

National regulation, state-level policy, and local job creation in the United States: A multilevel perspective

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Abstract. The relationship between national regulation and job creation remains highly debated. The “public choice” perspective holds that regulation hinders job creation through compliance costs and regulatory capture. Meanwhile, the “public interest” view suggests that regulation can facilitate employment growth by promoting innovation and fair competition. We offer a contingency perspective, i.e., that national regulation’s effects vary across heterogeneous state political institutions. Drawing on the political science theory of market-preserving federalism, we argue that state-level economic freedom moderates the effects of national regulation on local net job creation. Using U.S. data, we find support for this moderating hypothesis. National regulation destroys jobs on net in states with low economic freedom. However, national regulation has no effect in states with high economic freedom; this effect holds for tax freedom and labor market freedom. The moderation is concentrated among mature firms rather than young firms, and in metro counties rather than non-metro counties; furthermore, it is robust across multiple regulatory measures and instrumental variables approaches. Our work reveals that state political institutions have an underappreciated influence on the costs of national regulation, demonstrating the interdependence of policies for local economic development.

JEL codes: J48, K20, L51, M51

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1. Introduction

The objective of this paper is to examine how national regulation affects local net job creation.

This question has garnered considerable debate between a “public choice” perspective and a “public interest” view. The public choice perspective suggests that regulation imposes compliance

costs and yields differential benefits to politically active firms, deterring job creation by incumbents (Bailey & Thomas, 2017; Bertrand & Kramarz, 2002) as well as potential entrants (Djankov et al., 2002) to the detriment of local economic growth. Meanwhile, the public interest perspective views regulation as a solution to market failures, suggesting neutral or even beneficial impacts on growth outcomes—e.g., by combating anticompetitive behavior and promoting innovation (Hart, 2001; Kunapatarawong & Martínez-Ros, 2016). Although scholars have sought to integrate conflicting findings of regulations' effects on innovation (Blind et al., 2017) and entrepreneurship (Audretsch et al., 2018), research on regulation and job growth remains divided. How does regulation affect net job creation, and upon what does this relationship depend?

We offer a contingency view of the regulation-job creation relationship. Our thesis is that national regulation's effects on local net job creation, rather than being positive or negative *per se*, varies across state-level policy environments (Barbosa & Faria, 2011). Despite the considerable variation in job creation across regions (Fritsch & Storey, 2014), extant studies tend to estimate an “average” effect of national regulation. This approach overlooks the heterogeneity of state-level contexts and disregards other institutional levels (Kim et al., 2016).

Our theory of government interdependence builds on Weingast's (1995) theory of Market Preserving Federalism (MPF). MPF focuses on how a federalist political structure—consisting of hierarchical, overlapping political entities with coordinated governing roles—can impact economic growth. MPF suggests that state-level policymakers, possessing local knowledge and accountability to their particular economic context, may counteract federal rules that are inconsistent with state economic development. Political scientists have employed this theory to understand cross-country economic outcomes across the United States, China, and the European Union (Qian & Weingast, 1996; Tarabar & Young, 2017; Weingast, 1995).

We adapt the MPF logic to the subnational level to argue that national regulation of a given industry can hinder net local job creation for that industry in some state contexts but not others. Specifically, our premise is that state-level institutions alter the effects of national regulatory rules on local economic activity. Through the early 21st century, for example, marijuana has been at the center of a major legal struggle between federal and state governments in the United States. Longstanding tensions have resurfaced about the relationship between national and state policy, highlighting the interdependence of policy decisions across government levels. In this same spirit, we suggest that the costs imposed by national rules are contingent on state policies. We hypothesize that state economic freedom, understood as the market-enhancing nature of state political institutions, moderates the effects of national regulation on net job creation.¹

To test this hypothesis, we construct a county-sector-year panel within the United States from 2004 to 2016. Our outcome of interest, *net job creation*, captures the annual, per capita flow of jobs created minus jobs destroyed in a two-digit NAICS industry in a given county, representing an important measure of local, sector-specific growth (Haltiwanger et al., 2013). We utilize a novel measure of *regulatory accumulation*, RegData, that uses machine learning to probabilistically assign text in the United States Code of Federal Regulations to specific industries. Our measures of *state economic freedom* come from the Frasier Institute's index of "Economic Freedom of North America," which provides a comprehensive measure of state policy across three areas: tax, labor market, and government size. We test our arguments using a three way fixed effects model, allowing us to control flexibly for unobserved industry, county, and year-specific effects in addition to relevant county-level covariates.

¹ Net job creation = job gains – job losses. We say that net jobs are created if job gains > job losses, but net jobs are destroyed if job gains < job losses. This is important because the economy grows with higher net job creation. This is explained in more detail in section 3.

Our analysis yields several important findings. First, we find that federal, industry-specific regulations are negatively related to net job creation in that industry on average. Second, we find that state economic freedom moderates the relationship between federal regulation and net job creation. Critically, we decompose state economic freedom into its three subcomponents: tax freedom, labor market freedom, and government size, and we find unique effects for each policy margin. State tax and labor market freedom both attenuate the negative effects of national regulation, while government size (i.e., smaller state government) has little moderating effect.² These findings follow prior work that reveals important distinctions between the components of economic freedom (Aidis et al., 2012). Our results are robust to alternative regulatory measures and to multiple instrumental variables specifications that address potential endogeneity concerns. Interestingly, and contrary to our expectations, these moderating effects accrue to mature firms (greater than 10 years). We find little evidence of moderation for the youngest firm category (age 0–1 years), which is consistent with evidence that young firms are disadvantaged compared to more mature firms (Du & Mickiewicz, 2016).

We make several contributions to the literature. First, our study reveals that the effects of regulatory accumulation on job creation are asymmetric and context-dependent. By modeling the interdependence of national and state government policies, we provide a more nuanced account of the regulation-employment relationship than prior literature. Second, we compare the effects of regulation on entrepreneurs relative to incumbents, reporting results for job creation outcomes across the firm age spectrum. Theories of regulation frequently distinguish the effects of regulation for nascent versus established firms (Audretsch et al., 2012; Stigler, 1971); yet, few studies directly

² Note that the subcomponents of economic freedom measure the (1) *freedom* from taxes, (2) *freedom* in labor markets, and (3) *freedom* from government size. Consequently, higher numbers on the government size component indicate *smaller* government and lower numbers indicate *larger* government.

compare regulation's effects on new versus incumbent firm activity. Third, we address recent calls to explore heterogeneity in the effects of national regulation on local entrepreneurial activity (Audretsch et al., 2018; Dilli et al., 2018), as job creation is a key outcome of state entrepreneurial activity and local economic growth. By analyzing how the effects of regulation vary across regions and across firm age, our study reveals that the relationship between regulation and net job creation is more nuanced than previously considered (Bailey & Thomas, 2017; Goldschlag & Tabarrok, 2018).

Our paper is structured as follows. Section 2 provides a review of the relevant literature and develops our hypotheses. Section 3 presents the data and methodology. Section 4 provides our findings and additional robustness checks. Section 5 discusses our findings and future research directions, and Section 6 concludes.

2. Theoretical Framework

2.1. Public Choice and Public Interest Views of National Regulation

The two main perspectives in the national regulation literature are the public interest view and the public choice view. In the public interest view, regulation acts as a corrective mechanism to address market failures (e.g., externalities, monopoly power, or asymmetric information). Regulation is argued to curb harmful economic activities, like pollution, and is ultimately beneficial for firm growth outcomes. Examples include promoting investments in innovative products (Kunapatarawong & Martínez-Ros, 2016) and punishing anticompetitive actions (Vogelsang, 2002). To that end, recent work suggests that regulation might encourage innovation when there is uncertainty in the market—e.g., in the presence of competing technological standards

(Blind et al., 2017).³ The public interest argument suggests that regulation can reduce uncertainty and thereby increase consumption and production, leading to industry job growth. Hence, regulation may facilitate job creation in this view.

By contrast, the public choice perspective tends to view politics as an arena of exchange, just like the market (Peltzman, 1976; Stigler, 1971). In this view, the same assumptions are applied to market and political actors: namely, rationality and self-interest (Buchanan, 1984). Regulation may thus be viewed as a “market,” where regulators supply rules and politically-connected market actors demand them. Private interests influence the outcome of the regulatory process by providing support to politicians or regulators (Blind et al., 2017). Politicians can extract personal benefits in the form of political support and campaign contributions (Holcombe, 2002, 2013), and regulators can garner appointments to lucrative positions in the regulated sector (Holcombe & Boudreaux, 2015). When regulation is the outcome of self-interested exchange, it can yield concentrated benefits to organized interests while imposing dispersed costs on less organized interests.

This process suggests that regulation will hinder job creation for several reasons. Regulatory rules may increase compliance costs, causing firms to shift resources from the pursuit of new market opportunities (Bailey & Thomas, 2017). This tradeoff limits productivity, reduces the extent of the market, and deters employment growth in the regulated industry (Barbosa & Faria, 2011). Recent work has highlighted the complex nature of such regulatory costs, identifying significant sunk costs of entry (Ryan, 2012). Similar findings have emerged for product, labor, environmental regulations (Barone & Cingano, 2011).

³ For example, in the early 2000’s consumers could purchase a blu-ray player or an HD DVD player. Only one would likely win out, but which would become standardized was unclear. Ultimately, blu-ray won the format war, but it came at a substantial cost and delayed industry growth. This was a similar situation to VHS and Betamax in the 1980’s.

The public choice perspective suggests that the connections between industry and politics are strongest when regulations are complex and extensive—when firms need experts to navigate red tape. Regulators and ex-employees of regulatory agencies can help firms navigate this onerous process, but they can also use the political process to encourage rent seeking (Tullock, 1967) and to create entry barriers (Djankov et al., 2002). Regulatory complexity thus raises the cost of hiring and retaining employees, redirecting firm attention to navigating political rules. In the language of entrepreneurship scholarship, regulation encourages “unproductive entrepreneurship” at the expense of “productive entrepreneurship” (Baumol, 1990; Sobel, 2008). The net result of this redirection of effort tends to be reduced economic growth (Baumol, 1990).

An additional cost to job growth comes as incumbents seek regulation to insulate themselves from competitive pressures (Stigler, 1971). For instance, rent seeking may result in occupational licensing (Meehan & Benson, 2015) or may force entrants to adopt more stringent regulations via “grandfather clauses” (Dean & Brown, 1995). Rules that raise the costs of entry have been shown to hinder job creation among new firms (Bertrand & Kramarz, 2002; Branstetter et al., 2014). While this has clear implications for the reallocation of job growth among new and incumbent firms, it also suggests a reduction of competition that is indicative of reduced growth overall. In sum, the public choice view suggests that the accumulation of national regulation diverts economic activity and hinders local job growth.

2.2. Market-Preserving Federalism

One way to attempt to reconcile the conflicting perspectives and findings above is to recognize that the effects of national regulation are context-dependent. Thus, we consider the *conditions* under which the effects of national regulation might be negative or positive. Our solution is to consider national regulation in its proper, multilevel context. National regulation influences

economic activity across many state environments, each with unique policies that may interact with, complement, or even conflict with national rules. Recognizing this fact suggests the insight that state-level policy moderates the effects of national regulation.

To understand this interdependence across national and state policy, we turn to a political science theory about the economic effects of hierarchical governance: Market-Preserving Federalism (MPF) (Weingast, 1995). Federalism is a form of decentralized governance characterized by hierarchical, autonomous governing entities, each with a clearly delineated scope of authority (Riker, 1964). Most modern governments are “federalist” in this broad sense, with national and state political units each with enforcement roles. MPF is a theory of the economic implications of a federalist governance structure. Specifically, MPF suggests that state government plays a critical role in local economic development when that state-level government features three characteristics. First, state policy, rather than national, must be the principal governor of economic activity. Second, state governments must not be able to substantively restrict trade with other states; there must be a “common market” at the national level. Third, the state government must face a “hard budget constraint,” meaning that it cannot borrow indefinitely or print money (Weingast, 1995, p. 4). When these criteria are met, the state is said to “credibly commit” to preserving market incentives: entrepreneurs can have a reasonable expectation that the government will enable their market activity without extensive confiscation (Qian & Weingast, 1997).

A significant strand of political science literature views MPF as a relatively successful mechanism for navigating the tightrope of political power (Hayek, 1960; Qian & Weingast, 1996; Sorens, 2010, 2014; Weingast, 1995). Cross-country studies suggest that nations embracing the features of MPF tend to enjoy more economic development relative to those that do not (Weingast,

1995).⁴ Furthermore, researchers have attributed the economic rise of disparate countries including the United States and China as the result of *de facto* adherence to MPF (Qian & Weingast, 1997).

Note that the traditional MPF account deals with variation in economic development *across* countries: countries where state-level governments collectively share the ability to oppose federal rules stand to perform better overall. We extend the MPF logic to the *within*-country effects of regulation. To do this, we hold state governments' relative authority constant and look to a single country; all states in the United States share the same rights with respect to the federal government. We then extend the MPF framework with the observation that some state-level policymakers will *opt* to exercise this right to a different degree, and in different ways. Regardless of “why” some states do this or not, the result is state-level variation in the policy responses to national rules—and, hence, in the extent to which local economic actors are affected by a given set of national, industry-specific regulations.

MPF leads us to expect that state policymakers can successfully alter the effects of national-level regulatory restrictions on local net job creation. Prior work has argued that countries adhering to MPF structure outperform countries without MPF. We argue that *states* that implement market-preserving policies outperform states that do not, within the same country.

Our theory emerges from MPF's core logic. Importantly, it also offers a path toward reconciliation of the public choice and public interest views outlined above. MPF suggests that a key benefit of state-level enterprise policy is the ability of local policymakers to counteract or support national policy in the state economy. Because a single set of national rules will not be

⁴ It is important to note that the *de facto* governance structure can be federalist and market-preserving regardless of the *de jure*, formally designated institutions (Williamson, 1994). For instance, the late 20th century trend of marked economic development in China is said to have been facilitated by the government's adoption of a functional structure according with the features of market-preserving federalism (Qian & Weingast, 1996). Similarly, the Industrial Revolution-era United Kingdom and the 19th and 20th century United States experienced significant economic progress under market-preserving federalism (Weingast, 1995).

“optimal” for every state economy (Dilli et al., 2018), federal regulation is unlikely to yield job creation in the heterogeneous regions affected by it. Furthermore, because of this heterogeneity of interests, national policy would appear to be particularly subject to political competition—an insight consistent with the public choice view. For instance, localized interests may compete for rents from federal regulations, yielding subnational “winners” and “losers.”

MPF positions state policy in the critical role of enhancing or combatting national-level rules. This follows from the idea that state government is “closer” to the local citizenry and thereby has better access to local knowledge about the state economic system (Hayek, 1960). Furthermore, serving a more narrowly defined constituency, state-level policymakers face stronger accountability incentives to align policy outcomes with their electorate’s wishes (Blair, 2000; Lederman et al., 2005). In turn, the electorate has a stronger incentive to be informed and involved in state policy outcomes—thereby mitigating what Tullock and others have deemed “rational ignorance” of voters (Caplan, 2001; Tullock, 1967).⁵ This suggests a role for state policy that is functionally closer to the public interest view relative to national policy. Even setting aside motivations, state-level policymakers possess local knowledge and accountability pressures that make them more responsive to local economic needs. Thus, if national rules are inconsistent with states’ economic needs, local policymakers may aim to alter local policies to counteract those inconsistencies. If national rules are consistent with states’ economic interests, however, local policymakers can find more support with policies that complement national regulation.

