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- ▶ **The Impact of Mandated Employment Verification Systems on State-Level Employment by Foreign Affiliates**
- ▶ Catalina Amuedo-Dorantes, Cynthia Bansak and Allan A. Zebedee

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The Impact of Mandated Employment Verification Systems on State-Level Employment by Foreign Affiliates*

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Abstract

Faced with diminishing prospects for a comprehensive immigration reform at the federal level, states have started to take immigration matters into their own hands. For example, many states have been mandating the use of employment verification (E-Verify) systems to confirm work eligibility. Some of the consequences of these E-Verify mandates remain unclear. In this paper, we focus on the effect of anti-illegal immigrant laws on foreign investment. Specifically, we exploit the state-level and time variation in the enactment and implementation of E-Verify mandates to explore if punitive measures against the firm impact states' ability to attract foreign direct investment. We quantify foreign direct investment through the employment by U.S. affiliates owned by foreign firms. Our results suggest that E-Verify mandates adversely affect employment among these majority-owned U.S. affiliates and, therefore, work against states trying to attract foreign direct investment.

JEL Codes: F23, J61, R12,

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“This state has prided itself on its ability to attract international companies like Daimler-Benz AG, Toyota Motor Corp. and ThyssenKrupp AG. But negative publicity stemming from Alabama’s new anti-illegal immigrant law threatens to complicate the state’s effort to continue luring foreign investment, some business leaders say.” (Campo-Flores and Martin, *Wall Street Journal*, December 3, 2011)

1. Introduction

Recent efforts at immigration reform in the United States have focused on the large number of undocumented workers in the U.S. labor force. During the past two decades, proposals for a comprehensive immigration reform have increasingly addressed both the supply-side and the demand-side of the labor market as a means to reduce the number of illegal immigrants in the country. As efforts to reform the country’s immigration policy were unsuccessful in both 2006 and 2007, some states have taken matters into their own hands and have adopted the employment verification (E-Verify) system as a means to curtail the hiring of undocumented workers.¹ In addition to potentially increasing labor costs, the adoption of the E-Verify system – a federally developed identity and work authorization verification system – often flags the state being unwelcoming to immigrants and foreign firms. Negative media attention, accompanied by arrests of foreign business executives and confusion regarding these measures may make it more difficult to attract foreign business development. At this point, there is very little statistical evidence regarding the impact of these state-level actions on *the investment decisions of foreign firms* in the United States.

Foreign direct investment (FDI) in the United States is substantial and can play a beneficial role through a number of channels. Since 2006, the United States has been the largest recipient of FDI in the world and annual growth has outpaced that of GDP. The Bureau of

¹According to the Public Policy Institute of California (PPIC), over 118 laws related to the employment of immigrants were enacted in 37 states during the 2005-2010 five-year period (Bohn *et al.* 2011).

Economic Analysis (BEA) estimated that the majority-owned U.S. affiliates of foreign companies contributed over \$736 billion to U.S. gross domestic product in 2011 which was an 11 percent increase year over year, compared to a 1.7 percent increase in real US GDP over the same period. Over the past two decades, in particular, FDI growth has accelerated and has nearly doubled as a share of GDP. FDI can also be measured through its impact on employment. By 2011, foreign companies employed over 5.6 million workers or approximately 4 percent of U.S. labor force.

Besides increasing the scale of operations, FDI has other important benefits. Foreign investment adds to the capital stock and increases the number of physical assets such as production plants, warehouses, retail and service centers. Within manufacturing, these funds have gone towards the expansion of the pharmaceutical, petroleum and coal manufacturing industries. Less tangible benefits include additional research and development and the resulting innovation. As of 2011, foreign-owned affiliates accounted for 15.9 percent of private research and development spending. Not surprisingly, these firms also create high-paying jobs. According to Feliciano and Lipsey (2006) foreign owned firms pay wages about 10 percent higher compared to domestically owned firms within comparable industries. Currently, FDI investment in the US largely flows from Japan, Canada, Australia, Korea and some European countries. However, emerging countries such as China and Brazil are also recognizing the large consumer market, pool of skilled labor, and predictable regulatory and investment environment as benefits to investment and are increasing their FDI in the US as well.

Foreign firms do have a choice of location and competition among states can be fierce. State and local governments in an effort to foster economic growth attempt to attract foreign owned companies and encourage existing foreign owned companies to expand by offering

various incentive packages (Graham and Krugman, 1989). Incentive packages often include direct subsidies, tax credits and exemptions, financing options and worker training programs. Media reports describe intense competition between Ohio and Pennsylvania to attract a new Honda automotive facility, while a bidding war took place between Alabama, North Carolina and South Carolina for a new Mercedes-Benz factory (Zaretsky, 1994). Marvel and Shkurti (1993) estimate over 10,000 jobs were created in Ohio as a result of the Honda facility. In the case of the Mercedes-Benz factory, the final incentive package offered by Alabama to Mercedes-Benz exceeded the cost of the plant.

In this paper, we examine the potential consequences of implementing state-level E-Verify mandates on foreign direct investment. Our paper sheds light on both the existing E-Verify research and FDI literature by showing the impact of the costs of E-Verify on state-industry level employment data. To date, E-Verify analyses have been focused at the individual/worker level using household micro-level data. Furthermore, we are able to model the impact of increased labor costs on the decision of foreign firms to invest. Following the literature, employment at majority-owned U.S. affiliates of foreign companies is used as a proxy for foreign direct investment (Ford, Rork and Elmslie (2008a, 2008b), Foad (2011)).

Using annual state and industry-level data from the BEA for the 2004 through 2011 period, we find that E-Verify mandates appear to have a negative effect on employment at majority-owned U.S. affiliates of foreign companies in states with an E-verify mandate in place. This unintended consequence impacts the ability of states to attract additional foreign direct investment despite offering incentives worth millions of dollar to attract such investments and should be considered in policy decisions. Our results are robust to variations in state-level employment as well as a host of other time-varying state-level characteristics that may draw or

deter foreign firms from entering the United States market, such as worker skills, labor costs, immigrant networks, as well as changes in global and source country economic conditions. In addition, the results hold to a battery of industry, regional and time fixed effects, along with industry-specific time trends to control for other potentially unobservable effects.

In what follows, we briefly discuss employment verification programs and their expected impacts on foreign direct investment as proxied by the employment growth rate of majority-owned U.S. affiliates of foreign companies across various industries and states. We then describe the data and methodology used in our analysis, to conclude with a discussion of the results and some policy recommendations based on our findings.

