ones in particular) to become

[23]FDI data on several sub-sectors are not available for a large number of states and there is also not a uniform industry level classification of FDI over our sample period.

employees. Lower rates of business destruction following FDI would then be a natural extension of this explanation. Decreased supply of small-business owners alleviates the competitive pressure on existing ones and lowers their exit from the market.

Our proposed explanation is consonant with recent empirical studies that analyze relation among risk, wage, and entrepreneurship. For example, using data on US companies receiving venture funding between 1987 and 2008, Hall and Woodward (2010) compare the difference between cash rewards that entrepreneurs actually received with the cash that they would have received from a risk free waged job. They find that a venture-backed entrepreneur has a below-market salary and about 75 percent of them receive nothing at exit. Given this nature of entrepreneurship, individuals associated with relatively lower risk aversion and higher initial assets generally become entrepreneurs. A higher risk-free payoff (wages) in non-RTW states may induce more individuals to become wage workers rather than becoming entrepreneurs and facing an uncertain payoff.[24]

5.3 Robustness Checks

We implemented several sensitivity checks to examine the validity of our results. Tables 5 and 6 present these additional estimates of the effects of FDI for average monthly rate of business creation and destruction, respectively. First, we additionally control for quadratic state-specific time trends in the specifications. The results from this exercise are reported in the first column of Tables 5 and 6. The point estimates are very similar to our baseline results.

Second, following Duflo (2001), we interacted baseline covariates with a linear trend and estimate the following slightly modified version of equation (1)

$$E_{st} = \sum_{j=1}^{2} \beta_j FDI_{st-j} + \alpha_t + \alpha_s + X'_{st}\lambda + t\sum_k \delta_k X_{(s,1996),k} + \varepsilon_{st}. \quad (2)$$

[24]Several other empirical studies examine the relationship between risk and the supply of entrepreneurs. For example, Olds (2014) finds that the State Child Health Insurance Program (SCHIP) increased incorporated self-employment by 31%. He attributes the surge in self-employment to reduced risk within the household following SCHIP availability.

In doing so, we allow FDI inflows to be related to different underlying time trends in entrepreneurial activity across states, depending on baseline state characteristics. Column 2 of Tables 5 and 6 report the estimates based on equation (2) and our conclusions remain intact.

Third, it is conceivable to argue that FDI inflows to the neighboring states are correlated with our variable of interest and entrepreneurial activity. Although we condition on a detailed composite tax index measure in our specifications, a similar omitted variable bias argument can be made if our composite measure does not fully capture the impact of all relevant tax variables. To minimize concerns over these confounding effects, we extend our specifications by including the sum of FDI inflows to the neighboring states, and state-level corporate and average tax rates. The results from this exercise are reported in Column 3 of Tables 5 and 6. The coefficients on FDI measures are unchanged.

Fourth, we include the lagged dependent variable to our baseline model. Doing so has almost no effect on our point estimates (Column 4 of Tables 5 and 6). It is well known that fixed effects models with lagged dependent variables are biased for small T. Our goal in including lagged entrepreneurial activity is only to show that the coefficients on FDI measures remain the same, thereby providing additional evidence that our results do not suffer from omitted variable bias.

Fifth, given the count-based nature of our dependent variable, we re-run our baseline specifications using a Poisson regression model. The results from this alternative specification are presented in Column 5 of the tables. Specifically, a 10 percent increase in FDI decreases the average monthly rate of business creation by roughly 3.1 percent (Panel B, Table 5), while the same increase in FDI decreases the average monthly rate of business destruction by 2.6 percent (Panel B, Table 6). These results are consistent with those obtained from OLS regressions. We also experimented our analysis with a negative binomial regression and the results remain the same.