In the United States, considerable evidence supports this kind of offsetting political action through state governments. In fact, the struggle between federal and state regulatory authorities is a prominent theme in the legal studies literature (Macey, 1990). State governments are designated

⁵ Note that Caplan (2001) offers a nuanced perspective on what he calls “rational irrationality,” in contrast to the traditional rational ignorance view.

with varying rights to enforce—or not enforce—federal rules (Lemos, 2011). For instance, after Congress passed legislation in 1980 that would require states to enact specific waste disposal regulations, New York filed suit. In the resulting Supreme Court case (*New York v. United States 1992*), the Court overrode Congress’ ability to require that states enforce these regulations.

More recently, legal tensions over marijuana have highlighted the interdependence of national and state policy. Despite a longstanding federal prohibition, ten states legalized recreational marijuana and 33 legalized medicinal marijuana as of mid-2019. This has created significant tensions in the enforcement of federal regulation. Chemerinsky et al. (2015) assert that “The struggle over marijuana regulation is one of the most important federalism conflicts in a generation” (2015, p. 74). While national regulators determine and directly enforce federal rules, state policy can significantly alter the economic effects of those rules.

Following this logic, we argue that market-preserving policies can mitigate the costs of national regulation for net job creation. We use state economic freedom to measure the market-preserving nature of state policy. Economic freedom is a vehicle by which state enterprise policy can facilitate entrepreneurship and innovation (Hall & Sobel, 2008). In addition to these direct benefits, an important, indirect benefit of state-level economic freedom is the mitigation of federal regulatory costs in the state.

To see this, consider the implications of low levels of state economic freedom. When local policy restricts economic freedom, these rules complement the enforcement of national regulation (Macey, 1990). Furthermore, state-level institutions commonly conform to national standards (Crouch et al., 2001); the overlapping and cumulative nature of policies across government levels is often significant (Revesz, 2001). Less market-friendly environments often involve high business taxation, adding another cost to employment growth alongside regulatory constraints.

On the other hand, state policymakers are taking increasing responsibility for economic performance, as evidenced by the spread of industrial districts (Tomlinson & Branston, 2017). State policymakers may seek to offset the influence of federal regulation through their own policy decisions, and economic freedom can represent a *departure* from national regulatory stringency. When national regulation imposes costs that hinder net job creation, policy makers may attenuate these costs by promoting state economic freedom. To the extent that pro-market institutions limit regulatory burden and facilitate exchange, consumer demand will increase. The relative benefits of bringing on additional labor (even that which requires additional regulatory training and compliance) are greater. Market-friendly environments reduce regulatory barriers and enable local economic growth. This is one way that state-level institutions may be seemingly “incoherent” with national institutions but may yet be complementary (Schröder & Voelzkow, 2016). Case studies illustrate how this kind of state-level divergence from national regulation can facilitate economic activity for sectoral clusters with specific resource needs—e.g., a flexible and high-skill workforce (Crouch & Voelzkow, 2009).

While highly useful, economic freedom is also a broad construct. A growing number of studies find that the unique components of economic freedom have disparate effects on entrepreneurial activity (Bjørnskov & Foss, 2008, 2016; Estrin et al., 2013; Heckelman & Stroup, 2005; McMullen et al., 2008). For example, Aidis et al. (2012) use factor analysis on cross country measures of economic freedom from the Heritage Foundation. They find two distinct factors that they denote broadly as market freedom and state sector size (Aidis et al., 2012). Conceptually, the authors emphasize a distinction between government size and other elements of economic freedom. Similarly, Bergh (forthcoming) suggests that economic freedom can even be consistent with “big government,” using Sweden as an example case. This work reveals a growing

perspective that we follow: namely, an expectation of a distinct role for government size (“small government”) relative to other aspects of economic freedom.

The subnational data that we employ have three main components: tax freedom, labor market freedom, and government size. It is worth stressing a conceptual distinction between tax and labor market freedoms relative to government size. For tax and labor market areas, lower freedom entails more *stringent* policy; high economic freedom on these margins is characterized by more *permissive* tax and labor policies. By contrast, high (low) freedom on the government size margin entails relatively low (high) levels of public spending. We expect state tax and labor market freedoms to be market-preserving, in the sense that both of these elements directly alter the constraints that local economic actors face. By contrast, scholars’ distinction of government spending at the national level leads us to view the government size component as conceptually distinct from the other two. In sum, extant work leads us to focus our hypotheses on the elements of economic freedom other than government size (Aidis et al., 2012).

Overall, the above discussion indicates that national regulation’s effects on net job creation depend on state-level economic institutions. In our view, the market-preserving logic applies to a permissive institutional environment on both tax and labor policy margins. Because state-level institutions characterized by low tax and labor freedom are unlikely to buffer the costs associated with compliance and regulatory capture, national regulation should negatively affect net job creation in these regions. By contrast, regions with high tax and labor freedom are likely to buffer the costs of regulation and yield more net job creation. As such, the job-related costs of regulatory accumulation should decrease as the state economic freedom increases, which leads us to expect that national regulation should positively affect net job creation in those regions. This leads us to the following pair of hypotheses:

H1. State economic freedom, measured by permissive tax policies, moderates the relationship between national regulation and net job creation, such that the relationship will be less negative as state economic freedom increases.

H2. State economic freedom, measured by permissive labor policies, moderates the relationship between national regulation and net job creation, such that the relationship will be less negative as state economic freedom increases.

2.3. Firm Age Considerations

Our theory suggests that state economic freedom offsets the costs of national regulation for net job creation. We now extend this argument to consider additional heterogeneity in the effects of regulation—namely, across firm age. Recent studies have emphasized firm age as an important factor for net job creation (Haltiwanger et al., 2013). In light of this, we extend our theory to consider differential effects across the firm age spectrum.

We expect the moderating relationship identified above to be most pronounced for young firms. To see this, consider that the economic theory of regulation regularly pits incumbents against entrants. In this work, the unit of analysis for regulatory capture is the industry; incumbents jointly seek regulation in order to deter potential competitors from entering (Stigler, 1971). The implication is that regulation is most costly to potential and/or young firms—a prediction supported in the literature (Bertrand & Kramarz, 2002; Branstetter et al., 2014).

Conversely, tax and labor market policy consistent with economic freedom is said to be a key enabler of entrepreneurship (Bjørnskov & Foss, 2016; Boudreaux, 2014; Bradley & Klein, 2016; Kreft & Sobel, 2005). Economic freedom allows for flexibility and experimentation, creating favorable conditions for new ventures to form and grow. Together, this suggests that the interaction among regulation and tax and labor market freedom should be most prominent among entrepreneurial firms. Furthermore, in the public choice view that suggested regulation can be coopted by special interests, entrepreneurs bear the brunt of the regulatory burden. Thus, the

benefits of the state tax and labor market freedom that would offset these harms should accrue largely to new ventures.⁶

That said, we do expect the moderating relationship to hold for mature firms as well. Our theory suggests that state policy can safeguard state economic interests relative to national interest groups. There may also be disparate interests among industry participants across states; mature firms will enjoy market-preserving benefits as well. Incumbents, however, are established and thus likely better able to organize to combat interstate political competition than are young firms—likely through state-level policies not captured by economic freedom. By contrast, state economic freedom tends to level the intraregional playing field with respect to national regulation, mitigating cronyism and reducing the obstacles to competitive advantage for entrants. While the market-preserving benefits of state economic freedom are broadly applicable, our theory points to heterogeneity in the magnitude of these benefits with respect to firm age. Thus, we also hypothesize:

H3. State economic freedom, measured by permissive tax policies, moderates the relationship between national regulation and net job creation to a greater extent for young firms relative to mature firms.

H4. State economic freedom, measured by permissive labor policies, moderates the relationship between national regulation and net job creation to a greater extent for young firms relative to mature firms.

3. Data and Methods

To operationalize our research questions, we construct an industry-county panel in the U.S. from 2004 to 2016 from several sources. The sample selection is comprised as follows: we begin by collecting all available net job creation data from the QWI for the 15 two-digit NAICS sectors

⁶ While we do not ascribe to the view that equates new or young firm activity with entrepreneurship, we acknowledge these as a manifestation of entrepreneurship.

available in RegData, including 542,384 county-industry-year observations.⁷ We then match these data with the EFNA index; this state-level index does not include Washington, DC (146 observations). Next, we match this dataset with RegData. Lastly, we match our dataset with the state and county-level controls described below, which reduces our sample by 1,148 observations.⁸ Our full sample consists of 541,236 total observations across 3,137 counties in all 50 states for 15 major sectors of the economy; our unit of analysis is the county-industry-year.⁹

3.1. Dependent Variable: Net Job Creation

We use employment data from the Census Bureau’s Quarterly Workforce Indicators (QWI) to construct our net job creation measure. Whereas gross job creation relates to economic dynamism, net job creation is a key feature of state-level economic growth (Decker et al., 2014) and a focal point for state enterprise policy. To that end, QWI is an ideal measure for our purpose, as it reports employment flows by firm age within each major industry at a local geographic level. QWI data is available at the county-level for each North American Industry Classification System (NAICS) industry; we use the two-digit NAICS or sector level. QWI provides these data for each quarter and in several age bins including: 1) 0–1 years, 2) 2–3 years, 3) 4–5 years, 4) 6–10 years, and 5) 11 or more years.

⁷ These include Agriculture, Forestry, Fishing and Hunting; Mining, Quarrying, and Oil and Gas Extraction; Utilities; Manufacturing; Wholesale Trade; Retail Trade; Transportation and Warehousing; Information, Finance and Insurance; Professional, Scientific, and Technical Services; Administrative and Support and Waste Management and Remediation Service; Educational Services; Health Care and Social Assistance; Arts, Entertainment, and Recreation; and Public Administration.

⁸ The geographic units include counties and county equivalents as defined by the Census Bureau. There are a total of 3,142 counties and county-equivalents in the US, so we are able to capture over 99.7% of these in our sample.

⁹ A small number of counties are missing data from five states: Alaska, Louisiana, Hawaii, Texas, and Massachusetts. Most of these are rural and sparsely populated. Hawaii is missing data for Kalawao County (population 88). Several Alaskan Boroughs are missing controls data prior to 2009. King County, Texas (population 236) is missing job creation data for some industry-years, as is Loving County (population 134). For the other two states, data are missing for some of the sample period. Massachusetts reports no net job creation data until 2010. Louisiana is missing control data for 2005 and 2006, likely due to economic disruptions generated by Hurricane Katrina. Our results are robust to the exclusion of unbalanced county panels; we use the full available sample in reported results.

To construct our measure, we aggregate quarterly observations to the annual level for each industry-county observation. Net job creation is calculated as the number of job gains minus job losses in the period. Positive numbers for our measure indicate job creation (job gains > job losses); negative numbers indicate job destruction (job gains < job losses). For the comparability of different sized counties and sectors, we focus on the net job creation rate. Following Davis, Haltiwanger, and Schuh (1996), we divide net job creation in year t by the average employment for years t and $t - 1$. Because of this, we lose 2004 data from our analyses, yielding a final sample of 496,428 observations in our main regressions.

Figure 1 illustrates the trends in net job creation over our sample period from 2005 to 2016. Except for the Great Recession period from 2007 to 2009, net job creation was relatively stable. Moreover, the Great Recession impacted mature firms (> 10 years) but had little observable effect on net job creation by young firms (0–1 years).

[Insert Figure 1 about here]

3.2. Independent Variables: National Regulation and State Economic Freedom

Our measure of national regulation is gathered from RegData (Al-Ubaydli & McLaughlin, 2017). While regulation is a conceptual focal point in the literature, operationalizing its measurement has proven difficult. Some scholars use page counts or file sizes of regulatory documents to quantify regulation (Mulligan & Shleifer, 2005); others have counted the number of steps required to complete a business task like launching a venture (Djankov et al., 2002). Still others survey incumbents' opinions of regulatory burdens (Blind et al., 2017) or measure firms' compliance expenditures (Jaffe & Palmer, 1997). Yet, existing efforts are limited in that they often do not simultaneously measure the extent of regulation across industries or over time in a consistent, comparable manner. To our knowledge, RegData is the first effort to do this in the United States.

The RegData approach relies on machine learning to quantify the number of regulatory restrictions in the Code of Federal Regulations, the federal administrative code in the U.S., for many industries from 1970 to 2017 (Al-Ubaydli & McLaughlin, 2017). RegData measures the number of restrictive words—“shall,” “must,” “may not,” “prohibited,” and “required”—in each subsection (“part”) of the Code of Federal Regulations. The dataset’s authors then employ machine learning to assign a probability that the restrictions in a subsection apply to a given industry. The product of the restrictive words times the probability for each industry is then summed across all subsections for a given year, yielding a measure of federal regulation (Al-Ubaydli & McLaughlin, 2017). RegData thus provides an annual measure of industry regulation at several industry levels (2- through 6-digit NAICS); we utilize the 2-digit NAICS (sector) level, in order to match with QWI. The dataset also reports which agencies issue the regulatory restrictions and includes the total word count, rather than restrictions, as an alternative basis for the industry regulation measure. We use this alternative measure to test the robustness of our results. We transform both measures of regulation using the natural logarithm, and we mean-center based on the global mean for interpretability. Figure 2 plots the trend in total regulatory restrictions in the U.S. from 2004 to 2016. As the figure illustrates, there has been an increasing trend of regulation throughout the sample period; this trend is evident across major sectors as well.

[Insert Figure 2 about here]

It is natural to consider the comparison of this novel regulatory stringency measure with existing approaches. One of the key benefits of these data is that they offer time-varying, industry-varying measures that capture all major sectors of the economy—something that few other US-based studies do. That said, we identified two existing regulatory measures to compare with RegData. First, we gathered Crain and Crain’s (2014) estimates of total regulatory costs across

five broad sector categories as of 2012: Health Care, Services, Manufacturing, Trade, and an aggregation of other major sectors (“Other”). We created comparable sector categories from RegData’s restriction measure for 2012 and found a correlation of .84. Second, we gathered Pollution Abatement Control and Expenditures (PACE) estimates for 2005. These data provide estimates of total costs spent on pollution abatement from regulatory compliance for three-digit NAICS subsectors within the manufacturing sector (NAICS 31–33). The correlation between PACE and RegData scores for included industries in 2005 is .70. Figure 3 reports scatterplots of the comparisons of each measure to RegData’s relevant restrictions measure.

[Insert Figure 3 about here]

For our measure of state economic freedom, we use the Frasier Institute’s *Economic Freedom of North America* (EFNA) (Stansel et al., 2017).¹⁰ Whereas specific policy initiatives to foster entrepreneurship often fail (Acs et al., 2016; Lerner, 2009), economic freedom—including small government, favorable tax policy, and flexible labor market policy—has a robust, positive relationship to entrepreneurial activity and employment growth across nations (McMullen et al., 2008; Nikolaev et al., 2018; Nyström, 2008) and regions (Calcagno and Sobel 2014; Gohmann et al. 2008; Sobel 2008).

State economic freedom is constructed on a scale from zero to 10 for each component to represent the underlying distribution of each of the 10 components in the index. The highest possible score on each component is 10 (high economic freedom) and the lowest possible score is 0 (low economic freedom). The index is comprised of ten variables in three areas: (1) government spending, (2) taxes, and (3) labor market freedom.¹¹ The first area, government size, is measured

¹⁰ See Berggren (2003) and Hall and Lawson (2014) for reviews of the literature on economic freedom.

