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Regional business climate and interstate manufacturing relocation decisions☆

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ABSTRACT

In this study, we use the National Establishment Time Series (NETS) database to study relocation by manufacturers based on differences in the business climate between the origin and destination states. We model interstate relocations for manufacturers in aggregate and for three subgroups characterized by their industry-level research and development (R&D) intensity. The analysis suggests that very few manufacturing firms relocate across state lines in any given year and the vast majority of those that do are small in size and move to adjoining states. Our results also reveal that interstate migration by manufacturing establishments varies with their R&D intensity. Whereas a number of factors considered in this study are statistically significant, marginal effects at the mean are infinitesimal. This implies that states attempting to encourage manufacturing firms to relocate from other states via traditional perspectives on business climate are unlikely to be successful.

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1. Introduction

Encouraging businesses, particularly manufacturers, to relocate from one state to another remains a popular economic development policy at both the state and local levels (Feser 2014; Lowe and Freyer 2015; Warner and Zheng 2013). To facilitate industrial recruitment, state and local governments pursue a "positive business climate" through fiscal austerity, tax cuts, and other "pro-business" policies such as right-to-work legislation. Christopherson and Clark (2007) and McCarthy (2015) define this set of policies as a neo-liberal or supply-side approach to business climate. This perspective suggests that greater global competition is "flattening the world" and driving more firms, including manufacturers, into becoming price takers, where the road to profitability is through lower costs. Within the policy context, both the theoretical and the empirical literatures seek to better understand the efficacy of neo-liberal business climate policies. This literature remains vibrant for two reasons: (1) the policy approach remains popular among elected officials despite strong counterfactual arguments and (2) as our data and research methods advance, the empirical results and corresponding policy insights become more subtle and refined.

From a policy perspective, the contemporary competition between the states began with the Mississippi Balance Agriculture with Industry (BAWI) Act of 1933. Building on export base theory and neo-classical firm location theory as it was understood at the time, Mississippi attracted northern manufacturers by promoting cheaper labor and land, lower taxes, and limited regulations. The BAWI became the foundation for how we think about business climate. Since then states actively engage in neo-liberal or supply-side economic development policies that attempt to create an attractive business climate defined by low taxes, cheap labor, and minimal regulations (Deller and Goetz 2009; Eisinger 1988; Lynch 2004; Plaut and Pluta 1983; Prillaman and Meier 2014; Ross and Friedman 1990; Shaffer et al. 2004).

While the conventional approach to the business climate is multi-faceted, taxes and public services are perhaps the most widely studied within the academic literature. The early contributions based on work by Due (1961) and Oakland (1978) concluded that taxes had no impact on firm location decision because taxes were inconsequential in the accounting of profits. Since Wasylenko's (1980, 1981) challenge of those earlier studies for a lack of theoretical and empirical rigor, a new

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line of research has shifted the consensus. In a detailed review of the expansive literature, Bartik (1985, 1991, 1992) concluded that taxes and other factors commonly associated with business climate do matter. Bartik's work, and that which followed, indicate that taxes are a cost to companies and a detriment to the business climate. At the same time, taxes fund services, such as education, protective services, and transportation infrastructure that are vital to the production processes of firms and increasingly to the quality of life of the firm's employees.

Regional and local economic development policies designed to attract and retain businesses often target-specific industries and sectors. Michael Porter's (1998, 2000, 2001, 2003) reintroduction of the notion of clusters, based on agglomeration externalities, into the popular economic growth and development lexicon moved policy makers and practitioners toward a more industrial focus and away from the "shoot anything that flies, claim anything that falls" approach outlined by Rubin (1988). Today high-technology industries and those characterized by intensive research and development (R&D) activities are a common focus for policy thinking. In addition to promoting innovation and regional competitive advantage, such industries are argued to provide high-paying jobs and contribute to regional growth (Clarke and Gaile 1989; Jenkins et al. 2006). If manufacturing firms are sensitive to the neo-liberal business climate policies, it is important to understand how firms from different industries, such as "high tech" and "low tech", prioritize various tax and service characteristics when choosing their location.

Differences in priorities may stem from industries' various maturity levels, as suggested, for example, by the product life cycle theory (Duranton and Puga 2001; Hong 2014; Mack and Schaeffer 1993; Rink and Swan 1979; Wojan and Pulver 1995). According to this framework, businesses in more mature industries, or industries less likely to invest in innovation, tend to seek out lower cost alternatives while newer and more innovation-focused industries may place higher value on other factors, such as skilled workforce. Hence, the efficacy of neo-liberal business climate policies targeted at business attraction critically depends on the understanding of how relocation determinants vary across industries.