Sixth, we performed a falsification test. We replaced the lagged values from equation (1) with the lead value of FDI (FDI_{st+1}). Under the assumption that our results are not

driven by spurious correlations, one would expect FDI_{st+1} to have no effect on business creation and destruction at time t. The presence of a significant association compromises our identification strategy. Looking at the last column of Panel B of Table 5, the point estimate for non-RTW states flips sign. Therefore, if anything, this implies a positive selection bias, i.e., the estimated effect of FDI on business creation in non-RTW states from Table 2 potentially serves as a lower bound for the unknown true population parameter. Turning to Table 6, the point estimates on the effect of lead FDI value are all highly insignificant and are very small in magnitude. Recall that BLS collected FDI data over the 1977-2007 period. When we run the falsification test, the effective sample is restricted to observations between 1994 and 2006. To have a more fair comparison, we also re-estimate our baseline specifications with this subsample of observations. The corresponding results are similar to those presented in Tables 2 and 3.[25]

Finally, to examine whether our results are driven by one particular state, we estimated equation (1) repeatedly, each time removing one state. Out of a total of 50 regressions, the estimated effects of FDI on business creation rate are always precisely estimated in non-RTW states, whereas the point estimates for the effect in RTW states are all small in magnitude and are not different from zero. We find exactly the same pattern when we consider FDI and business destruction rate. We also tried longer lags (e.g., lag three) in our baseline specifications. None of the coefficient estimates on these additional lags are different from zero. Moreover, the estimated coefficient effects are not sensitive to the inclusion of these longer lags. All these additional results are available upon request.

6 Conclusion

The growing importance of FDI has also kindled a debate over its implications on economic outcomes. The existing literature has extensively analyzed the impact of FDI on

[25]More precisely, the estimated effects from lag one and two on business creation in non-RTW states are -0.145 (p-value=0.72) and -0.871 (p-value=0.09), respectively. The estimated effects from lag one and two on business destruction in non-RTW states are -16.054 (p-value=0.01) and 1.178 (p-value=0.82), respectively. No other point estimates are different from zero.

growth, labor market outcomes and technology transfer. Surprisingly, little attention has been devoted to the relationship between FDI and entrepreneurship. In this paper, we examine the effect of FDI on entrepreneurial activity (measured by average monthly business creation and destruction) at the individual-owner level by explicitly focusing on the RTW status of states in the U.S. To the extent that unobservable variables related to entrepreneurial activity do not deviate from a state's trend when FDI deviates from the trend, our estimation approach uncovers the causal effect of FDI on business creation and destruction.

Considering all states over the 1996–2008 period, we do not find any significant effect of FDI on entrepreneurial activity. These results also carry over to RTW states. In non-RTW states, however, we find a negative impact of FDI on business creation and destruction rates. Our results indicate that a 10 percent increase in FDI decreases average monthly rate of business creation and destruction by roughly 4 and 2.5 percent (relative to sample mean), respectively. Surprisingly, our estimates further imply that the net impact of FDI on entrepreneurial activity in non-RTW states is positive. For example, population numbers from the 2010 CPS-ORG imply that a 10 percent increase in FDI kept about 17,500 entrepreneurs in business. Several robustness checks and falsification tests support our findings. We evaluate several potential channels underlying our findings and propose an explanation related to differences in the opportunity costs of occupational choices in RTW and non-RTW states.

From a policy point of view, it may be misleading to draw a firm conclusion regarding welfare implications of local labor-market policies (operating through entrepreneurial activity) in non-RTW states. Lower business creation rate may eschew several benefits (such as innovation, growth, and job-creation) driven by new entrepreneurs. In addition, lower business destruction rate may reflect a less competitive environment, which adversely affects consumer welfare and induces inefficient entrepreneurs to stay in the market.

References

Aghion, Philippe, Ufuk Akcigit, and Peter Howitt, "What Do We Learn from Schumpeterian Growth Theory?," in Phillippe Aghion and Steven N. Durlauf, eds., *Handbook of Economic Growth*, Elsevier, 2014, pp. 515–63.

Alfaro, Laura, "Foreign Direct Investment: Effects, Complementarities, and Promotion," 2014. Harvard Business School, Working Paper: 15-006.

Barrios, Salvador, Holger Görg, and Eric Strobl, "Foreign Direct Investment, Competition and Industrial Development in the Host Country," *European Economic Review*, 2005, *49*, 1761–84.

Blanchflower, David G. and Andrew J. Oswald, "What Makes an Entrepreneur?," *Journal of Labor Economics*, 1998, *16*, 26–60.

Cameron, A. Colin, Jonah Gelbach, and Douglas Miller, "Bootstrap-Based Improvements for Inference with Clustered Errors," *Review of Economics and Statistics*, 2008, *90*, 414–27.