II. Background: E-Verify and its Potential Consequences for FDI

E-Verify is an internet-based, free program run by the United States government that compares information from an employee's employment eligibility verification form (I-9) to data from U.S. government records. If the information matches, that employee is deemed eligible to work in the United States. If there is a mismatch, E-Verify alerts the employer and the employee is allowed to work while he or she resolves the problem, but the employee must contact the appropriate agency to resolve the mismatch within eight federal government work days from the referral date. As of 2012, seven states (*i.e.* Arizona in 2008, Mississippi in 2009, Utah in 2010, North Carolina and Alabama in 2011, and Tennessee and South Carolina in 2012) required all firms to screen their new hires through the system, while eleven other states (*i.e.* Georgia and Oklahoma in 2007, Idaho, Minnesota and Colorado in 2008, Missouri and Nebraska in 2009, and Florida, Indiana and Louisiana in 2011, and Virginia in 2012) have only imposed E-Verify mandates on public agencies and contractors.

The introduction of this employee verification system may have a number of effects that could impact both foreign and domestic companies' investment decisions. The E-Verify system imposes numerous administrative costs to firms (Gonzalez 2008). According to the United States Citizenship and Immigration Services (USCIS), officials estimate that a mandatory E-Verify program for the 2009 through 2012 fiscal years could cost \$765 million if only newly hired employees are screened through the program, and about \$838 million over the same 4-year period if both newly hired and current employees are processed (U.S. GAO 2011). Additional expenses include: (a) hiring delays, which are estimated to be around 1.6 million individuals per year, and (b) lost productivity from letting go unauthorized immigrants, which could add up to about 14 million work-days (Rosenblum 2011). Therefore, E-Verify may induce a demand-response lowering overall employment. Amuedo-Dorantes and Bansak 2012 find that the employment rate fell by 4.6 percent among likely unauthorized immigrants in states that adopted mandates and that there were changes in the distribution of workers across industries.

In addition to the demand-response, empirical evidence suggests there is a supply-response to E-Verify that may affect the size of the labor force and the cost of labor for foreign firms. Specifically, the mandates may have a 'chilling effect' on the immigrant labor force, thereby limiting the size of the workforce. Immigrants may choose to leave the states that introduce legislation that is increasingly hostile towards undocumented immigrants. Evidence of a strong and immediate supply-response on the part of immigrants has been confirmed by the literature (Amuedo-Dorantes and Bansak 2012, Bohn *et al.* 2011). Thus, foreign firms may find it more difficult to expand and hire the desired workforce if the pool of workers has shrunk as a result of E-Verify.

The networks of immigrants may also be diminished in the E-Verify states which could also have an effect on foreign companies' investment decision. Since a considerably large share of undocumented immigrants live in mixed-status families, the passing of stricter hiring controls targeting undocumented immigrants may lead to a diminished presence of immigrants and the deterioration of immigrant networks. For example, undocumented parents of U.S. citizen children may be concerned about their likelihood of deportation and separation from their children. As a result, the whole family may return home or move to another state without such mandates. Large-scale internal migration may significantly reduce immigrant networks. Work by Foad (2011) suggests that immigrants in the receiving country create externalities that attract foreign direct investment.² If E-Verify has the unintended consequence of pushing undocumented workers to move to other states or further 'into the shadows', state-level mandates may also result in a reduction in network effects and foreign investment, putting states at a disadvantage relative to their counterparts lacking such measures.

While no studies have looked directly at the impact of E-Verify mandates on foreign direct investment, several authors have theorized and empirically examined how differences in labor market regulations, restrictions and standards impact firms' investment decisions and location choices. Similar to costs posed by employment protection, labor market regulations, and collective bargaining, E-Verify introduces additional costs to employers and reduces flexibility in hiring. Dewit *et al.* (2003) and Dewit *et al.* (2009) developed theoretical models to explain strategic foreign direct investment decisions in response to labor market flexibility in uncertain markets. In particular, Dewit *et al.* (2009) predict that "(i) firms are less likely to locate in countries with a high degree of employment protection; (ii) firms that do locate in

² Other examples of the literature emphasizing the importance of immigrant networks on FDI include the works of Gould (1994) and Javorcik *et al.* (2011).

countries with a high degree of employment protection will keep their plant, at least initially, relatively small, and (iii) firms located in countries with a high degree of employment protection are less likely to relocate than those located in countries with a low degree of employment protection.”

Empirical evidence supports the prediction that firms are less likely to invest or increase their workforce where labor costs are higher and where employees are more likely to impose additional costs through collective bargaining. The analyses of how labor market regulations impact foreign direct investment have varied in terms of the geographic coverage of the samples object of study, the time period under analysis and the measure of labor market costs being used, among other things. Overwhelmingly, they document a negative relationship between labor market regulations and the ability to attract foreign direct investment (*e.g.* Dewit *et al.* (2003), Nicoletti *et al.* (2003), Javorcik and Spatareanu (2005) and Olney (2012)). For instance, Javorcik and Spatareanu (2005) examine firm-level data on foreign direct investment undertaken by European companies from 1998 through 2001. They find that a more flexible labor market in the host country is positively associated with inward foreign direct investment. This effect is greater for firms in the service industry compared to their counterparts in manufacturing. More recently, Olney (2012) examines differences in labor standards across 26 countries over a 23-year period and finds that there is an inverse relationship between the level of employment protection and U.S. foreign direct investment. Furthermore, this negative and significant relationship is even stronger for mobile foreign direct investment.

The consequences of the decline in FDI due to strict labor market conditions and costly-E-Verify mandates may hurt regional economic growth and productivity. Mullen and Williams (2005) examine FDI at the state-level from 1977 to 1997 and find that foreign investment has a

significant impact on economic activity through FDI-related externalities. Although they do not quantify the magnitude of the impact, their findings have policy implications for local FDI promotion, especially in sectors where foreign and domestic capital is complementary. In a recent study by the Immigration Policy Center (2012), it is estimated that foreign companies employ 77,500 workers or 5 percent of Alabama’s workforce. If U.S. affiliates of foreign companies no longer experience a hassle-free environment for work permits for foreign managers and workers alike, future investment may be deterred. The study concludes that state-level anti-immigration legislation may “hinder prospects for economic growth”.