¹¹ We use the subnational index, which is the preferred index for comparisons within a single country (Stansel et al., 2017). An alternative measure is the ‘all government’ index, which is comprised of additional variables and areas.

as the extent of government consumption, transfers and subsidies, and insurance and retirement payments, all as shares of state income. The second area, tax policy, is measured by income and payroll tax revenue shares of state income, the top marginal income tax rate, the property tax rate, and sales tax revenues. The third area uses minimum wage legislation, government employment, and union density to measure labor market freedom.¹² Following the insight that government size component operates independently from the other elements of economic freedom (Bergh, forthcoming; Heckelman & Stroup, 2005; Kreft & Sobel, 2005; Lihn & Bjørnskov, 2017), we examine each component of economic freedom separately as well as individually. Both the cross-country and state-level indices have been fruitfully employed in the literature (Angulo-Guerrero et al., 2017; Bjørnskov & Foss, 2008; Hall & Sobel, 2008).

We report the trend in Economic Freedom and its components for our sample period in Figure 4. Overall Economic Freedom in the U.S. declined during the Great Recession from 2007 to 2010. This appears to be driven primarily by increases in government size (declines in the government size score) and decreased labor market freedom. Post recession, Economic Freedom in the U.S. increased through 2015 but saw a slight decrease in 2016 for all measures.

[Insert Figure 4 about here]

3.3. Controls

We include several variables to account for relevant county-level differences. To control for the health of the local economy, we include county median household income, unemployment rate, and poverty rate. Median household income and poverty rates are retrieved from the Small Area Income and Poverty Estimates (Census Bureau); unemployment data come from the Local Area

Refer to the Economic Freedom of North America report for more detail.

<https://www.fraserinstitute.org/studies/economic-freedom-of-north-america-2017>

¹² See The 2018 Economic Freedom of North America Report, Appendix A: Methodology, p. 54, for more details.

Unemployment Statistics (Bureau of Labor Statistics). We expect that counties with a healthy local economy will have more net job creation. We also include several demographic controls. We use population to control for agglomeration economies (Rosenthal & Strange, 2004) and to proxy urban context (McDonald, 1989); this variable is retrieved from the Census Bureau's intercensal population estimates. Lastly, we also include the number of establishments per worker as a proxy for the competitive density of the local area (Voss & Voss, 2008). A highly competitive market will likely lower profits, which might result in less firm growth and net job creation. Establishment count is retrieved from the Census Bureau's County Business Patterns.

Finally, we also gather a number of state-level controls that influence state policy and economic outcomes. Because unions represent a significant interest in labor market policy, we control for the percent of workers who are union members; these data are retrieved from Hirsch and MacPherson (2003). Next, states heavily reliant on natural resources may have unique tax and redistributive structures. We proxy for this using annual oil production by state, provided by the U.S. Energy Information Administration. Finally, states with tighter budget constraints may have less flexibility to implement proactive policies to offset national regulation. To adjust for state budget constraints, we calculate each state's annual operating ratio, defined as total revenues divided by total expenditures. The operating ratio captures states' ability to meet short-term obligations and thus also the leeway to implement costly policies to potentially offset or augment federal rules. These data are obtained from the Annual Survey of State and Local Governments.

Table 1 summarizes our data. On average, there are 1.36 net jobs created in each sector per 1,000 employed people in a given county annually. The average level of economic freedom is 6.16, which ranges from a low of 3.64 (Alaska in 2005) to a high of 8.05 (New Hampshire in 2006). The average level of economic freedom is roughly 7 for each component, but government

size has the largest standard deviation (SD = 1.54) and tax freedom has the smallest (SD = 0.87). There is also substantial variation in industry-level regulations. The average restriction score (i.e., industry-weighted count of restrictive words in the *Code of Federal Regulations*) is 62,288, ranging from a minimum of 5,399 (Wholesale Trade, 2005) to a maximum of 217,759 (Manufacturing, 2016). The average county has a median household income of \$44,605, 102,942 residents, a poverty rate of 16.14 percent, an unemployment rate of 6.72 percent, and 0.02 establishments per capita. The state level variables feature an average union membership rate of 9.37 percent, annual oil production of 73.39 MMb, and a state government operating ratio of 1.03. Table 2 provides a correlation matrix.¹³

[Insert Table 1 about here]

[Insert Table 2 about here]

3.4. Estimation Methods

To test our hypotheses, we estimate the effects of national regulation and state economic freedom on local net job creation using Ordinary Least Squares (OLS) with three-way fixed effects:

$$NJC_{cjt} = \alpha + \beta_1 R_{jt} + \beta_2 EF_{st} + \beta_3 (R_{jt} \times EF_{st}) + X'_{cjt} \delta_{cjt} + \Lambda_c + \theta_j + \Pi_t + u_{cjt} \quad (1)$$

The outcome variable, NJC , denotes the net job creation rate in county c for industry j and year t . We follow Davis, Haltiwanger, & Schuh (1996) in using a time-varying average employment size in t and $t - 1$ as the denominator for our net job creation variable. The right-hand side of the equation includes national regulation (R), state economic freedom (EF), their interaction, a vector of controls (X) for each observation of county c , industry j in year t , and county, industry, and year

¹³ Although most variables are not highly correlated with one another, we observe that the unemployment rate is highly correlated with labor market freedom and median household income, which raises multicollinearity concerns. We therefore tested whether the unemployment rate affects our results by excluding it from our model. The results are very similar whether we omit unemployment rate or include it in our model, which reduces our multicollinearity concerns. Results available upon request.

fixed effects. EF denotes the measure of economic freedom in state s and year t . Across specifications, EF is measured either as the overall economic freedom score or as one of the three components (i.e., tax freedom, government size, and labor market freedom). The parameter β captures the effect of each variable on net job creation. In particular, β_1 and β_2 capture the direct effect of regulation and economic freedom, and β_3 captures the effect of their interaction. The parameter δ captures the effect of each variable in the vector of controls (X). The parameters Λ , θ , and Π capture county, industry, and year heterogeneity. These fixed-effects control for common macroeconomic trends and unobserved state-level and industry idiosyncrasies (Boudreaux, 2019; Bournakis et al., 2018). The parameter, u , is the disturbance term, which is assumed independently and identically distributed (iid). However, we control for potential heteroscedasticity by using robust standard errors clustered at the county-level. For our main results, we complement our analysis with regressions weighted by 2004 county employment in order to estimate the net job creation effect observed by the typical worker.¹⁴ Except for state economic freedom, we express all explanatory variables in logs and mean-center based on the variable's global mean. This transforms all coefficient estimates into semi-elasticities to ease interpretation of our results.

4. Results

4.1. Main Results

Table 3 reports the results from our model. Model 1 presents our baseline results, which includes only our control variables and the direct effects of regulation and economic freedom. Model 2 augments this baseline by interacting the measures of regulation and economic freedom. The results indicate that regulation is negatively associated with the net job creation rate, but the average effect is not statistically different from zero ($\beta = -0.442$; $p > .10$). In addition, the

¹⁴ We thank an anonymous reviewer for this suggestion.

interaction between regulation and the overall economic freedom index is positive but statistically insignificant ($\beta = 0.047$, $p = .11$). Model 3 investigates the heterogeneity in economic freedom and tests how each of the three economic freedom components (i.e., government size, tax freedom, and labor market freedom) affect the relationship between regulation and net job creation. Following standard practice (e.g., Wennberg, Pathak, & Autio, 2013), we replace the overall economic freedom index with each of its three components. The results from Model 3 reveal notable heterogeneity. Regulation is negatively associated with the net job creation rate ($\beta = -1.086$; $p = .001$), but tax freedom attenuates this effect ($\beta = 0.206$; $p = .001$). Similarly, we observe that labor market freedom attenuates this effect ($\beta = 0.129$; $p = .054$). Interestingly, we find that the moderating effect of government size is negative and significant ($\beta = -0.131$; $p < .05$).

In Models 4–6, we replicate our analysis using weighted regressions¹⁵ to address the fact that unit sizes are sometimes very skewed; many counties are extremely small, and economic activity for a given industry in those counties may be low or nonexistent at times. In our case, employment weights allow larger employment counties to contribute more to an estimate, which provides an estimate of relevance for the typical worker as opposed to the typical county. Our weighted regression results in Models 4 – 6 are consistent in sign with the unweighted regression results in Models 1 – 3; in fact, they reveal larger and more robust relationships. Regulation is negatively associated with net job creation in each model and is highly statistically significant. In Model 5, the point estimate of regulation’s effect is ($\beta = -0.843$; $p < .001$). Meanwhile, state economic freedom attenuates this effect, and the result is statistically significant ($\beta = 0.078$; $p < .001$). Furthermore, in Model 6, results remain consistent. Both tax freedom ($\beta = 0.201$; $p < .001$) and labor market freedom ($\beta = 0.224$; $p < .001$) attenuate the effect of regulation, which is negative

¹⁵ The remainder of the paper uses unweighted models. Weighted results for Tables 5–10 are available by request.

on average ($\beta = -1.426$; $p < .001$). Once again, government size has the opposite relationship ($\beta = -0.189$; $p < .001$).

In sum, we find evidence that national regulation has a negative and statistically significant effect on the net job creation rate, which supports the public choice view of regulation. Yet, we also observe that state economic freedom attenuates this relationship; in particular, national regulation harms net job creation less as state tax and labor market freedoms increase. By contrast, the government size indicator has a different moderating effect. These findings reveal heterogeneity in the components of economic freedom.

[Insert Table 3 about here]

To better interpret these moderating results for the typical worker, we plot the marginal effects of regulation on net job creation at various levels of economic freedom in Figure 5. First, Panels A, B, and C present the marginal effects for each of the economic freedom subcomponents estimated in Model 6 of Table 3, respectively. Panel A illustrates the moderating effect of tax freedom, Panel B illustrates the moderating effect of government size, and Panel C illustrates the moderating effect of labor market freedom. In each figure, the vertical axis denotes the marginal effect on the net job creation rate, and the horizontal axis measures economic freedom. We include 95 percent confidence intervals, and we restrict prediction to the range of our sample to avoid extrapolation. Finally, we evaluate the marginal effects at the employment-weighted means of the other economic freedom subcomponents and regulation.

Panel A illustrates that national regulations have a more negative relationship to net job creation when state tax freedom is lower. For a state with tax freedom equal to 3 (roughly that of New York in 2016), a one percent increase in regulation is associated with 0.0068 fewer net jobs

created in a single sector per 1,000 employed in that county, *ceteris paribus*.¹⁶ However, this effect only holds in states with below-average tax freedom; when tax freedom is at the average level, the effect of regulation is no longer statistically significantly different from zero. The estimate is even positive and statistically significant at the highest levels of tax freedom (tax freedom = 9), suggesting that regulation is associated with *higher* net job creation rate of 0.0052. Panel B shows the opposite moderating effect of government size. For a state with government size of 3 (roughly that of Alaska in 2006), a one percent increase in regulation is associated with a 0.0024 *higher* net job creation rate per 1,000 people. By contrast, at the average level of government size, we find a negative and statistically significant effect of regulation on net job creation (marginal effect = 0.0046). Interestingly, at above-average levels of government size, the marginal effect of national regulation is negative and statistically significantly different from zero. At a government size score of 8 (roughly that of Texas in 2013), a one percent increase in regulation is associated with 0.0027 fewer net jobs created per 1,000 people. Lastly, Panel C reveals the labor market freedom attenuates and potentially reverses the effect of national regulation. When labor market freedom equals 3 (the bottom of the range), a one percent increase in regulation is associated with a lower net job creation rate of 0.0078. But at the top of the range (9), the effect switches in sign to a positive effect on the net job creation rate of 0.0056.

Finally, to understand the overall effect of state economic freedom in light of these subcomponent nuances, panel D plots the marginal effects for the overall index estimated in Table 3, Model 5. This reveals that the effect of national regulation is negative at the lowest levels of state economic freedom and approaches zero at the highest levels.

[Insert Figure 5 about here]

¹⁶ As a level-log specification, the margin calculated is a semi-elasticity, and the effect of a 1% increase in regulation corresponds to a $\beta/100$ change in the net job creation rate.

To put these magnitudes in perspective, we estimate a “restrictions per job” rate. This restrictions per job rate answers the question, “For a given marginal effect, how many restrictions does it take to destroy a single job on net in a single industry in some typical county”? Specifically, we estimate the number of additional regulatory restrictions that corresponds to one net job destroyed in a typical sector (regulatory burden = 45,881.13) and county (employed population = 240,424).¹⁷ Continuing with Model 5 of Table 3, the marginal effect of a one percent increase in regulation for the typical economic freedom level of 5.96 is -0.0038 ¹⁸ net jobs destroyed *per 1,000 employed people*. This implies that a one-percent increase in regulatory restrictions (458.81 restrictions) corresponds roughly 0.914 net jobs destroyed in the typical county ($-0.0038 * 240,424 / 1000$)—and, in turn, 502 restrictions per job (458.81 restrictions / 0.914 jobs). In other words, this estimate suggests that it takes 502 additional regulatory restrictions to destroy one job in a sector in a typical county each year. While this number may seem large, note that this amounts to just 1.1% of a standard deviation increase in the federal regulatory burden for a given sector (502 / 46825.93). Furthermore, our unit of analysis (county-industry-year) is quite fine-grained; hence, the aggregate results of these effects are nontrivial.

To further illuminate the moderating effect of economic freedom, we calculate restrictions per job rates similar to the above, but across the range of state economic freedom. This builds on the marginal effects plotted in Figure 5, Panel D, detailing the relevant restrictions per job estimate at each level. Table 4 reports the marginal effects, restrictions per job estimates, and the restrictions per job effect sizes relative to the standard deviation of regulatory restrictions. The restrictions per

¹⁷ For this discussion, we calculate and use employment-weighted median values for regulation (45,881.13), economic freedom (5.96), and employed population (240,424). The marginal effect of a 1% increase in regulation is calculated using Stata’s `margins, dydx()` command at the respective economic freedom level.

¹⁸ This magnitude is found by the following: $-0.843 + (5.96 \times 0.078) = -0.378$. Because regulation is in log form, a 1% increase involves dividing -0.378 by 100, which yields -0.00378 .

job rate increases with state economic freedom, ranging from 313 to 1,363—indicating that the labor “costs” of national regulation are declining.

How much does this moderation matter? For a county of the above size in Ohio (average state economic freedom ~ 4), a 1% increase in national regulation corresponds to 1.28 fewer jobs in a single sector. If the state’s economic freedom score improved to that of Florida (average state economic freedom ~ 8), the same increase in regulation would correspond to just 0.53 fewer jobs *ceteris paribus*—reducing the magnitude by over half.

In sum, it takes more federal regulations to hinder job growth as state economic freedom increases. Furthermore, the marginal effect of national regulation is no longer statistically significantly different from zero at the highest economic freedom level. This affirms that state-level institutions play a substantive role in the *de facto* costs of national regulation.

[Insert Table 4 about here]

4.2. Decomposing Job Creation by Firm Age

To test Hypothesis 3, we examine these relationships for different firm age categories within each industry. Table 5 reports results for young firms (less than one year of age) and for mature firms (greater than 10 years of age) within each industry. We focus on these two categories as they are the most consistent with our theoretical constructs and consistent with prior literature (Curtis & Decker, 2018).¹⁹ We find that the mature firm results are consistent with the above. Regulation has a negative and statistically significant effect on the net job creation rate across each model. Consistent with the previously reported moderating effects, we find that tax freedom and labor

¹⁹ We also estimated these models for the other age categories provided by the QWI dataset (2–3 years, 4–5 years, and 6–10 years). We found no statistical relationship for these age categories. Moreover, we see no clear and theoretically-sound reason to explain why regulation’s effects might differ at each of these cutoffs. Therefore, we only examine and contrast the young age category (0–1 years) and mature age category (> 10 years) to be more consistent with theory and extant literature (Bailey & Thomas, 2017).

market freedom attenuate the adverse effect of regulation on net job creation, whereas the government size exacerbates the adverse effect, though it is now statistically insignificant.