Cullen, Julie B. and Roger H. Gordon, "Taxes and Entrepreneurial Risk-Taking: Theory and Evidence for the U.S.," *Journal of Public Economics*, 2007, *91*, 1479–1505.

Danakol, Seçil Hülya, Saul Estrin, Paul Reynolds, and Utz Weitzel, "Foreign Direct Investment and Domestic Entrepreneurship: Blessing or Curse?," 2013. IZA Working Paper, No. 7796.

Desai, Mihir A., C. Fritz Foley, and James R. Hines Jr., "Tax Plicy and the Efficiency of U.S. Direct Investment Abroad," *National Tax Journal*, 2011, *64*, 1055–82.

Dinopoulos, Elias and Bulent Unel, "Entrepreneurs, Jobs, and Trade," *European Economic Review*, 2015, *79*, 93–112.

Duflo, Esther, "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," *American Economic Review*, 2001, *91*, 795–813.

Ellwood, David T. and Glenn Fine, "The Impact of Right-to-Work Laws on Union Organizing," *Journal of Political Economy*, 1987, *95*, 250–87.

Eren, Ozkan and Serkan Ozbeklik, "What Do Right-to-Work Laws Do? Evidence from a Synthetic Control Method Analysis," *Journal of Policy Analysis and Management*, 2016, *35*, 173–94.

Fairlie, Robert, "The Absence of the African American Owned Business: An Analysis of the Dynamics of Self-Employment," *Journal of Labor Economics*, 19999, *17*, 80–108.

Fairlie, Robert and Alicia Robb, *Race and Entrepreneurial Success: Black-, Asian-, and White-Owned Businesses in the United States*, Cambridge, MA: MIT Press, 2008.

Fairlie, Robert W, "Kauffman Index of Entrepreneurial Activity 1996-2013," Technical Report, Ewing Marion Kauffman Foundation 2014.

Farber, Henry S., "Nounion Wage Rates and the Threat of Unionization," *Industrial and Labor Relation Review*, 2005, *58*, 335–52.

Gentry, William M. and R. Glenn Hubbard, "Tax Policy and Entrepreneurial Entry," *American Economic Review*, 2000, *90*, 283–87.

Grossman, Gene M., "International Trade, Foreign Investment, and the Formation of the Entrepreneurial Class," *American Economic Review*, 1984, *97*, 605–14.

Hall, Robert E. and Susan E. Woodward, "The Burden of the Nondiversifiable Risk of Entrepreneurship," *American Economic Review*, 2010, *100*, 1163–94.

Haltiwanger, John, Ron S Jarmin, and Javier Miranda, "Who Creates Jobs? Small versus Large versus Young," *Review of Economics and Statistics*, 2013, *95* (2), 347–361.

Helpman, Elhanan, Marc J. Melitz, and Stephen R. Yeaple, "Export Versus FDI with Heterogeneous Firms," *American Economic Review*, March 2004, *94*, 300–16.

Hirsch, Barry T., "The Determinants of Unionization: An Analysis of Interarea Differences," *Industrial and Labor Relations Review*, 1980, *33*, 147–61.

Holmes, Thomas J., "The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders," *Journal of Political Economy*, 1998, *106*, 667–705.

Holtz-Eakin, Douglas, David Joulfaian, and Harvey S. Rosen, "Sticking it Out: Entrepreneurial Survival and Liquidity Constraints," *Journal of Political Economy*, 1994, *102*, 53–75.

Hout, Michael and Harvey Rosen, "Self-Employment, Family Background, and Race," *Journal of Human Resources*, 2000, *35* (4).

Hunt, Jennifer, "Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa," *Journal of Labor Economics*, 2011, *29*, 417–457.

Kihlstrom, Richard E. and Jean-Jacques Laffont, "A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion," *Journal of Political Economy*, 1979, *87*, 719–48.

Lucas, Robert E., "On the Size Distribution of Business Firms," *Bell Journal of Economics*, 1978, *9*, 508–23.

Madrian, Brigitte C. and Lars J. Lefgren, "A Note on Longitudinally Matching Current Population Survey (CPS) Respondents," 1999. NBER Technical Working Paper: T0247.

Markusen, James R. and Anthony Venables, "Foreign Direct Investment as a Catalyst for Industrial Development," *European Economic Review*, 1999, *40*, 335–56.