III. Data and Some Descriptive Statistics

In this paper, our goal is to assess the impact of E-Verify mandates on foreign direct investment at the state-industry level from 2004-2011. To do so, we gather data on the employment of U.S. affiliates of foreign companies from the BEA, as well as data on the enactment and implementation dates of E-Verify mandates at the state-level from the National Conference of State Legislatures (NCSL). We augment our dataset with time-varying state-level data on various demographic indicators, including employment, population, the fraction of their foreign-born population (overall and likely unauthorized), the percentage of residents with a high school education or with a college degree, and the average per capita income. Additionally, we control for time-varying state-level economic information, including the gross state product, the unemployment rate as well as average labor costs.

As noted above, *E-Verify dates* are gathered from the NCSL. The earliest state-level E-Verify mandates were enacted in 2006 and have continued through the present, with Virginia recently implementing an E-Verify mandate. Table 1 presents a summary of the states with E-

verify mandates during our sample period. In total, eighteen states have enacted E-Verify mandates over our sample period.

The NCSL identifies both an enactment and implementation date. The enactment date is the date the state's governing body passed the E-Verify mandate, while the implementation date is the date the mandate went into effect. For the most part, states implemented their E-Verify mandates through a phase-in process. For example, Mississippi enacted the Mississippi Employment Protection Act in March 2008, which required all government agencies and private sector firms with more than 250 employees to use E-Verify with new hires by July 2008. Smaller firms were phased into the law over the next three years, such that by July 2011 all businesses in Mississippi were required to use E-Verify. Our results are similar regardless of whether we use enactment or implementation dates; therefore, we only discuss the findings using the enactment date of the policy. As a robustness check, we also use an alternative definition of this key policy variable. Specifically, we create a window from the enactment to the implementation date and drop all observations within this window in an effort to isolate the program effect. These results presented below in Table 6 are not materially different.

In addition to identifying the enactment and implementation dates, Table 1 describes the scope of the mandate. The latter can be categorized into two categories: public sector mandates and universal mandates. Public sector mandates require government agencies as well as contractors to use the E-Verify system, whereas universal mandates require all firms within the state to use the E-Verify system. Within our sample period, only four of the 18 E-Verify states have enacted a universal mandate – namely Arizona, Mississippi, Tennessee and Alabama – from the onset. Three other states have recently expanded the scope of their public sector mandate to universal, providing ad hoc evidence of the public sector mandate functioning as an

intermediary step to a universal mandate. In the empirical analysis, an attempt to distinguish the impacts of public sector and universal mandates was made. Nevertheless, due to the very limited incidence of universal mandates during the time period we are able to examine, public sector and universal mandates are grouped into a single E-Verify mandate variable.

The Bureau of Economic Analysis disseminates wide-ranging statistics on *foreign-direct investment* in the United States based on mandatory annual surveys of U.S. affiliates of foreign companies. A U.S. affiliate is a business enterprise with a direct or indirect ownership by a foreign investor of 10 percent or more. While the BEA collects a wealth of information from these affiliates of foreign companies, ranging from financial and operating data to direct investment and balance of payment data, the source data is not disseminated to the public. Instead, select data are made available aggregated across different classifications, such as source country, state and/or industry. In addition to reporting data for all U.S. affiliates of foreign companies, select data are reported for majority owned U.S. affiliates. Majority owned U.S. affiliates are affiliates that are owned more than 50 percent by foreign firms. For the presented analysis, we use employment data of majority owned U.S. affiliates aggregated by state and industry to measure foreign direct investment into the United States.

Because each state implements E-verify mandates at a different time, we can exploit this variation across states and time to study the impact that the mandates are having on the employment by U.S. affiliates of foreign direct investment. As we shall explain in what follows, we use a quasi-experimental approach that compares the change in the employment of foreign affiliates in states that implement E-Verify mandates (our *treatment* group) to the change in the employment of foreign affiliates in states that did not implement such mandates (our *control* group), pre- vs. post-implementation of said policies. To provide some preliminary descriptive

evidence, Table 2 compares the employment by foreign affiliates during the pre- and the post-treatment periods (2004 and 2011) in *treatment* and *control* states. States implementing E-Verify mandates maintain, on average, stable total employment levels (97,160 in 2004 and 99,190 in 2010), whereas *control* states enjoy an increase in total employment levels (110,640 compared 122,610) over the same period.

The total employment data is also decomposed into eight industry categories. In general, the aforementioned pattern is mimicked at the industry level. For example, the largest industry group (*i.e.* manufacturing) experienced an employment reduction from 41,990 to 39,440 in *treated* states over the sample period being examined, whereas employment in that industry remained fairly stable in *control* states over the same time span (38,350 compared to 39,040). However, for most industries – typically displaying employment levels significantly smaller than manufacturing, the employment data are rather noisy, requiring a formal analysis to more clearly identify a link.

Table 3 goes on to provide a complete summary of the employment levels by U.S. affiliates of foreign firms across the sample period. For homogeneity purposes, we restrict the sample to non-E-Verify or control states. A close inspection of the data clearly shows a responsiveness of foreign firms to macroeconomic conditions and, as such, the need to account for them in order to identify the impact of E-Verify mandates. Indeed, total employment falls between 2008 and 2009 from 125,360 to 119,290 employees, or by nearly five percent. Across the industry groups, the general trend is similar, with employment growing prior to the economic downturn in 2008 and significantly contracting in 2009.

In examining the determinants of employment by U.S. affiliates of foreign companies, a number of time-varying state-level demographic and economic data are also included as controls.

In particular, we include information on the state's population, shares of foreign-born and likely unauthorized immigrants,³ as well as information on the educational attainment of the state's population. Population data are extracted from the BEA. The educational attainment data (that is, the share of the population with at least high school diploma and the share with a college degree) were obtained from the U.S. Department of Commerce. Figures on the shares of foreign-born – overall and likely unauthorized – are computed using annual data from the American Community Survey (ACS) extracted and tabulated through the IPUMS website. Several variables were selected to capture state-level market size (gross state product, per capita income) and labor markets (labor costs and total non-farm employment). Gross state product and per capita income are extracted from the BEA website, while average wage estimates for production occupations were downloaded from the Department of Labor's Occupational Employment Statistics.

Finally, we also include two variables to capture changes in global and source country economic conditions. The first measure examines relative economic conditions between the U.S. and the seven largest source countries of FDI to the U.S.⁴ Specifically, we calculate the change in the U.S. dollar exchange rate by year which is then weighted by the fraction of employees of U.S. affiliates of foreign companies for the seven largest source countries by state. This variable varies by state and year and is designed to capture time-varying relative economic conditions both for the global economy but also source countries. A positive value represents an appreciation of the source country currency relative to the U.S. dollar. The second variable

³ To measure the population of likely unauthorized immigrants, we follow the literature (see, for instance, Loftstrom *et al.* 2011), and focus our attention on a group of workers previously shown to be a very good representation of the most likely unauthorized (Passel and Cohn 2010). This group is composed of Hispanic, non-citizen, working age (under 45) individuals with a high school education or less.