Interestingly, we do not find similar evidence for young firms. The point estimate for national regulation is actually positive and statistically significant in all models. Furthermore, we do not observe a significant moderating effect for young firms. Thus, we do not find support for Hypothesis 3.

[Insert Table 5 about here]

In addition, as a post-hoc exercise, we also split our sample into metro and non-metro counties based on the 2013 USDA Rural Urban Continuum Codes.²⁰ Though we did not hypothesize it, intuition suggests that regulation would have more pronounced effects in more competitive local economies with greater population density and higher employment levels—hence, in more metropolitan counties. The fact that the weighted models in Table 3 yield larger estimates provides some suggestive evidence of this as well. Thus, Table 6 reports the results for all firms, restricting the sample to metro counties (Models 1 – 3) and then non-metro counties (Models 4 – 6). Notably, the aforementioned relationships are stronger in metro counties and are weaker in non-metro counties. Specifically, national regulation has a negative and statistically significant effect on the net job creation rate in metro counties across all specifications. Both the overall index and tax freedom attenuate the adverse effect of regulation on net job creation. Labor market freedom and government size indicators have similar signs as before but are statistically insignificant. We find similar relationships for net job creation in non-metro counties in Model 6, but the magnitudes are smaller, and the overall index interaction is statistically insignificant in Model 5. In addition, the direct effect of national regulation on net job creation is statistically

²⁰ Counties with a code value less than four are consider metropolitan, with all others being non-metropolitan.

insignificant—even flipping sign. These results are suggestive that the negative effects of regulation are primarily concentrated in high-employment, metropolitan counties.

[Insert Table 6 about here]

4.3. Robustness Checks

4.3.1. Alternate Measure of Regulation

We take several steps to assess the robustness of our results. First, Table 7 features an alternative measure of federal regulation. RegData provides this alternative measure, which uses the total *word count* for the text contained in the Code of Federal Regulations (rather than restrictive words only). The logic behind this alternative measure is that a lengthier administrative code naturally imposes more restrictions on firm activity; consequently, a larger regulatory code proxies a greater regulatory burden (Mulligan & Shleifer, 2005).

Model 1 presents our baseline results, including control variables, the overall measure of economic freedom, and the alternate measure of regulation. Model 2 adds an interaction term to test our hypothesis that economic freedom moderates the relationship between regulation and net job creation. The results are generally consistent with our previous findings. Once again, the interaction with the overall economic freedom index is insignificant. However, separating economic freedom into its three components, we find consistent support for our core hypotheses; regulation is associated with lower rates of net job creation ($\beta = -1.141$; $p < 0.001$), but this effect decreases with increases in tax freedom ($\beta = 0.167$; $p < 0.001$) and labor market freedom ($\beta = 0.155$; $p < 0.05$). We again find evidence that regulation's effect is moderated in the opposite direction by smaller state government (i.e., more government size) ($\beta = -0.133$; $p < 0.05$). Overall, these findings are quite consistent with our previous results. We also check the robustness of our findings using this alternative measure of regulation for our young firms, mature firms, metro

counties, and non-metro counties. Again, the results are consistent with our earlier findings: the negative effect of regulation and the moderating effects of economic freedom are most pronounced for mature rather than young firms and metro firms rather than non-metro firms.

[Insert Table 7 about here]

4.3.2. Instrumental Variable Results

A possible concern with our analysis is reverse causality. That is, although we hypothesize that national regulations affect local net job creation, it is possible that the growth in job creation also invites further regulation. As the market grows, the payoff to securing beneficial regulatory treatment through rent seeking and regulatory capture can increase.²¹ If true, our parameter estimates would be biased. We use an instrumental variables (IV) method to address this.

The main advantage of the IV method is that it addresses endogeneity stemming from reverse causality and omitted variable bias in OLS at the same time (Jha & Cox, 2015; Wooldridge, 2002, pp. 84–107). We run a two-stage least squares model that uses instruments for the endogenous variable, federal regulation. Our model is complicated slightly in that we interact our endogenous variable with economic freedom. Recall that our model takes the following form:

$$y = ax + bw + c(x \cdot w) + e \quad (3)$$

Where y is the dependent variable, x is endogenous, and w is exogenous. Following Ozer-Balli, & Sørensen (2013), if z is a valid instrument for x , then a valid instrument for $(x \cdot w)$ is $(z \cdot w)$. In our IV model, we treat *regulation* as endogenous and *economic freedom* as exogenous. For identification, we need an instrument for *regulation* and $(\text{regulation} \cdot \text{economic freedom})$.

We propose an instrument based on the concurrent total regulatory burden *for all other sectors* besides the focal sector. Conditional on the controls and year, industry, and county trends

²¹ We thank an anonymous reviewer for raising this point.

that we include, we expect other-sector regulations to be exogenous with respect to local sector employment growth. Yet, regulatory increases in other sectors should predict regulatory increases in one's own-sector, as this captures overall increases in regulatory activity across the economy (i.e., regulation growth in one industry can spill over to yield more regulation in other industries). Similar strategies have been proposed by scholars who use industry averages and neighboring region values as instruments (Boudreaux, 2018; Jha & Cox, 2015). Our proposed "all other industries" instrument is:

$$\text{Other Sector Restrictions}_{jt} = \sum_{i=1}^n (\text{Restrictions}_{it}) - \text{Restrictions}_{jt} \quad (4)$$

For a given industry j in year t , we create this variable by summing the sector-specific regulatory restrictions across all n industries and then subtracting the own-sector regulatory restriction value.

The first criterion for a valid instrument is relevance. That is, our instrument of other sector regulations should be correlated with own-sector regulations. We find evidence of a significant relationship between the endogenous variable and the instrument.²² This means that any one sector's regulations are predicted by regulatory levels throughout the economy. In addition, we refer to the well-known rule of thumb that the first stage F-statistic should exceed 10 (Staiger & Stock, 1997). Our first stage F-statistic well exceeds 10 in all models, satisfying this requirement.

The second condition is that the instrument must be uncorrelated with the error term. The instrument should (1) not be affected by the dependent variable except through the endogenous variables, (2) not affect the dependent variable except through the endogenous variables, and (3) not be correlated with omitted variables in the model (Wooldridge, 2002). We argue that our proposed instrument is plausibly conditionally exogenous. Even if sector-specific net job creation at the local, county level invites regulation in the focal sector, we do not expect that the county-

²² Results available upon request.

level, sector-specific net job creation will lead to changes in sector-specific regulations across all other industries and counties. Because national regulations are more closely tied to the political process and political interests (Murphy et al., 1993), it is unlikely that regulation *in other industries* would substantively change in response to net job gains in the focal industry in any given county. Furthermore, the public choice view suggests that firms engage in the political process to combat competition in their own industry—not unrelated industries.

We report results from the instrumental variable models in Table 8. Our findings are robust to this alternative method. We continue to find that national regulation deters net job creation, while tax and labor market freedom attenuate this adverse effect. Also consistent with our previous results, we observe that increases in the government size component exacerbate the adverse effect of regulation on net job creation. Like before, our findings are stronger for mature rather than young firms and metro firms rather than non-metro firms; however, the relationships of interest do hold here for young firms, where they were generally insignificant above. Note that the IV model effect sizes are generally larger than the OLS specifications, suggesting that the main results may understate the true effects of the relationships we study. In addition, an endogeneity test of the instrumented regressors in Table 8, Model 1 rejects the null hypothesis that regulation and its interaction with economic freedom are exogenous (chi-squared = 29.42; $p < 0.05$), suggesting the value of this instrumental approach.

[Insert Table 8 about here]

Finally, one concern with our preferred instrument could be omitted variable bias through inter-industry supply chains. This would imply that up- or down-stream industry regulations may be endogenous to focal industry employment trends, invalidating the exogeneity criteria for our prior instrument (Goldschlag & Tabarrok, 2018).

In the Appendix, we attempt to address this by providing two alternative instrumental variables. Each of these follows the “all other industry” regulation instrument logic; however, we weight the regulation values from each industry based on industry interdependence, such that a more closely-related industry’s regulation contributes less to the instrument. To do this, we follow Goldschlag & Tabarrok (2018) to calculate the use- and supply-shares between the focal industry and each other industry, based on the 2007 detailed industry use tables provided by the Bureau of Economic Analysis (BEA). Then, we weight each other industry’s regulation value by the *reverse* of their use or supply share ($1 - share$). This reduces the importance of the most closely-related industries. We do this to construct two separate instruments based on output-shares (Table 9) and input-shares (Table 10), respectively. Overall, the findings using these alternative IVs are generally consistent with our prior results, albeit with high standard errors and less precise estimates. For example, we find a negative direct effect of regulation with positive moderation by tax and labor market freedom for all firms (Model 2 of Tables 9 and 10). In addition, the mature firm and metro firm results continue to be the strongest relative to young and non-metro firms, respectively. Taken with the prior results, these findings affirm the relationships of interest.

5. Discussion

Despite a rich debate on the effects of regulation on job growth, scholars have largely overlooked state-level variation in this relationship. Our point of departure is that national regulatory costs are unequally dispersed across states, and that state-level policy influences these costs. Firms often navigate more than one formal institutional level, and prior single-level studies have failed to account for the multiple levels of government within which entrepreneurs are embedded.

Our work suggests that modeling these political layers together is important. We proposed a model of *hierarchical institutional interdependence*, in which the effects of national sectoral

regulations are contingent upon the state-level institutional framework. Drawing on MPF (Weingast, 1995), we argued that state policies that shape economic freedom moderate the impact of federal rules, yielding heterogeneity in the effects of national regulation across states.

Our analysis revealed that sector-specific national regulation is negatively associated with net job creation in those sectors, and that state economic freedom is positively associated with net local job creation. Critically, we uncovered a moderating effect, where tax and labor market freedom attenuate the adverse effect of regulation. Going beyond the estimation of a single, average effect, we showed that national regulations deter net job creation in some regions but not in others. This variation affirms that regulation can deter net job creation, consistent with the public choice view. It also suggests, however, that existing characterizations of regulation's effects have presented an overly narrow perspective; furthermore, it suggests a role for state policy in preserving local economic interests in a manner more consistent with the public interest view.

Our findings speak to the ongoing debate on the merits of a multilevel institutional framework such as the U.S. federalist system. The "centralization versus decentralization" debate has a rich history, including the well-known arguments of Alexander Hamilton, James Madison, and John Jay in *The Federalist Papers*. More recently, a concern raised in political science is that voters governed by multilevel or overlapping political entities may have a more difficult time attributing economic outcomes to particular government levels, thereby mitigating electoral accountability (Anderson, 2006). While voters' ability to attribute responsibility for state-level activity is beyond our scope, we do find that there are distinct and economically meaningful policy impacts for different institutional levels. Furthermore, we show that the state-level institutional environment moderates the impact of national policy. To the extent that state-level policy is more flexible and responsive to local economic conditions than national policy, the influence of state-

level policymaking is greater than previously acknowledged. This suggests the need for additional research on the interdependence of national and state-level policy for innovative activity such as R&D expenditures and technology commercialization.

5.1. Limitations and Future Research

One critique of the institutional approach we have employed is that state-level institutions may be difficult to measure and operationalize (Rodríguez-Pose, 2013). While the creation and improvement of state-level measures is ongoing (Teague, 2016), our work suggests that extant measures can yield fruitful insights about this subnational institutional variation. We utilize the best available measures of federal and state level policies we consider; furthermore, similar studies using RegData do not find evidence of measurement error (Goldschlag & Tabarrok, 2018), which helps to alleviate this concern. Our findings may also speak to recent work showing that state-level institutions can incentivize labor mobility, particularly among high-skilled workers (Mulholland & Hernández-Julián, 2013; Nifo & Vecchione, 2014). Future research could consider whether the relationships we observe vary along the skill spectrum and how they relate to interstate-level migration. Do heterogeneous regulatory costs lead firms to relocate activities and/or labor?

While our analysis makes headway into the interaction of governance institutions for employment and entrepreneurship, it does have limitations. First, it is unclear whether these results apply to other country contexts. It is certainly the case that the United States' version of federalism is unique, and that state policymakers may have a larger role than their counterparts in other mature economies. Whether and how state policy mitigates the effects of national regulation in other contexts is a question worthy of future research. In addition, emerging economies represent a particularly interesting context for questions of government interdependence.

Second, our research focuses on the net outcomes of firm growth activity at the industry level. We believe this is beneficial in order to observe the economic implications of the entrepreneurial competition we have described, and we retain as local a unit of analysis as available data allow (the industry-county-year). However, research engaging the firm and individual levels that follows our hierarchical institutional interdependence framework has a great deal to offer. It is clear that the effects of regulation are also heterogeneous with respect to both firm characteristics (e.g., their resource base and capabilities) and entrepreneurs' cognitive traits (Boudreaux et al., 2019; Estrin et al., 2013). Explicitly modeling the multilevel institutional environment is a promising direction for developing micro-foundations for the institutions-entrepreneurship nexus.

Perhaps our most surprising result is that the relationships we observe appear to be driven by mature firms. The economic theory of regulation conceives of regulation as asymmetrically burdening potential entrants, favoring incumbents (Stigler, 1971). Indeed, we expected that the relationships we study would affect young firms asymmetrically. Instead, we found that mature firms drove the relationships we observed. But this is interesting in light of recent findings on regulation and job creation across firm size. While some researchers have found negative effects of regulation for small firms (Bailey & Thomas, 2017), a recent and comprehensive examination revealed no relationship (Goldschlag & Tabarrok, 2018).²³ We depart from these studies by considering firm age rather than size, which is arguably a better categorization for net job creation (Haltiwanger et al., 2013). Notably, our findings are consistent with recent work revealing that young firms face disadvantages compared to more mature firms (Du & Mickiewicz, 2016). Future work might account for age and size concurrently, if data permit.

²³ One important difference between the two is a focus on rates (Goldschlag & Tabarrok, 2018) vs. levels (Bailey & Thomas, 2017). Both papers explore dynamism outcomes, whereas our focus is on growth. In addition, neither of these studies explore state-level variation, as analysis is performed at the industry-year level.

It is plausible that young firms' job turnover decisions are not primarily driven by regulation (Goldschlag & Tabarrok, 2018). It is also worth noting that net job creation for the median young firm is minimal (Decker et al., 2014). It is instead a small proportion of young firms that drive net job creation; these *high-growth* young firms are not limited to a particular industry (Henrekson & Johansson, 2010). We do not directly test the impact of regulation on high-growth entrepreneurship, instead looking at all young firms. Thus, for the typical observation in our young firm category, net job creation may simply be economically insignificant. Another potential explanation for the differences between young and mature firms could be because the impact of regulation is primarily on the extensive margin (i.e., the entrance decision) as opposed to the intensive margin of post-entry growth.²⁴

By contrast, tax and labor market freedom both offset the negative effects of regulation among older firms—an important finding in light of the literature on state-level employment growth (Acs & Armington, 2004; Holm & Østergaard, 2015). Much of this work emphasizes the direct effects of state-level policy in driving variation in net job creation. The evidence suggests a variety of policy regimes may be conducive to net job creation in different contexts—e.g., those tailored either toward new ventures or incumbents (Audretsch & Fritsch, 2002). Interestingly, our findings position tax and labor market freedom as a vehicle for net job creation by incumbents. This suggests a fruitful direction for future research to unpack the relative impact of policy outcomes for nascent and mature firms across a host of innovation-related outcomes. A final complication is that large, mature firms often operate in multiple states, so they face multiple state-level institutional environments simultaneously. They may thus be able to choose the state-level compliance costs they bear—e.g., by centralizing compliance or headquarters to a specific state.