Olds, Gareth, "Entrepreneurship and Public Health Insurance," 2014. Harvard Business School Working Paper.

Rodriguez-Clare, Andrés, "Multinationals, Linkages, and Economic Development," *American Economic Review*, 1996, *86*, 852–73.

Stansel, Daniel, José Torra, and Fred McMahon, "Economic Freedom of North America 2015," Technical Report, Fraser Institute 2015.

World Bank, *World Development Indicators (2015)*, Washington D.C.: World Bank Group, 2015.

Yeaple, Stephen R., "Th Multinational Firms," *Annual Review of Economics*, 2013, *5*, 193–217.

Table 1. Summary Statistics on Entrepreneurial Activity and FDI

	All States I	RTW States II	Non-RTW States III
Entrepreneurs	82.213	84.647	80.301
	(19.604)	(19.596)	(19.423)
Business-Creation	2.916	3.100	2.800
	(0.816)	(0.765)	(0.827)
Business-Destruction	79.445	80.316	78.894
	(13.855)	(14.199)	(13.621)
Log FDI	9.508	9.301	9.670
	(1.089)	(1.134)	(1.021)

Notes: The data on business creation and destruction rates are from Fairlie's (2014) Kauffman Entrepreneurship Micro-Data Files (1996–2008) and the authors' calculations, and FDI data are from the Bureau of Economic Analysis (1995–2007). Numbers in parentheses are standard deviations.

Table 2. Impact of Log FDI on the Average Business-Creation Rate

	Without Controls			With Controls		
Variable	1	2	3	4	5	6
Panel A. All States						
FDI_{t-1}	−0.239		−0.083	−0.244		−0.106
p-value	[0.290]		[0.690]	[0.316]		[0.646]
FDI_{t-2}		−0.452*	−0.416		−0.458*	−0.417
p-value		[0.098]	[0.140]		[0.092]	[0.138]
Panel B. RTW States						
FDI_{t-1}	0.025		−0.088	−0.072		−0.247
p-value	[0.916]		[0.868]	[0.882]		[0.622]
FDI_{t-2}		0.268	0.306		0.511	0.595
p-value		[0.410]	[0.382]		[0.262]	[0.136]
Panel C. Non-RTW States						
FDI_{t-1}	−0.477		−0.104	−0.514		−0.179
p-value	[0.186]		[0.702]	[0.172]		[0.578]
FDI_{t-2}		−1.083***	−1.038***		−1.104***	−1.033***
p-value		[0.004]	[0.004]		[0.000]	[0.000]

Notes: The sample sizes in panel A (All States), panel B (RTW States), and panel C (Non-RTW States) are 600, 264, and 336 observations, respectively. All regressions include state and year fixed effects, and state-specific linear trends. Control variables in Columns 4–6 include state's log real GSP, log population, unemployment rate, real minimum wage, percentage of the states adult population that are white, male, and college graduates, private sector unionization rate, composite measures of tax, and fraction of adult population that are entrepreneurs at t-1. Numbers in square brackets are *p*-values obtained from wild bootstrapping (999 repetitions) clustered at the state level; ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Table 3. Impact of Log FDI on the Average Business-Destruction Rate

	Without Controls			With Controls		
Variable	1	2	3	4	5	6
Panel A. All States						
FDI_{t-1}	−7.427		−5.932	−8.654*		−6.739
p-value	[0.142]		[0.268]	[0.064]		[0.172]
FDI_{t-2}		−6.529	−3.989		−8.419*	−5.827
p-value		[0.160]	[0.400]		[0.092]	[0.230]
Panel B. RTW States						
FDI_{t-1}	7.141		7.334	5.054		5.978
p-value	[0.224]		[0.330]	[0.384]		[0.420]
FDI_{t-2}		2.657	−0.518		−1.098	−3.150
p-value		[0.656]	[0.944]		[0.902]	[0.756]
Panel C. Non-RTW States						
FDI_{t-1}	−22.642***		−19.968***	−22.014***		−19.666***
p-value	[0.004]		[0.002]	[0.000]		[0.002]
FDI_{t-2}		−16.020**	−7.438		−14.986**	−7.226
p-value		[0.030]	[0.208]		[0.024]	[0.246]