⁴ The seven largest source countries of FDI to the U.S. are Canada, Japan, United Kingdom, Germany, France, Holland and Switzerland.

captures changes in the foreign equity markets. Equity markets are widely recognized not only as leading economic indicators but also a critical source of capital for new investments as such provide an additional measure of global economic activity. This variable is also calculated using the seven largest source countries. We calculate the change by year in each of the source country's primary equity market index. We then compute a weighted average of international equity performance using the same weights as above.

Table 4 shows the summary statistics of these controls by state as well as across the entire sample period. To provide a sense of how they are related to total employment by U.S. affiliates of foreign companies, Table 4 also displays the latter. Total employment by foreign firms is closely correlated with the size of the state in terms of population. The three largest states, California, Texas and New York, are also the three largest in terms of employment by U.S. affiliates of foreign companies, with California representing over a half million employees. The largest E-Verify state is Florida, with over 240,000 total employees hired by foreign firms. In total, between 2004 and 2011, over five million people per year were employed by U.S. affiliates of foreign companies.

IV. Methodology

To evaluate the consequences of employment verification mandates on the employment of U.S. affiliates of foreign companies by industry at the state level, we exploit the variation in the enactment and implementation dates of E-Verify mandates across states and over time. Specifically, we estimate the following regression:

$$(1) \quad L_{irt} = \alpha + \beta_1 E-Verify_{rt} + X_{rt}\gamma + Y_{rt}\lambda + \chi_i + \delta_r + \phi_t + \chi_i t + \varepsilon_{irt}$$

where: $\varepsilon_{irt} \sim N(\mu, \sigma^2)$, $i=1 \dots n$ industries, $r=\text{region}$, and $t=\text{year}$. The dependent variable L_{irt} stands for the employment of U.S. affiliates of foreign companies in a particular industry, state and year; and *E-Verify* is a dummy initially set equal to 1 if E-Verify was implemented in the state (see Table 1 for the enactment and implementation dates of the various states' E-Verify mandates).⁵ The vector X includes a variety of state-level characteristics known to impact the employment of foreign affiliates, such as proxies for market size (population, GDP, per capita income), immigrant networks (captured by both the shares of foreign-born and likely unauthorized foreign-born population), skill level (captured by the shares of high-school and of college-educated population) and average labor costs (average wage for production occupations). The vector Y includes state employment growth, a weighted-measure of foreign exchange, and another weighted measure of global stock market performance to capture state, macro and global economic conditions. Additionally, a battery of fixed effects is included in the analysis to capture systematic variations across industry (χ_i), geography (δ_r), and time (ϕ_t). Industry time trends (χ_{it}) are also included in the analysis. Our geographical fixed-effects are defined using information on the Census division in which the state is located (See Figure 1). Overall, the included fixed-effects and time trends are intended to capture idiosyncratic industry and regional level characteristics, sector-specific and economy-wide shocks, as well as time-varying economic conditions at the industry levels, such as changes in industry regulations, not explicitly modeled.

Equation (1) is estimated in log differences, with the exception of the policy variable, which is a dummy variable. First differencing the series ensures stationarity of the time series.

⁵ Results are rather similar when we using the enactment as opposed to the implementation date, probably signaling that firms make investment decisions once a year, once the policy has been enacted and it's about to be implemented. Nevertheless, as a robustness check, we also consider alternative specifications of our policy variable.

In particular, by examining the log difference employment levels at U.S. affiliates of foreign firms (namely: $\log(L_{irt}) - \log(L_{irt-1})$), we address the fact that current levels of foreign-direct investment are likely to depend on recently observed levels of foreign-direct investment – the so-called agglomeration effect in state-level FDI noted in the literature (*e.g.* Woodward 1992, List 2001).⁶ We estimate equation (1) using ordinary least squares and compute robust standard errors clustered at the state level. Finally, we estimate alternative model specifications to evaluate the robustness of our findings to changes in the regressors – some of them potentially endogenous, as well as to changes in the definition of our policy variable ($E\text{-Verify}_{rt}$).

V. Do E-Verify Mandates Curtail Employment by Foreign Affiliates?

Do E-Verify mandates negatively impact the employment of foreign affiliates? Table 5 shows the coefficient estimates from regressing the employment of U.S affiliates of foreign firms by industry and state on a policy dummy indicative of the implementation of an E-Verify mandate at the state level. Column (1) does not include any controls, column (2) adds the growth rate of nonfarm employment, column (3) adds additional time-varying region-level characteristics likely impacting the employment decisions at U.S. affiliates of foreign firms, and columns (4) and (5) progressively add the industry, region and year fixed-effects, followed by industry-level time trends. Regardless of the specification used, we find that E-Verify mandates have a negative and statistically significant impact on the employment of foreign affiliates. Because of the estimation of equation (1) in log differences, our dependent variable is the

⁶ As a robustness check, we also estimate equation (1) in log levels, including the lagged employment level as one of the regressors to account for its persistence over time. Results from this specification are consistent with the presented and are available from the authors upon request. Overall, the specification serves as a robustness check, but fails to address the non-stationarity of the regressors.

employment growth rate from period $t-1$ to period t . To turn the growth rate into an approximate percentage, we simply multiply by 100.

Our main results are presented in Table 5 and show an economically and significant decline for our measure of FDI when E-Verify mandates are in place. The baseline model (column 1) estimates a -4.7 percent impact of E-verify on the employment growth at U.S. affiliates of foreign firms. This model is estimated with no other controls and establishes an economically significant change in the employment growth at U.S. affiliates of foreign firms around the E-Verify enactment dates. However, without controls, the difference may be the result of other factors. To address this issue, we introduce a series of controls. Column (2) estimates a 3.6 percent reduction in the employment growth rate of affiliates owned by foreign firms after controlling for changes in the overall employment growth rate at the state level. The state's overall employment has a strong positive relationship with the employment growth at U.S. affiliates of foreign firms but is less than one suggesting a differential response. The estimated coefficient, 0.833, indicates a one percent change in the overall employment growth rate result in 0.833 percent change in the employment growth at U.S. affiliates of foreign firms. While state conditions clearly affect the employment growth rate of affiliates owned by foreign firms, the impact of E-verify is an economically strong impact on employment growth at U.S. affiliates of foreign firms. Columns (3) through (5) add to the control variables. For the most part, none of the other state-level controls plays much of a role, with the sole exception of having a more skilled population, possibly with stronger business and international ties that attract both immigrants and foreign direct investment. Hence, the estimates from Table 5 reveal that E-Verify mandates lower the employment growth rate of foreign affiliates between approximately 3.0 to 4.7 percent on average. The statistical significance of these estimates is based on a one

tailed test. The test is used to document the whether the estimated impact is significantly less than zero or in other words negative. All estimates of the E-Verify effect in Table 5 are statistically significant at the 5 percent significance level or better.