²⁴ We thank an anonymous reviewer for raising this possibility.

If such firms strategically choose state-level institutional costs across their establishment locations, our results might understate the full institutionally-moderated regulatory burden. While data limitations preclude us from observing interstate firm activity, the influence of their reallocation decisions on state-level growth is a compelling question.

Finally, we also found that both the negative effects of regulation and the benefits of state economic freedom were most pronounced in metropolitan counties, which have much larger populations on average. This suggests the possibility of additional interactions of national regulation with other local economic and social factors—a topic that has received little attention.

6. Conclusion

In light of the global shift toward the entrepreneurial economy (Thurik et al., 2013), the accumulation of national regulation becomes increasingly important. We explore how policies at different governance levels interact to influence net job creation outcomes. While state-level policymakers may be unable to change national policy outcomes, their decisions can shape the local impact of those policies on entrepreneurial net job creation.

Our work offers four implications. First, the importance of state-level political institutions has been understated. That tax and labor market freedom moderate the effects of national regulation suggests that researchers should consider both direct and indirect consequences of state-level enterprise policy. Second, the impact of national regulation is more nuanced than previously acknowledged. Not only have we identified heterogeneity in the effects of regulation, we also found surprising evidence that regulation's costs were not moderated for young firms, at least on the job growth margin. Third, our work points to state-level economic freedom as a fruitful object of inquiry for the entrepreneurial ecosystems literature, as it represents an important answer to calls for policy reform that would foster an entrepreneurial economy (Stam, 2015). Finally, we

demonstrate the rich potential of multilevel theoretical frameworks from other disciplines (such as MPF) that can be incorporated into innovation and entrepreneurship research.

References

- Acs, Z., & Armington, C. (2004). Employment growth and entrepreneurial activity in cities. *Regional Studies*, 38(8), 911–927.
- Acs, Z., Astebro, T., Audretsch, D., & Robinson, D. T. (2016). Public policy to promote entrepreneurship: A call to arms. *Small Business Economics*, 47(1), 35–51.
- Aidis, R., Estrin, S., & Mickiewicz, T. M. (2012). Size matters: Entrepreneurial entry and government. *Small Business Economics*, 39(1), 119–139.
- Al-Ubaydli, O., & McLaughlin, P. A. (2017). RegData: A numerical database on industry-specific regulations for all United States industries and federal regulations, 1997-2012: RegData: US federal regulation data. *Regulation & Governance*, 11(1), 109–123. <https://doi.org/10.1111/rego.12107>
- Anderson, C. D. (2006). Economic voting and multilevel governance: A comparative individual-level analysis. *American Journal of Political Science*, 50(2), 449–463.
- Angulo-Guerrero, M. J., Pérez-Moreno, S., & Abad-Guerrero, I. M. (2017). How economic freedom affects opportunity and necessity entrepreneurship in the OECD countries. *Journal of Business Research*, 73, 30–37. <https://doi.org/10.1016/j.jbusres.2016.11.017>
- Audretsch, D. B., Belitski, M., & Desai, S. (2018). National Business Regulations and City Entrepreneurship in Europe: A Multilevel Nested Analysis. *Entrepreneurship Theory and Practice*, 1042258718774916. <https://doi.org/10.1177/1042258718774916>
- Audretsch, D. B., Falck, O., Feldman, M. P., & Heblich, S. (2012). Local entrepreneurship in context. *Regional Studies*, 46(3), 379–389.
- Audretsch, D. B., & Fritsch, M. (2002). Growth regimes over time and space. *Regional Studies*, 36(2), 113–124.
- Bailey, J. B., & Thomas, D. W. (2017). Regulating away competition: The effect of regulation on entrepreneurship and employment. *Journal of Regulatory Economics*, 52(3), 237–254. <https://doi.org/10.1007/s11149-017-9343-9>
- Barbosa, N., & Faria, A. P. (2011). Innovation across Europe: How important are institutional differences? *Research Policy*, 40(9), 1157–1169.
- Barone, G., & Cingano, F. (2011). Service regulation and growth: Evidence from OECD countries. *The Economic Journal*, 121(555), 931–957.
- Baumol, W. J. (1990). Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, 98(5, Part 1), 893–921. <https://doi.org/10.1086/261712>
- Berggren, N. (2003). The Benefits of Economic Freedom: A Survey. *The Independent Review*, 8(2), 193–211.
- Bergh, A. (forthcoming). Hayekian welfare states: Explaining the coexistence of economic freedom and big government. *Journal of Institutional Economics*, 1–12. <https://doi.org/10.1017/S1744137419000432>
- Bertrand, M., & Kramarz, F. (2002). Does entry regulation hinder job creation? Evidence from the French retail industry. *The Quarterly Journal of Economics*, 117(4), 1369–1413.
- Bjørnskov, C., & Foss, N. J. (2008). Economic freedom and entrepreneurial activity: Some cross-country evidence. *Public Choice*, 3(134), 307–328. <https://doi.org/10.1007/s11127-007-9229-y>
- Bjørnskov, C., & Foss, N. J. (2016). Institutions, entrepreneurship, and economic growth: What do we know and what do we still need to know? *The Academy of Management Perspectives*, 30(3), 292–315.

- Blair, H. (2000). Participation and accountability at the periphery: Democratic local governance in six countries. *World Development*, 28(1), 21–39.
- Blind, K., Petersen, S. S., & Riillo, C. A. (2017). The impact of standards and regulation on innovation in uncertain markets. *Research Policy*, 46(1), 249–264.
- Boudreaux, C. J. (2014). Jumping off of the Great Gatsby curve: How institutions facilitate entrepreneurship and intergenerational mobility. *Journal of Institutional Economics*, 10(2), 231–255. <https://doi.org/10.1017/S1744137414000034>
- Boudreaux, C. J. (2018). Ethnic diversity and small business venturing. *Small Business Economics*. <https://doi.org/10.1007/s11187-018-0087-4>
- Boudreaux, C. J. (2019). The Importance of Industry to Strategic Entrepreneurship: Evidence from the Kauffman Firm Survey. *Journal of Industry, Competition and Trade*. <https://doi.org/10.1007/s10842-019-00310-7>
- Boudreaux, C. J., Nikolaev, B. N., & Klein, P. (2019). Socio-cognitive traits and entrepreneurship: The moderating role of economic institutions. *Journal of Business Venturing*, 34(1), 178–196.
- Bournakis, I., Papanastassiou, M., & Pitelis, C. (2018). The impact of multinational and domestic enterprises on regional productivity: Evidence from the UK. *Regional Studies*, 1–12.
- Bradley, S. W., & Klein, P. (2016). Institutions, economic freedom, and entrepreneurship: The contribution of management scholarship. *The Academy of Management Perspectives*, 30(3), 211–221.
- Branstetter, L., Lima, F., Taylor, L. J., & Venâncio, A. (2014). Do entry regulations deter entrepreneurship and job creation? Evidence from recent reforms in Portugal. *The Economic Journal*, 124(577), 805–832.
- Buchanan, J. M. (1984). Politics without romance: A sketch of positive public choice theory and its normative implications. *The Theory of Public Choice II*, 11, 22.
- Calcagno, P. T., & Sobel, R. S. (2014). Regulatory costs on entrepreneurship and establishment employment size. *Small Business Economics*, 42(3), 541–559.
- Caplan, B. (2001). Rational irrationality and the microfoundations of political failure. *Public Choice*, 107(3–4), 311–331.
- Census Bureau, & U.S. Department of Commerce. (2008). *Pollution Abatement Costs and Expenditures: 2005* (No. MA200-2005).
- Chemerinsky, E., Forman, J., Hopper, A., & Kamin, S. (2015). Cooperative Federalism and Marijuana Regulation. *UCLA Law Review*, 62, 74–122.
- Crain, W. M., & Crain, N. V. (2014). *The cost of federal regulation to the US economy, manufacturing and small business*. National Association of Manufacturers.
- Crouch, C., Gales, P. L., Trigilia, C., & Voelzkow, H. (Eds.). (2001). *Local production systems in Europe: Rise or demise?*
- Crouch, C., & Voelzkow, H. (Eds.). (2009). *Innovation in local economies: Germany in comparative context*. Oxford University Press.
- Curtis, E. M., & Decker, R. (2018). *Entrepreneurship and state taxation*. Board of Governors of the Federal Reserve System (US).
- Davis, S. J., Haltiwanger, J., & Schuh, S. (1996). Small business and job creation: Dissecting the myth and reassessing the facts. *Small Business Economics*, 8(4), 297–315. <https://doi.org/10.1007/BF00393278>

- Dean, T. J., & Brown, R. L. (1995). Pollution Regulation as a Barrier to New Firm Entry: Initial Evidence and Implications for Future Research. *Academy of Management Journal*, 38(1), 288–303. <https://doi.org/10.5465/256737>
- Decker, R., Haltiwanger, J., Jarmin, R., & Miranda, J. (2014). The role of entrepreneurship in US job creation and economic dynamism. *Journal of Economic Perspectives*, 28(3), 3–24.
- Dilli, S., Elert, N., & Herrmann, A. M. (2018). Varieties of entrepreneurship: Exploring the institutional foundations of different entrepreneurship types through ‘Varieties-of-Capitalism’ arguments. *Small Business Economics*, 1–28.
- Djankov, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2002). The regulation of entry. *The Quarterly Journal of Economics*, 117(1), 1–37.
- Du, J., & Mickiewicz, T. (2016). Subsidies, rent seeking and performance: Being young, small or private in China. *Journal of Business Venturing*, 31(1), 22–38.
- Estrin, S., Korosteleva, J., & Mickiewicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing*, 28(4), 564–580. <https://doi.org/10.1016/j.jbusvent.2012.05.001>
- Fritsch, M., & Storey, D. J. (2014). *Entrepreneurship in a regional context: Historical roots, recent developments and future challenges*. Routledge.
- Garrett, T. A., & Rhine, R. M. (2011). Economic Freedom and Employment Growth in US States. *Federal Reserve Bank of St. Louis Review*, 93(1), 1–18.
- Gohmann, S. F., Hobbs, B. K., & McCrickard, M. (2008). Economic freedom and service industry growth in the United States. *Entrepreneurship Theory and Practice*, 32(5), 855–874.
- Goldschlag, N., & Tabarrok, A. (2018). Is regulation to blame for the decline in American entrepreneurship? *Economic Policy*, 33(93), 5–44.
- Hall, J. C., & Lawson, R. A. (2014). Economic freedom of the world: An accounting of the literature. *Contemporary Economic Policy*, 32(1), 1–19.
- Hall, J. C., & Sobel, R. S. (2008). Institutions, Entrepreneurship, and Regional Differences in Economic Growth. *Southern Journal of Entrepreneurship*, 1(1).
- Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics*, 95(2), 347–361.
- Hart, D. M. (2001). Antitrust and technological innovation in the US: Ideas, institutions, decisions, and impacts, 1890–2000. *Research Policy*, 30(6), 923–936.
- Hayek, F. A. (1960). *The constitution of liberty*. University of Chicago Press.
- Heckelman, J. C., & Stroup, M. D. (2005). A comparison of aggregation methods for measures of economic freedom. *European Journal of Political Economy*, 21(4), 953–966. <https://doi.org/10.1016/j.ejpoleco.2005.06.001>
- Henrekson, M., & Johansson, D. (2010). Gazelles as job creators: A survey and interpretation of the evidence. *Small Business Economics*, 35(2), 227–244.
- Hirsch, B. T., & Macpherson, D. A. (2003). Union membership and coverage database from the current population survey: Note. *ILR Review*, 56(2), 349–354.
- Holcombe, R. G. (2002). Political entrepreneurship and the democratic allocation of economic resources. *The Review of Austrian Economics*, 15(2–3), 143–159.
- Holcombe, R. G. (2013). Crony capitalism: By-product of big government. *The Independent Review*, 17(4), 541–559.
- Holcombe, R. G., & Boudreaux, C. J. (2015). Regulation and corruption. *Public Choice*, 164(1–2), 75–85. <https://doi.org/10.1007/s11127-015-0263-x>

- Holm, J. R., & Østergaard, C. R. (2015). Regional employment growth, shocks and regional industrial resilience: A quantitative analysis of the Danish ICT sector. *Regional Studies*, 49(1), 95–112.
- Jaffe, A. B., & Palmer, K. (1997). Environmental Regulation and Innovation: A Panel Data Study. *The Review of Economics and Statistics*, 79(4), 610–619. <https://doi.org/10.1162/003465397557196>
- Jha, A., & Cox, J. (2015). Corporate social responsibility and social capital. *Journal of Banking & Finance*, 60, 252–270. <https://doi.org/10.1016/j.jbankfin.2015.08.003>
- Kim, P. H., Wennberg, K., & Croidieu, G. (2016). Untapped riches of meso-level applications in multilevel entrepreneurship mechanisms. *The Academy of Management Perspectives*, 30(3), 273–291.
- Kreft, S. F., & Sobel, R. S. (2005). Public Policy, Entrepreneurship, and Economic Freedom. *Cato Journal*, 25, 595.
- Kunapatarawong, R., & Martínez-Ros, E. (2016). Towards green growth: How does green innovation affect employment? *Research Policy*, 45(6), 1218–1232.
- Lederman, D., Loayza, N. V., & Soares, R. R. (2005). Accountability and corruption: Political institutions matter. *Economics & Politics*, 17(1), 1–35.
- Lemos, M. H. (2011). State Enforcement of Federal Law. *New York University Law Review*, 86(June), 698–765.
- Lerner, J. (2009). *Boulevard of broken dreams: Why public efforts to boost entrepreneurship and venture capital have failed—and what to do about it*. Princeton University Press.
- Lihn, J., & Bjørnskov, C. (2017). Economic freedom and veto players jointly affect entrepreneurship. *Journal of Entrepreneurship and Public Policy*, 6(3), 340–358. <https://doi.org/10.1108/JEPP-D-17-00007>
- Macey, J. R. (1990). Federal deference to local regulators and the economic theory of regulation: Toward a public-choice explanation of federalism. *Virginia Law Review*, 265–291.
- McDonald, J. F. (1989). Econometric studies of urban population density: A survey. *Journal of Urban Economics*, 26, 361–385.
- McMullen, J. S., Bagby, D. R., & Palich, L. E. (2008). Economic Freedom and the Motivation to Engage in Entrepreneurial Action. *Entrepreneurship Theory and Practice*, 32(5), 875–895. <https://doi.org/10.1111/j.1540-6520.2008.00260.x>
- Meehan, B., & Benson, B. L. (2015). The occupations of regulators influence occupational regulation: Evidence from the US private security industry. *Public Choice*, 162(1–2), 97–117.
- Mulholland, S. E., & Hernández-Julián, R. (2013). Does economic freedom lead to selective migration by education? *Journal of Regional Analysis & Policy*, 43(1), 65.
- Mulligan, C. B., & Shleifer, A. (2005). The Extent of the Market and the Supply of Regulation. *The Quarterly Journal of Economics*, 120(4), 1445–1473.
- Murphy, K. M., Shleifer, A., & Vishny, R. W. (1993). Why is rent-seeking so costly to growth? *The American Economic Review*, 83(2), 409–414.
- Nifo, A., & Vecchione, G. (2014). Do institutions play a role in skilled migration? The case of Italy. *Regional Studies*, 48(10), 1628–1649.
- Nikolaev, B., Boudreaux, C. J., & Palich, L. E. (2018). Cross-Country Determinants of Early Stage Necessity and Opportunity-Motivated Entrepreneurship: Accounting for Model Uncertainty. *Journal of Small Business Management*. <https://doi.org/10.1111/jsbm.12400>