Notes: The sample sizes in panel A (All States), panel B (RTW States), and panel C (Non-RTW States) are 600, 264, and 336 observations, respectively. All regressions include state and year fixed effects, and state-specific linear trends. Control variables in Columns 4–6 include state's log real GSP, log population, unemployment rate, real minimum wage, percentage of the states adult population that are white, male, and college graduates, private sector unionization rate, composite measures of tax, and fraction of adult population that are entrepreneurs at t-1. Numbers in square brackets are *p*-values obtained from wild bootstrapping (999 repetitions) clustered at the state level; ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Table 4. Impact of Log FDI Composition on Entrepreneurial Activity

			Excluded States: CA, MA, NY	
	Entry	Exit	Entry	Exit
Variable	1	2	3	4
Panel A. RTW States				
$FDI_{m,t-1}$	−0.162	−2.604		
p-value	[0.426]	[0.612]		
$FDI_{m,t-2}$	0.359	−0.376		
p-value	[0.246]	[0.918]		
$FDI_{o,t-1}$	−0.062	4.940		
p-value	[0.824]	[0.210]		
$FDI_{o,t-2}$	0.508	0.675		
p-value	[0.110]	[0.896]		
Panel B. Non- RTW States				
$FDI_{m,t-1}$	0.002	−7.574	0.035	−7.754
p-value	[0.988]	[0.246]	[0.856]	[0.236]
$FDI_{m,t-2}$	-0.615^{**}	−3.013	-0.596^{**}	−3.696
p-value	[0.016]	[0.400]	[0.018]	[0.326]
$FDI_{o,t-1}$	−0.228	-7.656^{**}	−0.215	-8.177^{**}
p-value	[0.362]	[0.046]	[0.406]	[0.046]
$FDI_{o,t-2}$	-0.514^{*}	−2.937	−0.530	−2.951
p-value	[0.078]	[0.530]	[0.132]	[0.534]

Notes: All regressions include state and year fixed effects, state-specific linear trends, and control variables specified in equation (1). Numbers in square brackets are p-values obtained from wild bootstrapping (999 repetitions) clustered at the state level; ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Table 5. Robustness Checks: Impact of Log FDI on the Average Business-Creation Rate

Variable	Add Quadratic Trend 1	Base Covars Inter. with Time Trend 2	Additional Controls Variables 3	Add Lagged Dependent Variable 4	Poisson Regression 5	Falsification Test 6
Panel A. RTW States						
FDI_{t-1}	−0.245	−0.197	−0.241	−0.269	−0.072	
p-value	[0.622]	[0.692]	[0.584]	[0.580]	[0.539]	
FDI_{t-2}	0.595	0.462	0.517	0.592	0.174	
p-value	[0.140]	[0.198]	[0.234]	[0.270]	[0.168]	
FDI_{t+1}						−0.423
p-value						[0.248]
E_{st-1}				−0.159***		
p-value				[0.000]		
Panel B. Non-RTW States						
FDI_{t-1}	−0.178	0.092	−0.149	−0.254	−0.044	
p-value	[0.578]	[0.816]	[0.624]	[0.442]	[0.673]	
FDI_{t-2}	−1.033***	−0.687**	−1.013***	−1.096***	−0.313***	
p-value	[0.000]	[0.020]	[0.000]	[0.004]	[0.000]	
FDI_{t+1}						0.504
p-value						[0.118]
E_{st-1}				−0.198***		
p-value				[0.000]		

Notes: All regressions include state and year fixed effects, state-specific linear trends. Columns 1-5 also include states log real GSP, log population, unemployment rate, real minimum wage, percentage of the states adult population that are white, male, and college graduates, private sector unionization rate, composite measures of tax, and the fraction of adult population that are entrepreneurs at t-1. Numbers in square brackets are p-values obtained from wild bootstrapping (999 repetitions) clustered at the state level for columns 1–4 and 6, and from analytical standard errors clustered at the state level for column 5; ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6. Robustness Checks: Impact of Log FDI on the Average Business-Destruction Rate