As shown in Table 1, there is often a lag between the enactment and actual implementation date of many of these mandates. Because firms might make investment decisions once a year and, therefore, might make their decisions before or after the implementation date but following the enactment of an E-Verify mandate, we try an alternative specification of the policy variable and drop all observations corresponding to the years between the enactment and implementation dates. Table 6 displays the results from such an exercise. The estimated impact of E-Verify mandates remains quite robust despite the change in the definition of the policy variable, still lowering the employment growth rate of foreign affiliates by approximately 3.4 percent in our most complete specification (column (5)).⁷

In sum, the results from Tables 5 and 6 suggest that E-Verify mandates do have a negative and statistically significant on the employment by U.S. affiliates of foreign companies. This effect might be emerging through various channels. As found by some of the literature on foreign direct investment for investment levels, greater flexibility in the host labor market is associated with larger employment levels by foreign affiliates. Hence, the passing of E-Verify mandates might inhibit the desire by some foreign firms to establish themselves in markets with increased hiring controls. Even the enactment and implementation of an E-Verify mandate imposed on public sector firms, agencies and contractors might be regarded by foreign firms as a sign of forthcoming enhanced restrictions on hiring that eventually will be expanded to all firms

⁷ We also experiment with falsely changing the timing of the policy to one year prior to assess the presence of any pre-existing trends and are unable to find any significant differences in foreign-affiliates' employment growth rates across the states prior to the true E-Verify mandate date. These results are available from the authors as well.

in the state – as it has indeed been the case in several states. The uncertainty associated to changing employment conditions might be enough for firms to consider alternative locations for their investments.

Alternatively, as noted by previous studies, E-Verify mandates may alter the residential decisions of many migrants, both likely unauthorized as well as legal migrants living in mixed-status families, thus reducing the immigrant presence in the state (Bohn *et al.* 2011). If immigration raises foreign direct investment by lowering the risk of foreign investment through increased information flows and a built in market (Gould 1994, Hisham 2011, Javorcik *et al.* 2011), E-Verify mandates may reduce the size of immigrant communities and, in turn, foreign direct investment. Note, however, that the growth rate of the foreign-born and likely unauthorized population in the state should be capturing much of the impact that changes in the share of immigrants might be having on the employment of foreign affiliates in the United States. Hence, much of the impact of E-Verify mandates on the employment of foreign affiliates in the United States is likely to be originating from increased hiring restrictions and the uncertainty created by the introduction of employment policy changes.

Finally, one caveat to our analysis worth noting is the potential endogeneity of the policy implementation. Endogeneity can arise through various sources, including omitted variable biases and reverse causality. We try to address the former by including as state-level characteristics known to impact the employment of foreign affiliates. The latter include proxies for the state's employment performance (state's employment growth rate), market size (population, GDP, per capita income), immigrant networks (captured by both the shares of foreign-born and likely unauthorized foreign-born population), skill level (captured by the shares of high-school and of college-educated population) and average labor costs (average wage of

production occupations). We also control for macro and global economic conditions, such as the foreign exchange and stock market performance, as well as for a battery of industry, geography and time fixed-effects, plus industry-specific time trends.

The second source of endogeneity refers to reverse causality. Note, however, that while there is no doubt that the passing of an E-Verify mandate by the state is not a random event; it is unlikely to be a response to the employment of foreign affiliates in the state. Nevertheless, Table 7 assesses that possibility by estimating the likelihood that any given state at a point in time might implement an E-Verify mandate. Therefore, for this estimation, we collapse the data at the (state, year) and estimate the likelihood that a particular state s in year t might have implemented E-Verify in response to the employment of foreign affiliates in the state a year prior or to other state-level characteristics. According to the estimates, the lagged growth rate of employment of foreign affiliates in the state has no impact, whatsoever, on the likelihood of having an E-Verify mandate at the state level. Rather, other factors we already control for, such as the growth rate of the state's nonfarm employment, the state's GDP growth rate or the performance of stock markets a year prior appear to be marginally correlated to the implementation of the abovementioned policy.

VI. Summary and Conclusions

This paper investigates the impact that hiring restrictions mandated at the state level through the enactment/implementation of E-Verify mandates have on the employment of foreign affiliates. With that aim in mind, we construct a panel data set of the employment of foreign affiliates by industry and by state from 2004 through the year 2011. We then use a quasi-experimental methodology that exploits the variation in the enactment and implementation of E-

Verify mandates across states and over time to assess their impact on the employment of foreign affiliates.

The results reveal a clearly negative impact of E-Verify mandates on the employment of foreign firms, which persists even after accounting for a wide range of state-level determinants of FDI, including the relative size of the foreign-born population in the state. On average, E-Verify mandates appear to reduce the employment of foreign affiliates in the United States between 3 and 6 percent. This is a sizeable and economically meaningful impact. To put in perspective, a 3 to 6 percent reduction in employment levels translates to an average loss of 158,910 to 317,820 jobs in the United States. The negative effect of the policy may be driven by the increased restrictions on hiring placed by the mandates or by the uncertainty created by the passing of the mandate on labor market flexibility and forthcoming restrictions that may follow.

Overall, the findings provide evidence of other implications of employment verification systems that may be worth considering by states and by the federal government in a hopefully forthcoming comprehensive immigration reform.