- Nyström, K. (2008). The institutions of economic freedom and entrepreneurship: Evidence from panel data. *Public Choice*, 136(3–4), 269–282.
- Ozer-Balli, H., & Sørensen, B. E. (2013). Interaction effects in econometrics. *Empirical Economics*, 45(1), 583–603. <https://doi.org/10.1007/s00181-012-0604-2>
- Peltzman, S. (1976). Toward a more general theory of regulation. *The Journal of Law and Economics*, 19(2), 211–240.
- Qian, Y., & Weingast, B. R. (1996). China's transition to markets: Market-preserving federalism, Chinese style. *The Journal of Policy Reform*, 1(2), 149–185.
- Qian, Y., & Weingast, B. R. (1997). Federalism as a commitment to reserving market incentives. *Journal of Economic Perspectives*, 11(4), 83–92.
- Revesz, R. L. (2001). Federalism and Environmental Regulation: A Public Choice Analysis. *Harvard Law Review*, 115(2), 553–641. <https://doi.org/10.2307/1342673>
- Riker, W. H. (1964). Some ambiguities in the notion of power. *American Political Science Review*, 58(2), 341–349.
- Rodríguez-Pose, A. (2013). Do institutions matter for regional development? *Regional Studies*, 47(7), 1034–1047.
- Rosenthal, S. S., & Strange, W. C. (2004). Chapter 49—Evidence on the Nature and Sources of Agglomeration Economies. In J. V. Henderson & J.-F. Thisse (Eds.), *Handbook of Regional and Urban Economics* (Vol. 4, pp. 2119–2171). Elsevier. [https://doi.org/10.1016/S1574-0080\(04\)80006-3](https://doi.org/10.1016/S1574-0080(04)80006-3)
- Ryan, S. P. (2012). The costs of environmental regulation in a concentrated industry. *Econometrica*, 80(3), 1019–1061.
- Schröder, M., & Voelzkow, H. (2016). Varieties of regulation: How to combine sectoral, regional and national levels. *Regional Studies*, 50(1), 7–19.
- Sobel, R. S. (2008). Testing Baumol: Institutional quality and the productivity of entrepreneurship. *Journal of Business Venturing*, 23(6), 641–655.
- Sorens, J. (2010). The institutions of fiscal federalism. *Publius: The Journal of Federalism*, 41(2), 207–231.
- Sorens, J. (2014). Does fiscal federalism promote regional inequality? An empirical analysis of the OECD, 1980–2005. *Regional Studies*, 48(2), 239–253.
- Staiger, D., & Stock, J. H. (1997). Instrumental variables regression with weak instruments. *Econometrica; Evanston*, 65(3), 557–586.
- Stam, E. (2015). Entrepreneurial ecosystems and regional policy: A sympathetic critique. *European Planning Studies*, 23(9), 1759–1769.
- Stansel, D., Torra, J., & McMahon, F. (2017). *Economic Freedom of North America*. Fraser Institute Vancouver. <https://www.fraserinstitute.org/studies/economic-freedom-of-the-world-2017-annual-report>
- Stigler, G. J. (1971). The theory of economic regulation. *The Bell Journal of Economics and Management Science*, 3–21.
- Tarabar, D., & Young, A. T. (2017). Liberalizing reforms and the European Union: Accession, membership, and convergence. *Southern Economic Journal*, 83(4), 932–951.
- Teague, M. (2016). Barriers to entry index: A ranking of starting a business difficulties for the United States. *Journal of Entrepreneurship and Public Policy*, 5(3), 285–307. <https://doi.org/10.1108/JEPP-02-2016-0007>
- Thurik, A. R., Stam, E., & Audretsch, D. B. (2013). The rise of the entrepreneurial economy and the future of dynamic capitalism. *Technovation*, 33(8–9), 302–310.

- Tomlinson, P. R., & Branston, R. J. (2017). Firms, governance and development in industrial districts. *Regional Studies*, 1–13.
- Tullock, G. (1967). The Welfare Costs of Tariffs, Monopolies, and Theft. *Economic Inquiry*, 5(3), 224–232. <https://doi.org/10.1111/j.1465-7295.1967.tb01923.x>
- Vogelsang, I. (2002). Incentive regulation and competition in public utility markets: A 20-year perspective. *Journal of Regulatory Economics*, 22(1), 5–27.
- Voss, G. B., & Voss, Z. G. (2008). Competitive density and the customer acquisition–retention trade-off. *Journal of Marketing*, 72(6), 3–18.
- Weingast, B. R. (1995). The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development. *Journal of Law, Economics, & Organization*, 11(1), 1–31.
- Wennberg, K., Pathak, S., & Autio, E. (2013). How culture moulds the effects of self-efficacy and fear of failure on entrepreneurship. *Entrepreneurship & Regional Development*, 25(9–10), 756–780.
- Williamson, O. E. (1994). The institutions and governance of economic development and reform. *The World Bank Economic Review*, 8(suppl_1), 171–197.
- Wooldridge, J. (2002). *Econometric Analysis of Cross Section and Panel Data. Econometric Analysis of Cross Section and Panel Data.*

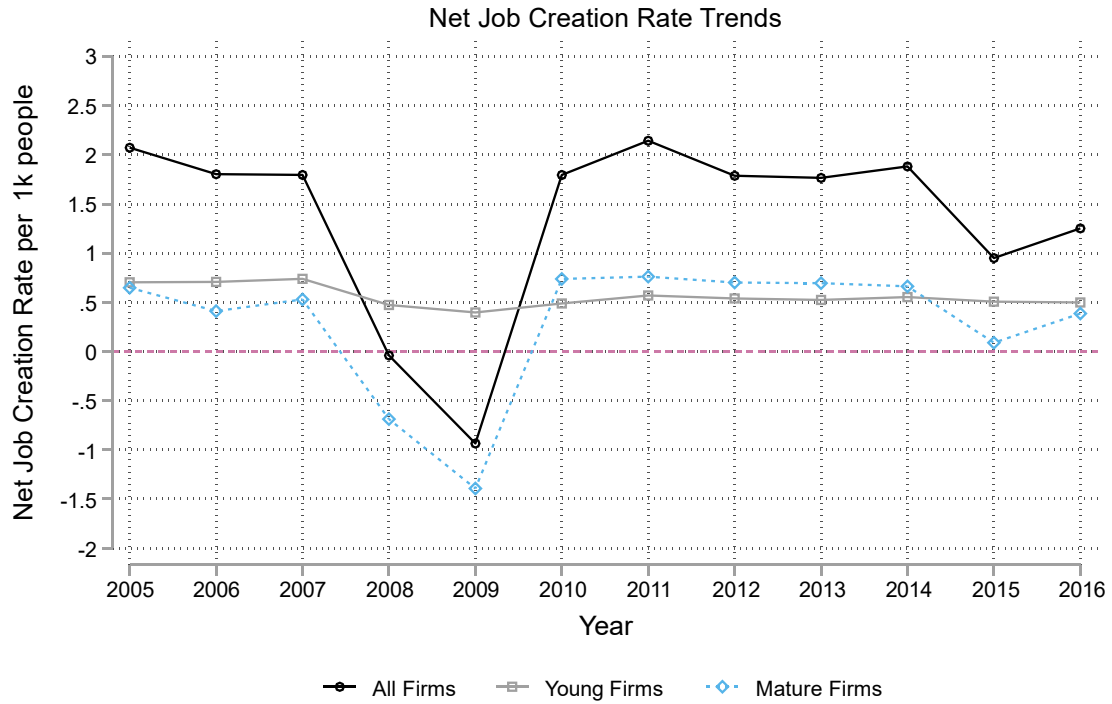


Figure 1. Net Job Creation in the US, 2004–2016

Note: County-sector employment averages based on data from the Census Bureau's Quarterly Workforce Indicators (QWI), used to construct our net job creation measure. Denominator is two-year moving average of county employment (source: County Business Patterns, Census Bureau).

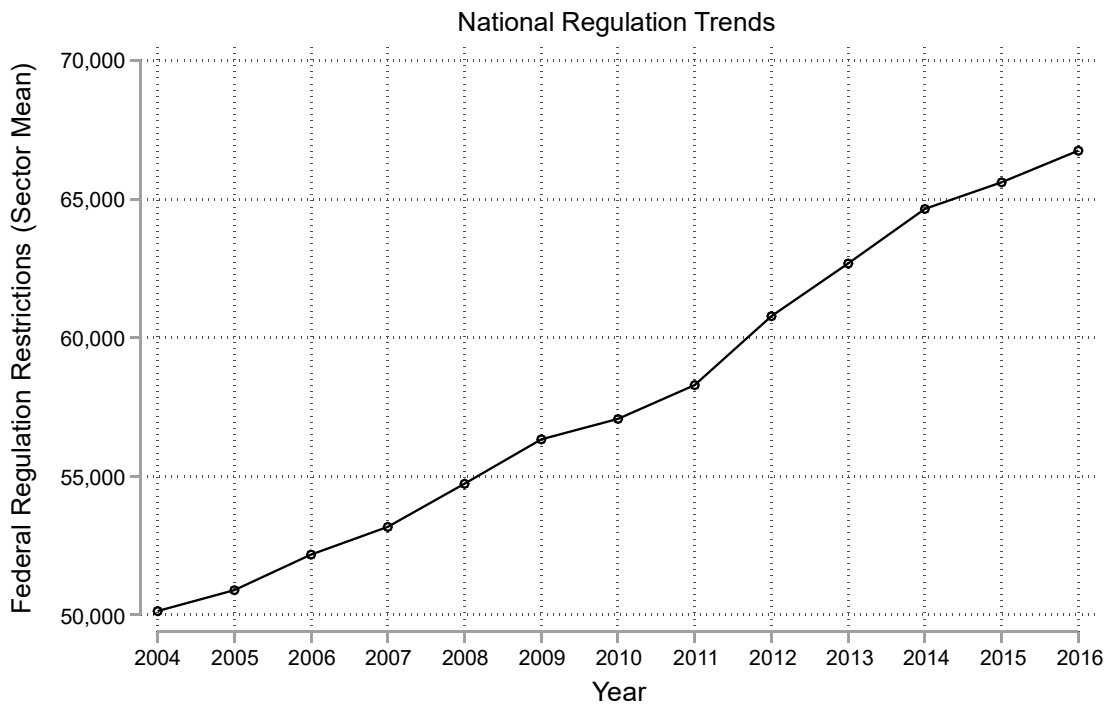


Figure 2. Federal Regulations in the US, 2004–2016

Note: RegData obtained from QuantGov database (Al-Ubaydli & McLaughlin, 2017).

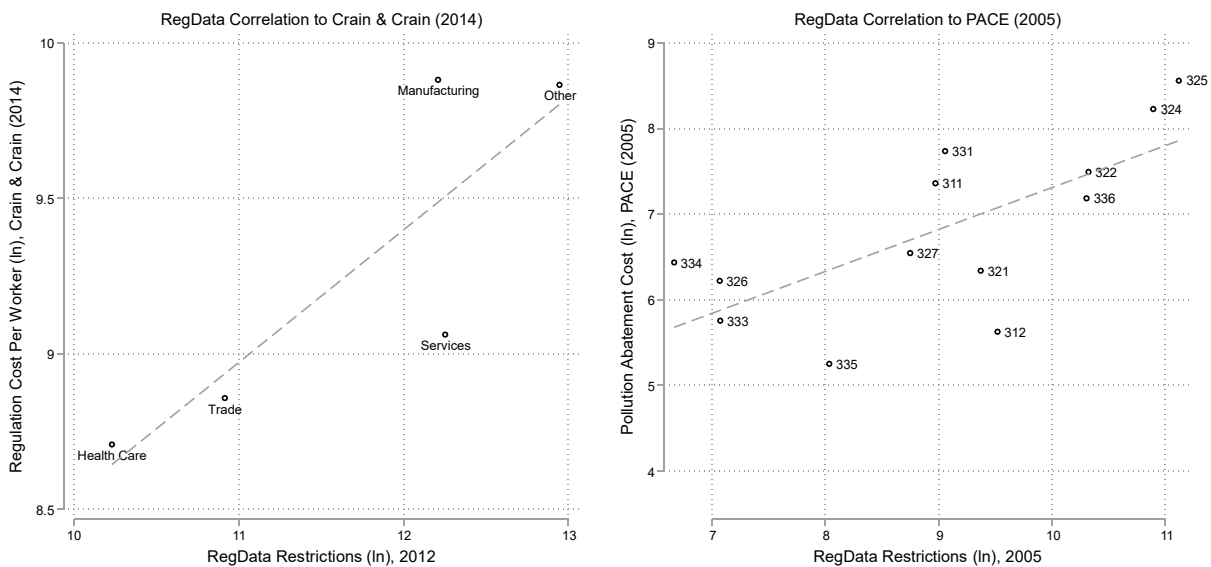


Figure 3. RegData Comparison with Other Regulatory Measures

Note: Data sources include Al-Ubaydli & McLaughlin (2017), Crain & Crain (2014), and Census Bureau and Department of Commerce (2008)

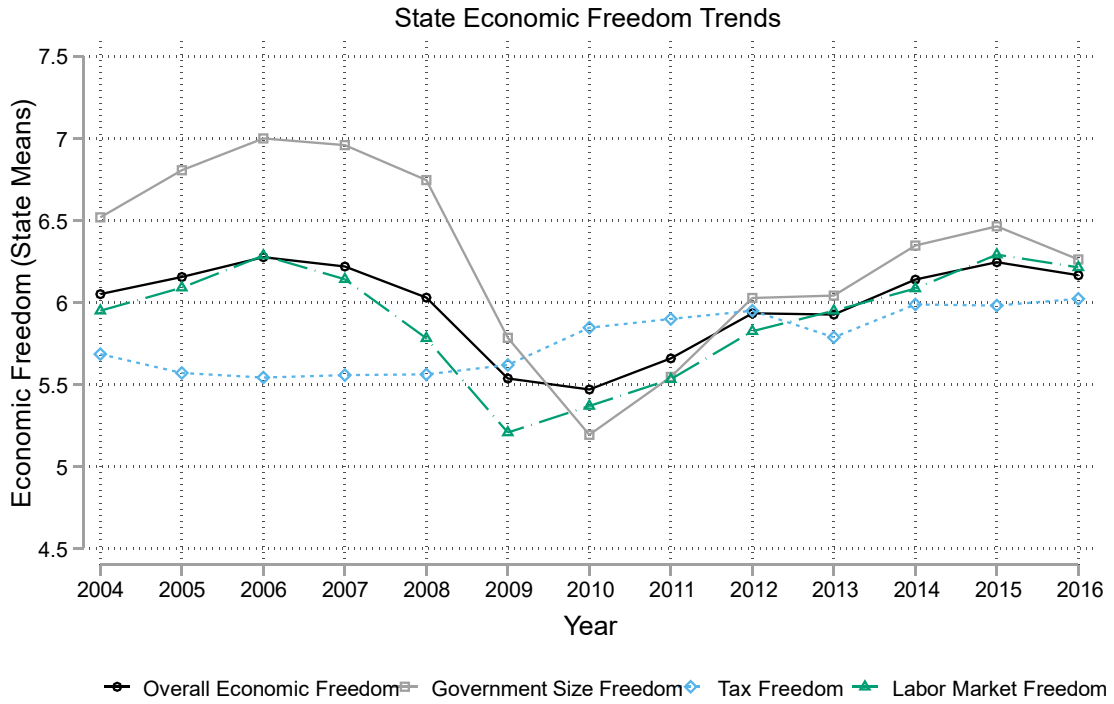


Figure 4. Economic Freedom in the US, 2004–2016

Note: Economic freedom measured using the Economic Freedom of North America 2018 index by the Fraser Institute.