Variable	Add Quadratic Trend 1	Base Covars Inter. with Time Trend 2	Additional Controls Variables 3	Add Lagged Dependent Variable 4	Poisson Regression 5	Falsification Test 6
Panel A. RTW States						
FDI_{t-1}	5.983	7.378	4.206	5.818	0.078	
p-value	[0.420]	[0.322]	[0.526]	[0.428]	[0.403]	
FDI_{t-2}	−3.148	0.426	−0.781	−3.080	−0.053	
p-value	[0.756]	[0.960]	[0.944]	[0.810]	[0.665]	
FDI_{t+1}						−2.351
p-value						[0.758]
E_{st-1}				−0.067***		
p-value				[0.000]		
Panel B. Non-RTW States						
FDI_{t-1}	−19.648***	−16.953***	−18.809***	−19.880***	−0.257***	
p-value	[0.002]	[0.000]	[0.000]	[0.002]	[0.000]	
FDI_{t-2}	−7.219	−0.902	−6.239	−9.867	−0.084	
p-value	[0.246]	[0.858]	[0.268]	[0.254]	[0.229]	
FDI_{t+1}						−2.651
p-value						[0.712]
E_{st-1}				−0.155***		
p-value				0.000]		

Notes: All regressions include state and year fixed effects, state-specific linear trends. Columns 1-5 also include states log real GSP, log population, unemployment rate, real minimum wage, percentage of the states adult population that are white, male, and college graduates, private sector unionization rate, composite measures of tax, and the fraction of adult population that are entrepreneurs at t-1. Numbers in square brackets are p-values obtained from wild bootstrapping (999 repetitions) clustered at the state level for columns 1–4 and 6, and from analytical standard errors clustered at the state level for column 5; ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