Table 1
Enactment and Implementation Dates for E-Verify Mandates

State	Enactment	Implementation	Scope of the Mandate
North Carolina	Aug-06	Jan-07	Public sector firms, agencies, and/or contractors first, Universal after Oct. 2011
Georgia	Apr-06	Jul-07	Public sector firms, agencies, and/or contractors
Oklahoma	May-07	Nov-07	Public sector firms, agencies, and/or contractors
Idaho	Dec-06	Jan-08	Public sector firms, agencies, and/or contractors
Arizona	Jul-07	Jan-08	Universal
Minnesota	Jan-08	Jan-08	Public sector firms, agencies, and/or contractors
Mississippi	Mar-08	Jul-08	Universal
Colorado	Jun-06	Aug-08	Public sector firms, agencies, and/or contractors
South Carolina	Jun-08	Jan-09	Public sector firms, agencies, and/or contractors first, Universal after January 2012
Missouri	Jul-08	Jan-09	Public sector firms, agencies, and/or contractors
Utah	Mar-08	Jul-09	Public sector firms, agencies, and/or contractors first, Universal after March 2010
Nebraska	Apr-09	Oct-09	Public sector firms, agencies, and/or contractors
Florida	Jan-11	Jan-11	Public sector firms, agencies, and/or contractors
Indiana	May-11	Jul-11	Public sector firms, agencies, and/or contractors
Louisiana	Jul-11	Aug-11	Public sector firms, agencies, and/or contractors
Tennessee	Jun-11	Jan-12	Universal
Alabama	Jun-11	Apr-12	Universal
Virginia	Apr-10	Dec-12	Public sector firms, agencies, and/or contractors

Table 2
Summary Statistics: Average Employment of U.S. Affiliates of Majority Owned Foreign Direct Investment (in 000s)

Group	Treatment (n=18)			Control (n=33)		
Year	2004	2011	Change	2004	2011	Change
Total Employment	97.16 (53.57)	99.19 (50.31)	2.09%	110.64 (74.72)	122.61 (80.07)	10.82%
Manufacturing	41.99 (29.21)	39.44 (26.43)	-6.07%	38.35 (45.74)	39.04 (47.17)	1.82%
Wholesale Trade	9.42 (6.73)	9.48 (6.77)	0.63%	11.87 (19.32)	11.22 (17.58)	-5.46%
Retail Trade	11.66 (13.60)	9.14 (11.78)	-21.57%	12.11 (15.83)	10.53 (12.95)	-13.01%
Information	3.41 (4.15)	4.07 (4.08)	19.53%	5.50 (9.06)	5.46 (8.52)	-0.82%
Finance	2.28 (2.32)	3.73 (3.87)	63.26%	4.62 (8.77)	10.56 (18.19)	128.51%
Real Estate	1.21 (1.92)	1.11 (2.37)	-7.73%	1.11 (1.71)	1.00 (1.20)	-10.48%
Professional	2.49 (1.80)	4.28 (3.96)	71.51%	4.73 (7.60)	6.47 (9.40)	36.83%
Other	25.28 (19.52)	26.36 (18.27)	4.29%	27.96 (36.37)	34.64 (42.48)	23.92%

Notes: Standard deviations are shown in parentheses.

Table 3
Summary Statistics: Employment of Affiliates by Year and Industry (Control Group)

Year	2004	2005	2006	2007	2008	2009	2010	2011
Total Employment	110.64	115.03	118.09	123.82	125.36	119.29	123.73	122.61
	(74.72)	(78.49)	(79.50)	(81.91)	(82.79)	(76.49)	(81.95)	(80.07)
Manufacturing	38.35	38.35	39.84	39.70	41.70	38.16	40.42	39.04
	(45.74)	(45.86)	(47.21)	(47.66)	(50.23)	(45.70)	(48.04)	(47.17)
Wholesale trade	11.87	12.12	12.63	13.63	12.72	11.70	11.03	11.22
	(19.32)	(19.87)	(20.23)	(21.48)	(18.63)	(17.49)	(17.53)	(17.58)
Retail trade	12.11	12.42	11.35	10.69	9.62	10.23	10.33	10.53
	(15.83)	(16.37)	(15.61)	(14.28)	(11.71)	(12.44)	(13.09)	(12.95)
Information	5.50	4.98	5.50	5.37	6.02	5.79	5.31	5.46
	(9.06)	(7.27)	(7.74)	(7.64)	(9.27)	(8.77)	(8.40)	(8.52)
Finance and insurance	4.62	4.83	5.19	9.82	10.54	10.26	10.66	10.56
	(8.77)	(9.12)	(9.47)	(19.90)	(19.13)	(17.85)	(18.30)	(18.19)
Real estate	1.11	1.04	1.06	0.86	0.89	0.94	1.13	1.00
	(1.71)	(1.65)	(1.70)	(1.18)	(1.16)	(1.13)	(1.43)	(1.20)
Professional services	4.73	4.97	5.50	6.19	5.87	5.70	6.35	6.47
	(7.60)	(7.93)	(8.44)	(9.66)	(9.28)	(8.98)	(9.70)	(9.40)
Other industries	27.96	34.16	32.69	31.94	33.54	32.30	32.59	34.64
	(36.37)	(42.40)	(41.17)	(41.70)	(41.26)	(38.40)	(43.25)	(42.48)

Notes: Standard deviations are shown in parentheses.

Table 4: Summary Statistics

State	FDI Employment (000s)	E-Verify as of 2010 (yes/no)	Population	Foreign-Born Population (%)	Gross State Product (million\$)	HS- educated Population (%)	College- educated Population (%)	Per Capita Income (\$)	Ave Wages of Production Occupations
Alabama	71	1	4,683	4%	163,195	82%	22%	32,077	14.25
Alaska	13	0	688	8%	43,949	91%	27%	41,061	19.18
Arizona	73	1	6,151	15%	242,312	85%	26%	33,816	14.60
Arkansas	35	0	2,851	5%	96,307	81%	19%	30,652	13.18
California	578	0	36,500	28%	1,800,150	81%	30%	41,366	15.00
Colorado	79	1	4,845	11%	238,612	89%	36%	41,380	15.68
Connecticut	102	0	3,539	14%	212,275	89%	35%	53,210	17.47
Delaware	28	0	872	9%	58,048	87%	27%	38,818	15.56
Florida	240	1	18,400	20%	717,344	85%	26%	37,627	14.06
Georgia	179	1	9,357	10%	387,987	84%	27%	34,198	13.86
Hawaii	28	0	1,327	19%	62,954	89%	29%	39,011	15.86
Idaho	9	1	1,505	7%	52,462	88%	24%	31,302	14.08
Illinois	254	0	12,700	14%	613,923	86%	30%	40,696	15.43
Indiana	141	1	6,389	5%	256,251	86%	22%	33,219	15.85
Iowa	43	0	3,006	4%	130,387	90%	25%	35,821	14.73
Kansas	49	0	2,800	7%	118,070	90%	30%	37,026	15.18
Kentucky	90	0	4,266	3%	150,258	81%	20%	30,994	15.08
Louisiana	52	1	4,482	4%	207,904	81%	21%	34,488	17.06
Maine	14	0	1,325	4%	48,739	89%	26%	34,864	15.66
Maryland	104	0	5,681	14%	272,247	88%	36%	46,270	16.40
Massachusetts	181	0	6,473	15%	351,424	88%	38%	48,772	16.76
Michigan	171	0	9,968	7%	371,819	88%	25%	33,883	17.66
Minnesota	91	1	5,220	7%	253,946	92%	32%	40,990	16.13
Mississippi	24	1	2,934	2%	89,362	80%	20%	29,016	13.27
Missouri	83	1	5,895	4%	231,749	86%	25%	35,144	14.81
Montana	7	0	967	3%	33,915	91%	27%	32,884	14.86
Nebraska	21	1	1,792	6%	81,940	90%	27%	37,481	14.28
Nevada	24	0	2,583	20%	122,679	85%	22%	37,497	15.23
New Hampshire	39	0	1,310	6%	57,613	91%	33%	42,099	15.67
New Jersey	226	0	8,714	21%	462,168	87%	35%	48,520	16.02