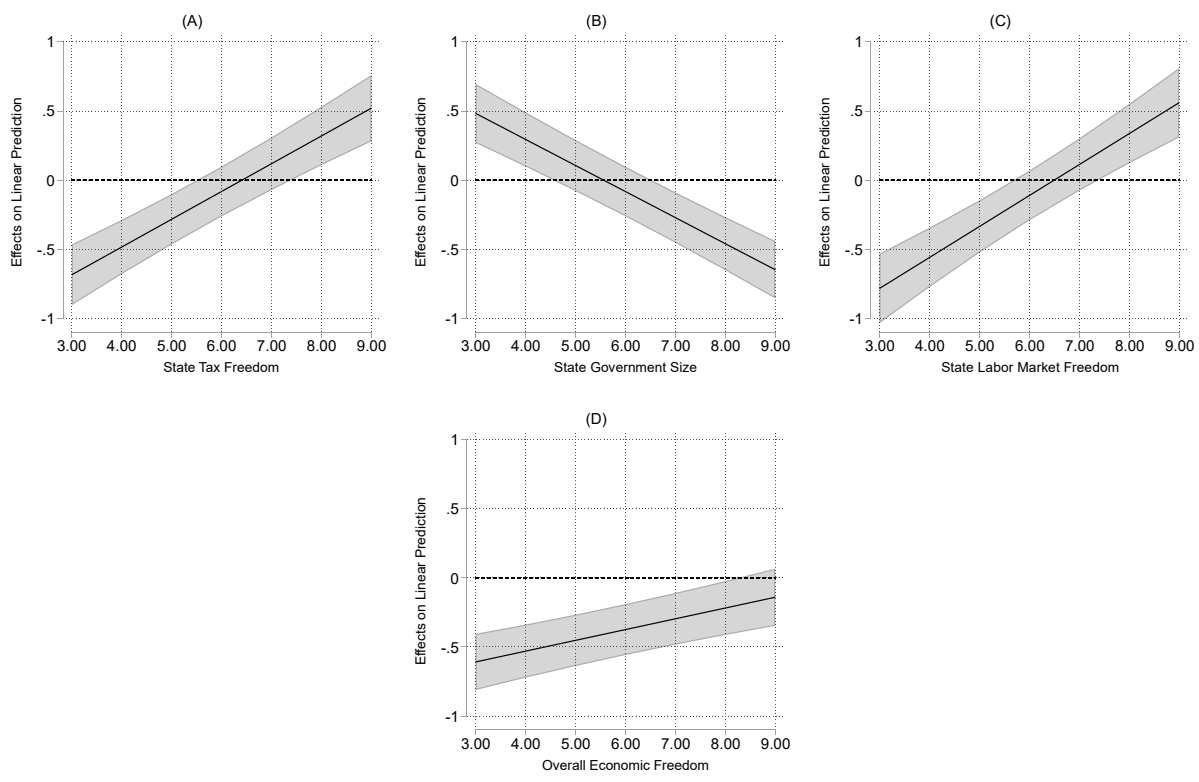


Figure 5. Marginal Effects of Regulation Over Economic Freedom Components
Note: Plotted marginal effects predicted for a 100 percent change in regulation. In text discussion transforms this to reflect the marginal effect of a one percent change (i.e., dividing by 100). Panels A, B, and C present economic freedom subcomponent effects, derived from Table 3 Model 6; panel D represents the overall effect of economic freedom (Table 3 Model 5).

Table 1. Summary Statistics

Variable	Count	Mean	Median	SD	Min	Max
<u>Net Job Creation</u>						
All Firms	496,623	1.36	0.18	26.66	-3000.00	10666.67
0-1 Year Old Firms	496,623	0.56	0.00	8.04	-666.67	4666.67
>10 Year Old Firms	496,623	0.30	0.00	19.55	-4515.15	5333.33
<u>National Regulation</u>						
Regulation Restrictions	500,733	62288.54	46825.93	47560.30	5398.61	217759.45
Regulation Restrictions (ln)	500,733	10.73	10.75	0.84	8.59	12.29
Regulation Words	500,733	5784718.19	4449618.50	4318374.56	542912.06	19608548.00
Regulation Words (ln)	500,733	15.27	15.31	0.83	13.20	16.79
<u>State Economic Freedom</u>						
Economic Freedom (Overall)	500,733	6.16	6.24	0.93	3.64	8.05
Tax Freedom	500,733	5.93	5.96	0.87	2.95	8.20
Government Size	500,733	6.49	6.65	1.54	0.00	9.54
Labor Market Freedom	500,733	6.04	6.03	0.98	3.39	8.67
Median Household Income	500,512	10.67	10.66	0.25	9.73	11.81
Poverty Rate (ln)	500,512	2.71	2.72	0.39	0.88	4.13
County Population (ln)	500,733	10.34	10.22	1.43	4.11	16.13
Unemployment Rate (ln)	500,239	1.82	1.81	0.42	0.11	3.36
Establishments Per Capita (ln)	500,282	-3.82	-3.82	0.35	-5.67	-2.15
Union Membership Rate	500,733	2.09	2.08	0.55	0.47	3.26
Oil Production (MMb) (ln)	500,733	1.80	1.07	2.12	0.00	7.14
State Gov't Operating Ratio	500,733	1.03	1.04	0.12	0.44	1.48

Notes: Unadjusted, uncentered values reported here for years 2005 – 2016. Net job creation variables calculated following Davis, Haltiwanger, and Shuh (1996) with a denominator of moving average per 1,000 employed persons.

Table 2. Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) Net Job Creation	1.00																
(2) 0-1 Year Old Firms	0.52	1.00															
(3) >10 Year Old Firms	0.80	0.28	1.00														
(4) Regulation Restrictions	-0.01	0.00	-0.01	1.00													
(5) Regulation Words	-0.01	0.00	-0.01	0.98	1.00												
(6) Economic Freedom Overall	0.01	0.01	0.01	0.01	0.01	1.00											
(7) Tax Freedom	0.01	0.00	0.01	0.03	0.03	0.65	1.00										
(8) Government Size	0.01	0.01	0.00	-0.01	-0.01	0.91	0.37	1.00									
(9) Labor Market Freedom	0.01	0.01	0.01	0.01	0.01	0.85	0.38	0.69	1.00								
(10) Median Household Income	0.01	0.01	0.01	0.03	0.03	-0.05	-0.14	-0.05	0.06	1.00							
(11) Poverty Rate (ln)	-0.01	-0.01	-0.01	0.02	0.03	0.00	0.23	-0.07	-0.09	-0.80	1.00						
(12) County Population (ln)	-0.01	0.00	-0.00	-0.02	-0.02	-0.18	-0.17	-0.18	-0.09	0.40	-0.15	1.00					
(13) Unemployment rate (ln)	-0.02	-0.01	-0.02	0.01	0.01	-0.41	-0.00	-0.47	-0.43	-0.33	0.49	0.12	1.00				
(14) Establishments per capita (ln)	-0.00	-0.01	0.00	-0.01	-0.02	0.02	-0.15	0.09	0.03	0.32	-0.46	-0.03	-0.41	1.00			
(15) Union Membership Rate (ln)	-0.01	-0.01	-0.00	-0.02	-0.02	-0.61	-0.49	-0.45	-0.62	0.23	-0.29	0.15	0.06	0.18	1.00		
(16) Annual Oil Production (MMb) (ln)	0.01	0.01	0.00	0.00	0.00	0.15	0.27	0.07	0.09	-0.06	0.12	-0.14	-0.11	0.01	-0.18	1.00	
(17) State Government Operating Ratio	0.03	0.01	0.03	-0.01	-0.02	0.13	0.01	0.13	0.17	-0.04	-0.06	-0.08	-0.28	0.10	-0.03	0.06	1.00

Notes: All correlations exceeding 0.002 and below 0 are statistically significant at conventional levels ($p < 0.05$) with Bonferroni adjustment. Global mean-centered variables except for net job creation and state economic freedom variables.

Table 3. National Regulation, State Economic Freedom, and Net Job Creation Results: All Firms

DV: Net Job Creation (DHS)	(1)	(2)	(3)	(4)	(5)	(6)
<i>Controls</i>						
Median Household Income	-9.481*** (2.764)	-9.487*** (2.764)	-9.211*** (2.836)	-3.787*** (0.461)	-3.762*** (0.462)	-3.367*** (0.470)
Poverty rate	0.246 (1.776)	0.249 (1.775)	0.290 (1.795)	0.790*** (0.193)	0.801*** (0.193)	0.769*** (0.191)
Population	-9.426*** (2.935)	-9.445*** (2.937)	-9.697*** (2.884)	-1.770*** (0.541)	-1.845*** (0.542)	-1.992*** (0.531)
Unemployment rate	-4.837*** (0.547)	-4.839*** (0.546)	-4.881*** (0.541)	-2.542*** (0.156)	-2.548*** (0.156)	-2.631*** (0.153)
Establishments per capita	-8.559 (5.985)	-8.560 (5.985)	-8.369 (6.039)	-1.180 (0.719)	-1.127 (0.734)	-0.508 (0.750)
Union Membership rate	0.565* (0.251)	0.561* (0.252)	0.313 (0.270)	0.407*** (0.116)	0.404*** (0.116)	0.476*** (0.117)
Annual Oil Production	-0.617*** (0.227)	-0.619*** (0.227)	-0.640*** (0.221)	-0.516*** (0.081)	-0.526*** (0.082)	-0.586*** (0.081)
State Government Operating Ratio	0.466 (0.544)	0.462 (0.543)	0.743 (0.592)	0.144 (0.270)	0.148 (0.269)	0.552* (0.280)
<i>National Regulation</i>						
Regulation Restrictions (ln)	-0.152 (0.197)	-0.442 (0.353)	-1.086*** (0.313)	-0.393*** (0.096)	-0.843*** (0.130)	-1.426*** (0.167)
<i>State Economic Freedom</i>						
Economic Freedom (Overall)	0.275 (0.172)	0.274 (0.172)		0.489*** (0.072)	0.490*** (0.072)	
Tax Freedom			0.387* (0.155)			0.527*** (0.069)
Government Size			0.055 (0.092)			-0.067+ (0.035)
Labor Market Freedom			-0.149 (0.208)			0.213*** (0.050)
<i>Interactions</i>						
Regulation Restrictions x Economic Freedom		0.047 (0.042)			0.078*** (0.015)	
Regulation Restrictions x Tax Freedom			0.206*** (0.062)			0.201*** (0.024)
Regulation Restrictions x Government Size			-0.131* (0.062)			-0.189*** (0.019)
Regulation Restrictions x Labor Market Freedom			0.129+ (0.067)			0.224*** (0.030)
Constant	0.070 (1.076)	0.080 (1.077)	0.178 (1.306)	2.992* (1.384)	3.166* (1.380)	2.619+ (1.365)
Weighted?	No	No	No	Yes	Yes	Yes
Observations	496428	496428	496428	496210	496210	496210
Counties	3137.00	3137.00	3137.00	3132.00	3132.00	3132.00
Log Likelihood	-2323131.38	-2323130.89	-2323117.80	-1613078.68	-1613048.16	-1612745.19

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. Columns 1–3 are unweighted and columns 4–6 are weighted by 2004 county employment. We estimate all models using linear regression that include county, industry, and year fixed effects. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4. Restrictions per Job Estimates Across the Economic Freedom Spectrum

Economic Freedom Component Levels	Marginal Effect of 1% Increase in Regulation	Restrictions per Job	
		Estimate	% of Standard Deviation
3	-0.0061***	-313	0.7%
4	-0.0053***	-360	0.8%
5	-0.0045***	-424	0.9%
6	-0.0037***	-516	1.1%
7	-0.0030**	-636	1.4%
8	-0.0022*	-867	1.9%
9	-0.0014	-1,363	2.9%

Notes: Marginal effects calculated from Model 5 of Table 3, evaluated at Economic Freedom index values reported in column 1 above. Restrictions-per-job estimate calculated based on 1% change from the weighted median restriction score (45,881.13) for the weighted median county (population 240,424).

Table 5. Results for Young and Mature Firms.

DV: Net Job Creation (DHS)	Young			Mature		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Controls</i>						
Median Household Income	-0.935 (0.689)	-0.931 (0.689)	-0.951 (0.711)	-5.490*** (1.606)	-5.501*** (1.606)	-5.272*** (1.649)
Poverty rate	-0.514 (0.554)	-0.515 (0.554)	-0.525 (0.559)	0.895 (0.898)	0.900 (0.897)	0.947 (0.907)
Population	-0.927 (0.765)	-0.915 (0.766)	-0.872 (0.736)	-5.610*** (1.569)	-5.644*** (1.569)	-5.891*** (1.552)
Unemployment rate	-0.320*** (0.088)	-0.319*** (0.088)	-0.318*** (0.090)	-3.389*** (0.453)	-3.393*** (0.453)	-3.423*** (0.447)
Establishments per capita	-0.659 (1.332)	-0.658 (1.332)	-0.668 (1.350)	-3.246 (2.768)	-3.247 (2.768)	-3.098 (2.796)
Union Membership rate	0.086+ (0.047)	0.088+ (0.047)	0.149*** (0.051)	0.345 (0.236)	0.338 (0.237)	0.073 (0.235)
Annual Oil Production	-0.004 (0.038)	-0.002 (0.038)	-0.012 (0.040)	-0.384*** (0.125)	-0.389*** (0.125)	-0.390*** (0.130)
State Government Operating Ratio	0.292+ (0.170)	0.294+ (0.170)	0.318+ (0.180)	0.132 (0.582)	0.126 (0.582)	0.295 (0.566)
<i>National Regulation</i>						
Regulation Restrictions (ln)	0.080+ (0.046)	0.269*** (0.068)	0.267*** (0.069)	-0.333* (0.153)	-0.839*** (0.244)	-1.391*** (0.208)
<i>State Economic Freedom</i>						
Economic Freedom (Overall)	0.064* (0.032)	0.065* (0.032)		0.113 (0.117)	0.110 (0.117)	
Tax Freedom			0.027 (0.029)			0.233+ (0.128)
Gov't Size Freedom			-0.007 (0.012)			0.056 (0.065)
Labor Market Freedom			0.085 (0.054)			-0.227+ (0.121)
<i>Interactions</i>						
Regulation Restrictions x Economic Freedom		-0.031*** (0.006)			0.083*** (0.028)	
Regulation Restrictions x Tax Freedom			-0.006 (0.005)			0.194*** (0.048)
Regulation Restrictions x Government Size			-0.008 (0.005)			-0.097* (0.045)
Regulation Restrictions x			-0.017* (0.008)			0.121* (0.056)
Constant	0.584*** (0.201)	0.578*** (0.201)	0.347 (0.281)	-0.809 (0.783)	-0.791 (0.783)	-0.359 (0.917)
Observations	496428	496428	496428	496428	496428	496428
Counties	3137.00	3137.00	3137.00	3137.00	3137.00	3137.00
Log Likelihood	-1731520	-1731517.7	-1731516.6	-2175479.1	-2175476.3	-2175458.4