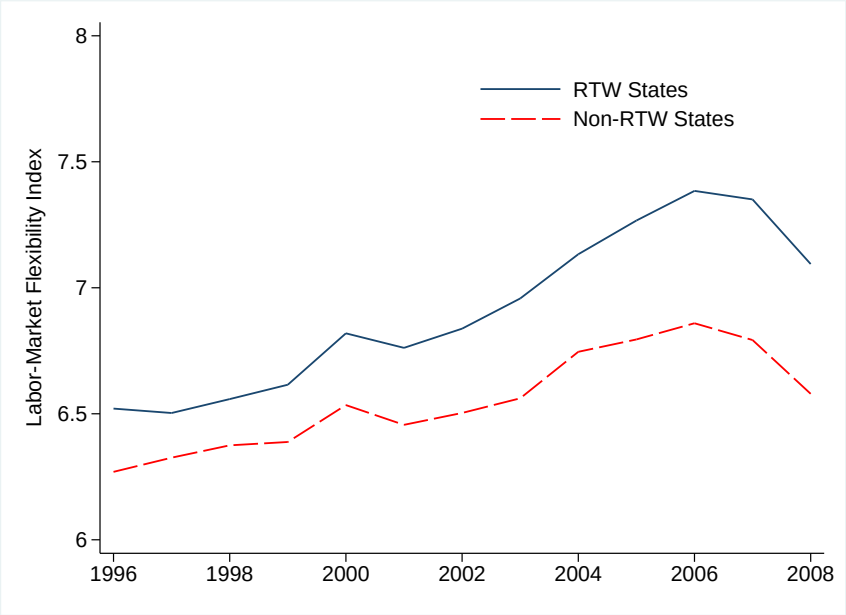


Figure 1: Average Labor-Market Flexibility Index, 1996–2008

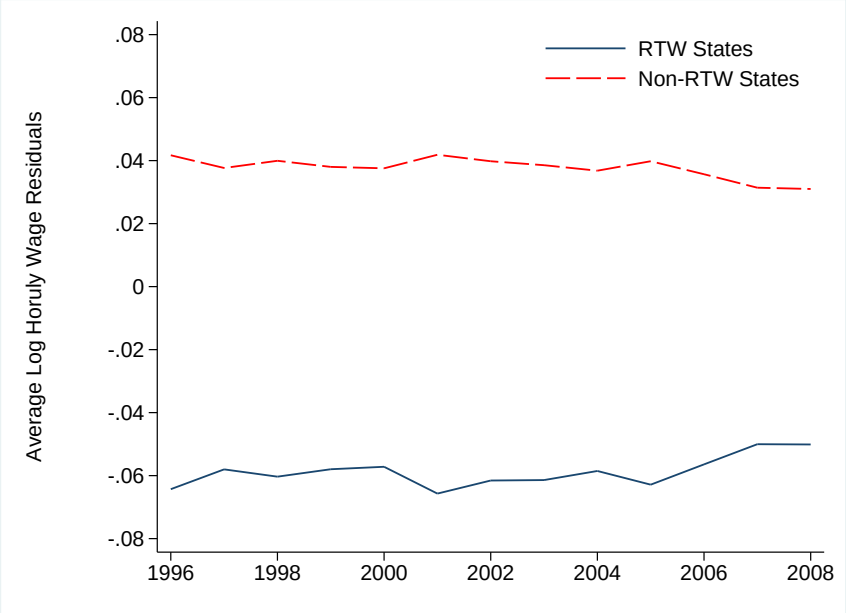
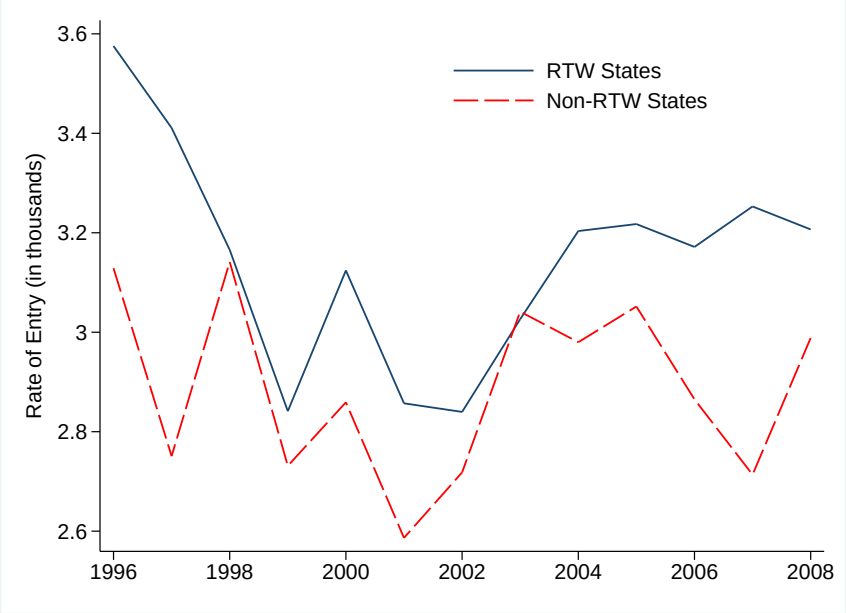
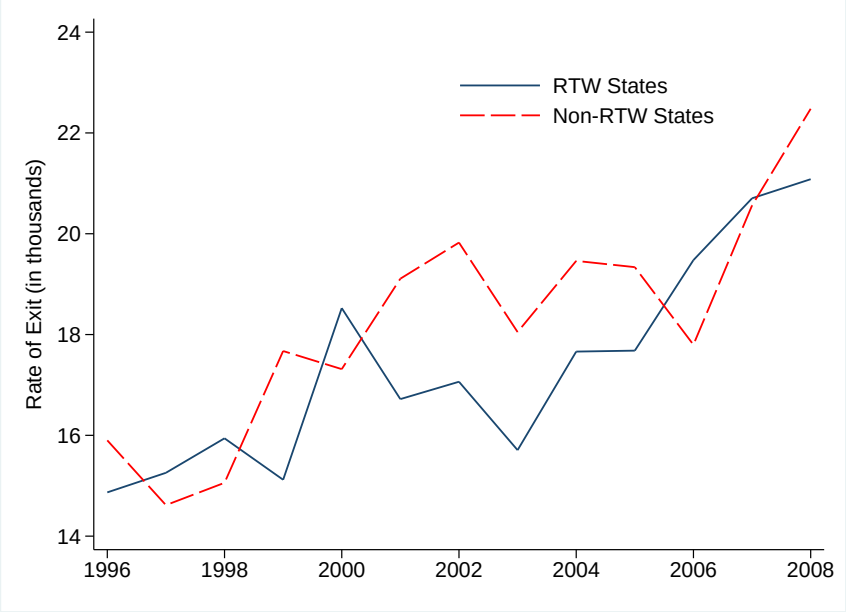