Table 4 – Continued

State	FDI Employment (000s)	E-Verify as of 2010 (yes/no)	Population	Foreign-Born Population (%)	Gross State Product (\$)	HS- educated Population (%)	College- educated Population (%)	Per Capita Income (\$)	Ave Wages of Production Occupations
New Mexico	11	0	1,995	10%	73,140	82%	25%	31,163	15.31
New York	400	0	19,200	22%	1,052,996	85%	32%	46,072	15.60
North Carolina	200	1	9,159	8%	392,535	83%	26%	33,862	14.16
North Dakota	9	0	659	3%	30,223	90%	26%	37,550	15.38
Ohio	218	0	11,500	4%	458,165	88%	24%	34,798	15.91
Oklahoma	27	1	3,655	6%	138,049	85%	23%	33,924	14.39
Oregon	46	0	3,733	10%	165,592	88%	28%	35,108	15.55
Pennsylvania	255	0	12,600	6%	525,800	87%	26%	38,364	15.82
Rhode Island	14	0	1,059	13%	46,687	83%	30%	39,705	14.89
South Carolina	112	1	4,465	5%	153,940	83%	24%	31,220	15.00
South Dakota	6	0	798	3%	35,770	89%	25%	37,684	13.21
Tennessee	129	1	6,185	5%	241,021	82%	23%	33,651	14.39
Texas	407	0	24,100	17%	1,121,407	79%	25%	36,412	14.59
Utah	32	1	2,620	9%	106,405	91%	29%	31,448	14.44
Vermont	7	0	624	5%	24,196	91%	34%	37,435	15.24
Virginia	151	1	7,795	12%	388,542	87%	33%	42,263	15.14
Washington	91	0	6,509	14%	316,082	90%	31%	40,755	17.79
West Virginia	22	0	1,838	2%	57,677	82%	17%	29,813	15.36
Wisconsin	83	0	5,620	5%	233,113	89%	26%	36,422	15.84
Wyoming	9	0	541	4%	33,091	91%	23%	43,860	18.99
DC	18	0	584	14%	93,119	86%	48%	64,849	21.13
Mean	104	0.35	5,931	9%	267,010	87%	27%	37,854	15.51
Min	6		541	2%	24,196	79%	17%	29,016	13.18
Max	578		36,500	28%	1,800,150	92%	48%	64,849	21.13
Sum	5,297		302,463		13,617,535				

Table 5: Employment Growth Rate of Affiliates

Independent Variables	(1) Baseline for Enactment	(2) Add State Employment Growth Rate	(3) Added Controls No FE or Trends	(4) All Controls, FE, no Trends	(5) All Controls FE and Industry Trend
E-Verify Mandate	-0.047*** (0.011)	-0.036*** (0.011)	-0.040*** (0.011)	-0.030** (0.014)	-0.030** (0.013)
Growth Rate of State Nonfarm Employment		0.833*** (0.191)	0.317 (0.496)	1.021* (0.592)	0.973 (0.590)
Population Growth Rate			-0.036 (0.807)	-0.792 (0.920)	-0.752 (0.935)
Growth Rate of Foreign-Born Population Share			0.085 (0.095)	0.087 (0.092)	0.090 (0.091)
Growth Rate of Likely Unauthorized Population Share			0.088 (0.056)	0.065 (0.055)	0.064 (0.055)
GDP Growth Rate			0.115 (0.300)	0.026 (0.292)	0.008 (0.292)
Growth Rate of HS-educated Population			0.476 (0.582)	1.294* (0.653)	1.285* (0.654)
Growth Rate of College-educated Population			-0.207 (0.144)	-0.160 (0.136)	-0.162 (0.137)
Growth Rate of Per Capita Income			0.242 (0.366)	-0.025 (0.458)	0.020 (0.464)
Growth Rate of Wages in Production Occupations			0.797** (0.338)	0.482 (0.401)	0.480 (0.398)
Exchange Rate Growth Rate			0.007 (0.087)	0.073 (0.588)	0.089 (0.591)
Equity Growth Rate			-0.052* (0.031)	0.506 (1.008)	0.626 (1.019)
Industry Fixed-Effects	No	No	Yes	Yes	Yes
Region Fixed-Effects	No	No	Yes	Yes	Yes
Year Fixed-Effects	No	No	Yes	Yes	Yes
Industry-Time Trend	No	No	No	Yes	Yes
Region-Time Trend	No	No	No	No	Yes
Observations	2,728	2,728	2,728	2,728	2,728
R-squared	0.003	0.007	0.013	0.052	0.063

Notes: Regressions contain a constant. Robust standard errors clustered at regional level are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1 in the corresponding 1-tailed or 2-tailed test.

Table 6: Employment Growth Rate of Affiliates Using an Alternative Definition of the Policy Variable