It is important to separate the study of relocation decision factors from the study of location decisions more generally. As noted by Holl (2004), Hong (2014), Kronenberg (2013), and Manjon-Antolin and Arauzo-Carod (2011), many previous studies treat relocation, new firm formation, and new branch location decisions equally in broad investigations of location choices, thus leading to potentially incorrect policy infrerences. Using the National Establishment Time Series (NETS) data set, which is particularly well suited for the study of establishment interstate relocations (Neumark et al. 2005), we exploit the preferences revealed by firms that relocate from state to another to investigate the factors behind interstate migration of manufacturers. By narrowing the analysis to the actual movements between states, we can more directly estimate how characteristics of the business climate determine firm relocation as measured by migration flows. This provides a more powerful test of the traditional business climate hypothesis compared to the previous location studies that explore whether or not a particular type of firms is present within a region.

In our analysis, we track manufacturing establishment moves across state lines annually from 2000 to 2011 and offer a stylized description and an empirical analysis using differences-between-states models. The models take into account important regional characteristics, such as concentration of manufacturing activity as a measure of agglomeration economies as well as tax and unionization rates, of both the origin and destination states. That is, the flow of firms between any two states is determined by the differences between states across several key measures of business climate. This approach captures state-to-state flows, and unlike studies that look at aggregate in- or out-migration, it allows for a better understanding of migration behavior. To the best of our knowledge, we are the first to use a differences-between-states technique in a study of business interstate migration. In addition to the analysis of all manufacturing, we separately investigate how the impact of regional relocation determinants may vary with the level of research and development intensity within various industries.

Beyond these simple introductory comments, the study is composed of six additional sections. In the next section, we briefly review relevant theoretical and empirical literature explicitly focusing on relocations. In section three, we outline the theoretical modeling framework followed by the empirical model and estimation methods in section four. In section five, we describe the data and operationalization of variables used in the analysis. Section six outlines the empirical results. We close with a summary of our findings and a discussion of their policy implications with a focus on broader manufacturing relocation patterns.

2. Literature review

A thorough review of the extensive firm location literature is beyond the scope of this analysis; instead, we limit the discussion to the theoretical and empirical aspects of firm relocations specifically. The research to date has mostly been concerned with business location determinants where the research question is if a firm of a particular type (usually specific industry affiliation) is or is not present in a region (e.g. Fortenbery et al. 2013; Leatherman et al. 2002; Leatherman and Kastens 2009). If the statistical modeling suggests, for example, that higher corporate taxes decrease the likelihood of a particular type of firms to be present in a location, inferences are drawn about business climate. The literature that specifically investigates those drivers in relation to relocation, where a firm makes a locational choice, moving from one region (state) to another, is underdeveloped. Only recently, with the availability of new data, researchers have been able to start analyzing the patterns and determinants of firm migration. Specifically, they study the behavior of firms that make the decision to move from one location to another within a revealed preference structure.

The discussion of business relocation behavior is usually organized within one of three frameworks: neo-classical, behavioral, and institutional (Pellenbarg et al. 2002). Profit maximization is the cornerstone of the neo-classical approach, which is the most widely adopted theoretical framework and most consistent with the neo-liberal or supply-side view of business climate. Here all firms are assumed to be rational decision makers with full information and the ability to fully process that information about the profitability prospects in each potential location. By monitoring differences between expected profits across space relative to the current site, a company decides to move if doing so maximizes profits. For manufacturing, the "low-cost of doing business" is often more important for profit maximization than revenue streams.

The neo-classical framework applies particularly well to large companies, which are likely to adopt more sophisticated algorithms of new site selection (Greenhalgh 2008) and to move long distances to escape locational mismatch (Kalnins and Chung 2004), or to exploit an opportunity (Stam 2007). Empirically, studies of neo-classical relocation determinants focus on labor and transportation costs, market size, agglomeration economies and other, mostly regional, characteristics. The evidence suggests that companies are attracted by agglomerations (Erickson and Wasylenko 1980; Figueiredo et al. 2002; Giuliano 1989; Strauss-Kahn and Vives 2009), labor force availability (Erickson and Wasylenko 1980; Giuliano 1989; Schmitt et al. 1987), and access to transportation networks (Holguin-Veras et al. 2005; Ozmen-Ertekin et al. 2007).

The institutional approach to business relocations contends that the existing institutions, such as governments, real estate brokerage services, and regional economic development organizations among others, play an important role in firm relocation. Like the neo-classical theory, the institutional approach is more applicable to large companies, those possessing negotiating power, because a decision to move is viewed as a result of negotiations with the community, local government, and suppliers, as well as other economic and social actors (Brouwer et al. 2004). At the same time, factors prominent within the institutional framework such as local policies and regulations,