Figure 2: Average Log Hourly Wage Residuals, 1996–2008



a. Rate of Business Creation in 1,000 Non-Business Owners



b. Rate of Business Destruction in 1,000 Entrepreneurs

Figure 3: The Average Rate of Business Creation and Destruction, 1996–2008

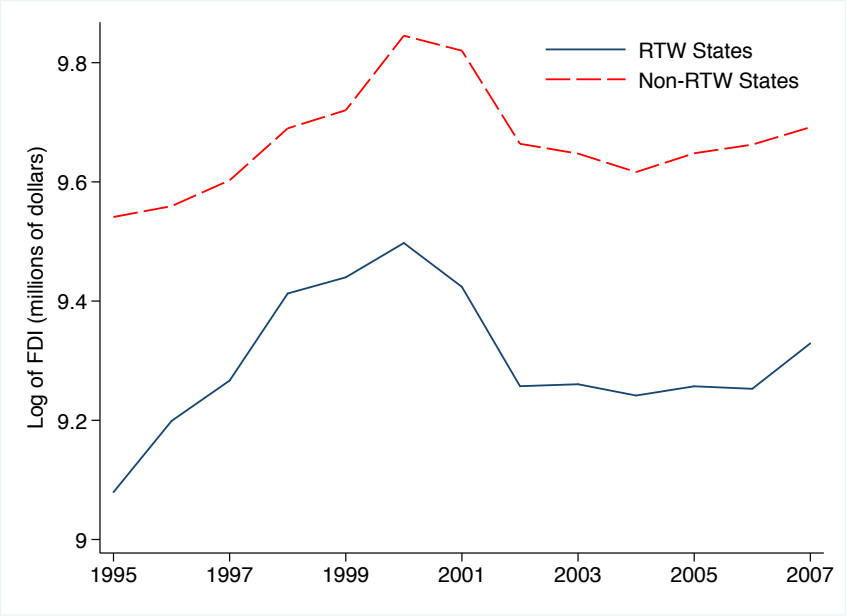


Figure 4: Log FDI (in Millions of Chained 2009 Dollars), 1995–2007

Appendix

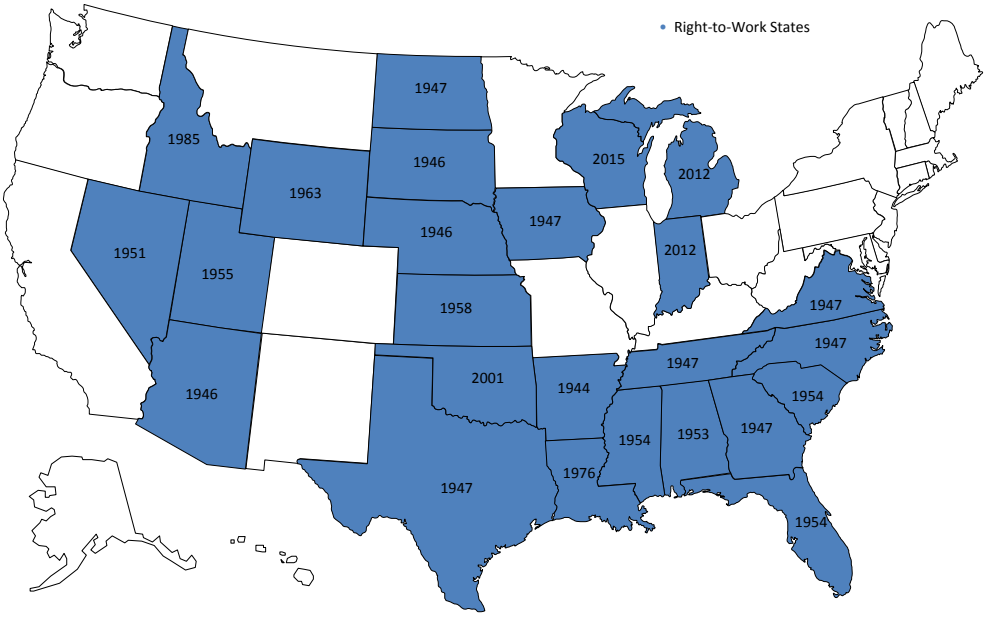


Figure A.1: States with Right-to-Work Laws