Independent Variables	(1) Baseline for Enactment	(2) Add State Employment Growth Rate	(3) Added Controls No FE or Trends	(4) All Controls, FE, no Trends	(5) All Controls FE and Industry Trend
E-Verify Mandate	-0.058*** (0.017)	-0.047*** (0.016)	-0.047*** (0.016)	-0.033** (0.018)	-0.034** (0.017)
Growth Rate of State Nonfarm Employment		0.825*** (0.193)	0.402 (0.442)	1.142* (0.570)	1.094* (0.570)
Population Growth Rate			-0.501 (0.883)	-1.271 (1.012)	-1.226 (1.026)
Growth Rate of Foreign-Born Population Share			0.071 (0.100)	0.079 (0.095)	0.082 (0.095)
Growth Rate of Likely Unauthorized Population Share			0.098* (0.057)	0.071 (0.056)	0.071 (0.056)
GDP Growth Rate			0.185 (0.296)	0.128 (0.288)	0.107 (0.289)
Growth Rate of HS-educated Population			0.613 (0.604)	1.314** (0.642)	1.312** (0.643)
Growth Rate of College-educated Population			-0.182 (0.144)	-0.123 (0.141)	-0.125 (0.142)
Growth Rate of Per Capita Income			0.150 (0.339)	-0.185 (0.419)	-0.137 (0.425)
Growth Rate of Wages in Production Occupations			0.669* (0.341)	0.301 (0.398)	0.302 (0.396)
Exchange Rate Growth Rate			-0.014 (0.087)	0.137 (0.593)	0.151 (0.596)
Equity Growth Rate			-0.050 (0.032)	0.468 (1.025)	0.578 (1.034)
Industry Fixed-Effects	No	No	Yes	Yes	Yes
Region Fixed-Effects	No	No	Yes	Yes	Yes
Year Fixed-Effects	No	No	Yes	Yes	Yes
Industry-Time Trend	No	No	No	Yes	Yes
Region-Time Trend	No	No	No	No	Yes
Observations	2,573	2,573	2,573	2,573	2,573
R-squared	0.004	0.008	0.014	0.052	0.063

Notes: Regressions contain a constant. Robust standard errors clustered at the Region level are shown in parentheses. *** p<0.01, ** p<0.05, * p<0.1 in the corresponding 1-tailed or 2-tailed test.

Table 7: E-Verify Determinants

Independent Variables	E-Verify Mandate
Lagged Growth Rate of FDI Employment	-0.146 (0.157)
Lagged Growth Rate of Non-farm Employment	-5.955* (3.270)
Lagged Population Growth Rate	7.091 (5.276)
Lagged Growth Rate of Foreign-Born Population Share	-0.112 (0.163)
Lagged Growth Rate of Likely Unauthorized Population Share	-0.037 (0.100)
Lagged GDP Growth Rate	1.941* (1.026)
Lagged Growth Rate of HS-educated Population	-1.131 (1.483)
Lagged Growth Rate of College-educated Population	0.484 (0.325)
Lagged Growth Rate of Per Capita Income	-2.423 (1.519)
Lagged Growth Rate of Wages in Production Occupations	-0.694 (1.408)
Lagged Exchange Rate Growth Rate	-0.367 (1.192)
Lagged Equity Growth Rate	-0.220 (1.064)
Region Fixed-Effects	Yes
Year Fixed-Effects	Yes
Observations	306
R-squared	0.272

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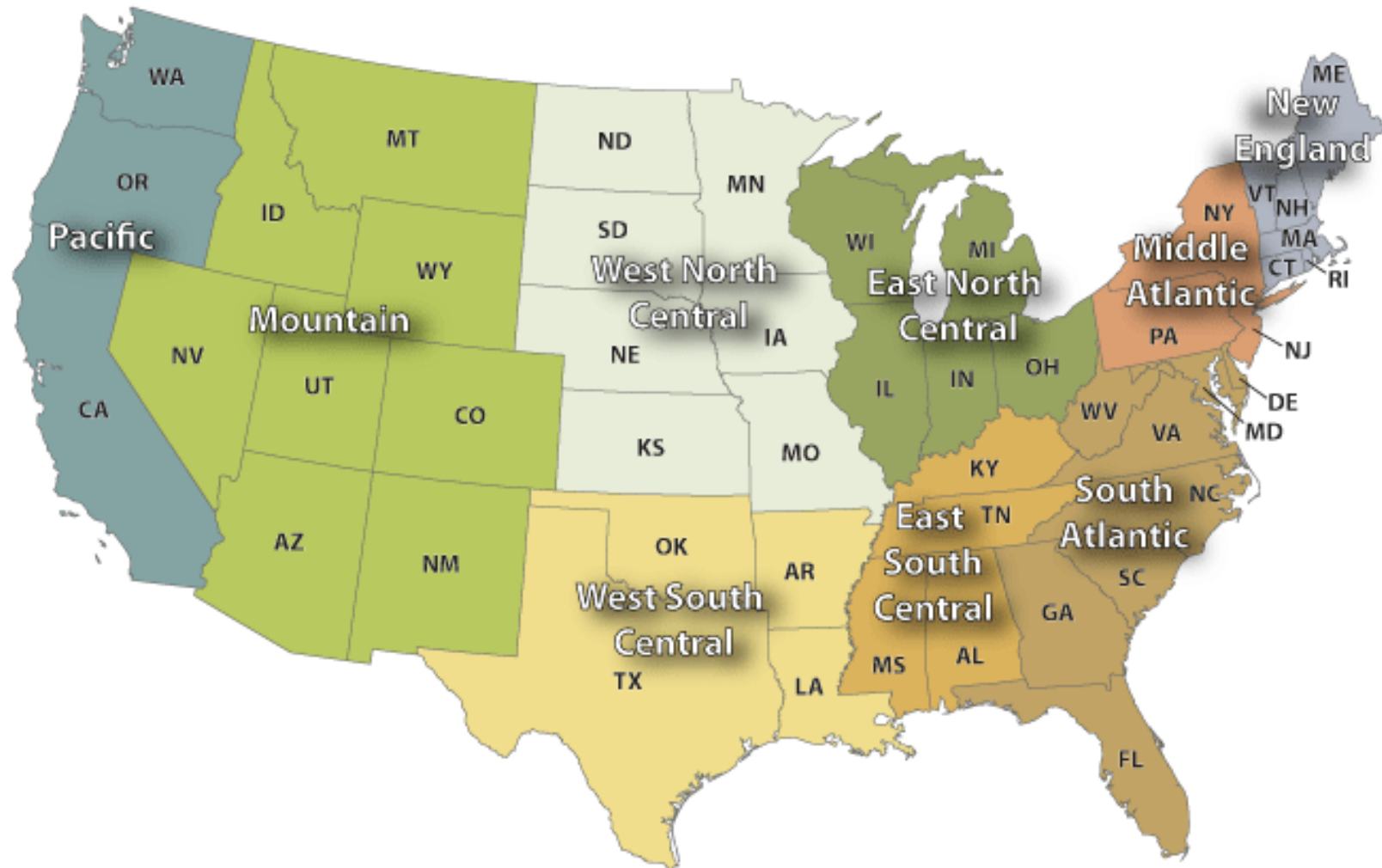
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Figure 1

U.S. Census Divisions



Source: <http://www1.ncdc.noaa.gov/pub/data/cmb/temp-and-precip/maps/us-census-divisions.gif>