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. We estimate all models using linear regression that include county, industry, and year fixed effects. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6. Results for Metro and Non-Metro Firms

DV: Net Job Creation (DHS)	Metro			Nonmetro		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Controls</i>						
Median Household Income	-1.699 (1.262)	-1.693 (1.262)	-1.045 (1.393)	-4.995*** (0.646)	-4.998*** (0.646)	-4.788*** (0.661)
Poverty rate	0.952+ (0.551)	0.958+ (0.550)	1.004+ (0.556)	0.891*** (0.328)	0.894*** (0.328)	0.934*** (0.330)
Population	-3.798*** (1.254)	-3.853*** (1.261)	-4.200*** (1.232)	-8.040*** (1.288)	-8.067*** (1.285)	-8.346*** (1.298)
Unemployment rate	-3.073*** (0.511)	-3.082*** (0.512)	-3.145*** (0.502)	-4.061*** (0.268)	-4.063*** (0.268)	-4.073*** (0.269)
Establishments per capita	-3.730+ (2.209)	-3.728+ (2.209)	-3.078 (2.318)	-4.195*** (0.978)	-4.196*** (0.978)	-3.953*** (0.987)
Union Membership rate	0.236 (0.253)	0.228 (0.254)	-0.096 (0.314)	0.605*** (0.178)	0.603*** (0.178)	0.467*** (0.178)
Annual Oil Production	-0.548*** (0.149)	-0.552*** (0.149)	-0.617*** (0.159)	-0.240*** (0.093)	-0.241*** (0.093)	-0.288*** (0.095)
State Government Operating Ratio	0.369 (0.658)	0.369 (0.657)	0.926 (0.652)	0.387 (0.402)	0.386 (0.401)	0.561 (0.413)
<i>National Regulation</i>						
Regulation Restrictions (ln)	-0.965*** (0.271)	-1.502*** (0.419)	-1.930*** (0.320)	0.380 (0.271)	0.212 (0.526)	-0.529 (0.486)
<i>State Economic Freedom</i>						
Economic Freedom (Overall)	0.327* (0.163)	0.325* (0.162)		0.190 (0.252)	0.189 (0.252)	
Tax Freedom			0.776*** (0.196)			0.220 (0.203)
Government Size			-0.078 (0.084)			0.134 (0.137)
Labor Market Freedom			-0.178 (0.168)			-0.296 (0.297)
<i>Interactions</i>						
Regulation Restrictions x Economic Freedom		0.089* (0.036)			0.027 (0.067)	
Regulation Restrictions x Tax Freedom			0.261*** (0.057)			0.193* (0.091)
Regulation Restrictions x Government Size			-0.097 (0.086)			-0.132 (0.082)
Regulation Restrictions x Labor Market Freedom			0.044 (0.140)			0.139+ (0.071)
Constant	3.811* (1.501)	3.884*** (1.502)	3.525* (1.629)	-12.226*** (4.132)	-12.226*** (4.132)	-11.589*** (4.258)
Observations	189915	189915	189915	306513	306513	306513
Counties	1164.00	1164.00	1164.00	1973.00	1973.00	1973.00
Log Likelihood	-802515.79	-802514.03	-802495.21	-1482501.27	-1482501.20	-1482495.24

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. We estimate all models using linear regression that include county, industry, and year fixed effects. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 7. Alternative Measure of Regulation Results (Regulatory Words)

DV: Net Job Creation (DHS)	All Firms		Young Firms		Mature Firms		Metro Counties		Nonmetro Counties	
<i>Controls</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Median Household Income	-9.486*** (2.765)	-9.207*** (2.838)	-0.930 (0.689)	-0.950 (0.712)	-5.502*** (1.606)	-5.270*** (1.650)	-1.692 (1.262)	-1.045 (1.393)	-11.441*** (3.628)	-11.212*** (3.690)
Poverty rate	0.249 (1.774)	0.287 (1.796)	-0.516 (0.554)	-0.527 (0.559)	0.901 (0.897)	0.948 (0.907)	0.959+ (0.550)	1.004+ (0.556)	-0.513 (2.922)	-0.474 (2.940)
Population	-9.451*** (2.942)	-9.708*** (2.887)	-0.912 (0.768)	-0.871 (0.737)	-5.653*** (1.571)	-5.905*** (1.553)	-3.858*** (1.262)	-4.209*** (1.233)	-19.501*** (6.140)	-19.888*** (6.089)
Unemployment rate	-4.840*** (0.546)	-4.883*** (0.541)	-0.318*** (0.088)	-0.318*** (0.090)	-3.394*** (0.452)	-3.425*** (0.446)	-3.082*** (0.512)	-3.147*** (0.502)	-5.435*** (0.719)	-5.484*** (0.723)
Establishments per capita	-8.560 (5.985)	-8.369 (6.040)	-0.658 (1.332)	-0.668 (1.350)	-3.248 (2.768)	-3.098 (2.797)	-3.729+ (2.210)	-3.078 (2.318)	-9.983 (7.924)	-9.888 (7.955)
Union Membership rate	0.560* (0.252)	0.314 (0.270)	0.089+ (0.047)	0.148*** (0.051)	0.337 (0.237)	0.073 (0.235)	0.228 (0.254)	-0.094 (0.314)	0.605+ (0.349)	0.254 (0.357)
Annual Oil Production	-0.619*** (0.227)	-0.642*** (0.221)	-0.002 (0.038)	-0.011 (0.041)	-0.390*** (0.125)	-0.393*** (0.130)	-0.553*** (0.149)	-0.618*** (0.159)	-0.457 (0.299)	-0.435 (0.288)
State Government Operating Ratio	0.462 (0.543)	0.744 (0.590)	0.294+ (0.170)	0.317+ (0.180)	0.125 (0.582)	0.298 (0.565)	0.369 (0.657)	0.933 (0.651)	0.270 (0.729)	0.424 (0.811)
<i>National Regulation</i>										
Regulation Words (ln)	-0.567 (0.383)	-1.141*** (0.340)	0.203*** (0.078)	0.212*** (0.078)	-0.842*** (0.233)	-1.356*** (0.198)	-1.163*** (0.370)	-1.559*** (0.290)	-0.225 (0.601)	-0.859 (0.550)
<i>State Economic Freedom</i>										
Economic Freedom (Overall)	0.273 (0.172)		0.066* (0.032)		0.110 (0.117)		0.324* (0.162)		0.189 (0.252)	
Tax Freedom		0.387* (0.156)		0.028 (0.030)		0.231+ (0.128)		0.776*** (0.196)		0.220 (0.203)
Government Size		0.054 (0.092)		-0.007 (0.012)		0.055 (0.066)		-0.080 (0.084)		0.133 (0.137)
Labor Market Freedom		-0.147 (0.209)		0.084 (0.054)		-0.224+ (0.121)		-0.175 (0.168)		-0.295 (0.298)
<i>Interactions</i>										
Regulation Words x Economic Freedom	0.044 (0.047)		-0.032*** (0.008)		0.084*** (0.029)		0.078* (0.035)		0.030 (0.078)	
Regulation Words x Tax Freedom		0.167*** (0.064)		-0.018*** (0.006)		0.179*** (0.048)		0.234*** (0.051)		0.152 (0.096)
Regulation Words x Government Size		-0.133* (0.064)		-0.009+ (0.005)		-0.098* (0.044)		-0.109 (0.076)		-0.126 (0.087)
Regulation Words x Labor Market Freedom		0.155* (0.065)		-0.008 (0.008)		0.132* (0.052)		0.071 (0.121)		0.157* (0.078)
Constant	0.101 (1.073)	0.165 (1.299)	0.568*** (0.198)	0.337 (0.278)	-0.749 (0.782)	-0.345 (0.914)	4.000*** (1.500)	3.611* (1.621)	-12.265*** (4.132)	-11.658*** (4.259)
Observations	496428	496428	496428	496428	496428	496428	189915	189915	306513	306513
Counties	3137.00	3137.00	3137.00	3137.00	3137.00	3137.00	1164.00	1164.00	1973.00	1973.00
Log-likelihood	-2323130.65	-2323119.22	-1731517.71	-1731516.61	-2175476.00	-2175459.37	-802514.66	-802497.12	-1482501.34	-1482496.40

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. We estimate all models using linear regression that include county, industry, and year fixed effects. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 8. Instrumental Variable 1: All Other Industry Regulation Results

DV: Net Job Creation (DHS)	All Firms		Young Firms		Mature Firms		Metro Counties		Nonmetro Counties	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Controls</i>										
Median Household Income	-9.473*** (2.769)	-9.165*** (2.836)	-0.931 (0.691)	-0.943 (0.711)	-5.479*** (1.607)	-5.240*** (1.648)	-1.695 (1.259)	-1.036 (1.392)	-11.418*** (3.634)	-11.140*** (3.686)
Poverty rate	0.245 (1.770)	0.311 (1.786)	-0.515 (0.553)	-0.517 (0.557)	0.892 (0.895)	0.944 (0.904)	0.955+ (0.548)	1.025+ (0.552)	-0.518 (2.917)	-0.464 (2.930)
Population	-9.430*** (2.951)	-9.762*** (2.903)	-0.918 (0.772)	-0.878 (0.739)	-5.596*** (1.571)	-5.899*** (1.554)	-3.834*** (1.263)	-4.246*** (1.228)	-19.466*** (6.145)	-19.979*** (6.110)
Unemployment rate	-4.836*** (0.544)	-4.884*** (0.541)	-0.319*** (0.088)	-0.317*** (0.090)	-3.385*** (0.451)	-3.423*** (0.446)	-3.078*** (0.515)	-3.143*** (0.501)	-5.430*** (0.717)	-5.490*** (0.722)
Establishments per capita	-8.560 (5.986)	-8.363 (6.039)	-0.658 (1.332)	-0.666 (1.350)	-3.246 (2.769)	-3.094 (2.797)	-3.725+ (2.209)	-3.055 (2.320)	-9.981 (7.924)	-9.885 (7.954)
Union Membership rate	0.564* (0.255)	0.317 (0.270)	0.087+ (0.048)	0.149*** (0.051)	0.348 (0.238)	0.074 (0.235)	0.228 (0.255)	-0.098 (0.314)	0.613+ (0.353)	0.260 (0.357)
Annual Oil Production	-0.615*** (0.227)	-0.651*** (0.224)	-0.002 (0.039)	-0.014 (0.041)	-0.381*** (0.125)	-0.390*** (0.131)	-0.550*** (0.149)	-0.624*** (0.160)	-0.450 (0.298)	-0.454 (0.294)
State Government Operating Ratio	0.465 (0.540)	0.813 (0.596)	0.293+ (0.171)	0.332+ (0.180)	0.135 (0.581)	0.322 (0.569)	0.369 (0.657)	0.939 (0.647)	0.280 (0.724)	0.518 (0.822)
<i>National Regulation</i>										
Regulation restrictions (ln)	-1.168 (0.955)	-3.244*** (0.853)	0.130 (0.195)	0.014 (0.178)	-0.783 (0.579)	-2.129*** (0.514)	-2.375*** (0.777)	-3.782*** (0.616)	-0.250 (1.444)	-2.830* (1.365)
<i>State Economic Freedom</i>										
Economic Freedom (Overall)	0.275 (0.171)		0.065* (0.032)		0.115 (0.116)		0.326* (0.162)		0.193 (0.250)	
Tax Freedom		0.375* (0.155)		0.023 (0.030)		0.236+ (0.127)		0.763*** (0.193)		0.214 (0.201)
Government Size		0.052 (0.093)		-0.007 (0.012)		0.056 (0.065)		-0.078 (0.084)		0.132 (0.139)
Labor Market Freedom		-0.138 (0.213)		0.086 (0.054)		-0.229+ (0.123)		-0.171 (0.167)		-0.292 (0.303)
<i>Interactions</i>										
Regulation Restrictions x Economic Freedom	-0.007 (0.140)		-0.024 (0.024)		-0.048 (0.080)		0.055 (0.090)		-0.071 (0.216)	
Regulation Restrictions x Tax Freedom		0.437*** (0.157)		0.056* (0.023)		0.204* (0.098)		0.416*** (0.102)		0.353 (0.235)
Regulation Restrictions x Government Size		-0.286* (0.133)		-0.020 (0.014)		-0.209* (0.085)		-0.069 (0.146)		-0.429* (0.186)
Regulation Restrictions x Labor Market Freedom		0.234+ (0.123)		-0.041* (0.018)		0.215* (0.102)		-0.038 (0.214)		0.510*** (0.163)
Observations	496428	496428	496428	496428	496428	496428	189915	189915	306513	306513
Counties	3137.00	3137.00	3137.00	3137.00	3137.00	3137.00	1164.00	1164.00	1973.00	1973.00
Widstat	7581.96	7551.24	7581.96	7551.24	7581.96	7551.24	2873.36	2414.67	4785.33	5437.43
Log-likelihood	-2323134.17	-2323135.91	-1731518.04	-1731524.38	-2175485.50	-2175469.36	-802516.86	-802503.99	-1482503.30	-1482511.42

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. We estimate all models using linear regression that include county, industry, and year fixed effects. Second stage results resorted from instrumental variables analysis. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Appendix

Table 9. Instrumental Variable 2: Reverse Supply Share Other Industry Regulation Results

DV: Net Job Creation (DHS)	All Firms		Young Firms		Mature Firms		Metro Counties		Nonmetro Counties	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Controls</i>										
Median Household Income	-9.474*** (2.769)	-9.165*** (2.835)	-0.931 (0.691)	-0.942 (0.711)	-5.480*** (1.608)	-5.241*** (1.648)	-1.693 (1.260)	-1.034 (1.393)	-11.416*** (3.633)	-11.138*** (3.684)
Poverty rate	0.247 (1.772)	0.314 (1.788)	-0.515 (0.553)	-0.517 (0.557)	0.894 (0.896)	0.946 (0.904)	0.961+ (0.549)	1.031+ (0.553)	-0.518 (2.918)	-0.462 (2.930)
Population	-9.430*** (2.951)	-9.762*** (2.903)	-0.917 (0.771)	-0.877 (0.739)	-5.596*** (1.571)	-5.900*** (1.555)	-3.829*** (1.263)	-4.240*** (1.229)	-19.465*** (6.142)	-19.979*** (6.109)
Unemployment rate	-4.837*** (0.544)	-4.885*** (0.541)	-0.319*** (0.088)	-0.317*** (0.090)	-3.387*** (0.452)	-3.424*** (0.446)	-3.081*** (0.515)	-3.146*** (0.501)	-5.430*** (0.717)	-5.490*** (0.722)
Establishments per capita	-8.562 (5.988)	-8.364 (6.040)	-0.659 (1.333)	-0.666 (1.350)	-3.246 (2.770)	-3.095 (2.797)	-3.723+ (2.211)	-3.055 (2.321)	-9.982 (7.924)	-9.886 (7.955)
Union Membership rate	0.564* (0.255)	0.316 (0.270)	0.087+ (0.048)	0.149*** (0.051)	0.348 (0.238)	0.074 (0.235)	0.228 (0.255)	-0.099 (0.314)	0.613+ (0.352)	0.259 (0.357)
Annual Oil Production	-0.614*** (0.226)	-0.651*** (0.224)	-0.002 (0.039)	-0.013 (0.041)	-0.381*** (0.125)	-0.389*** (0.131)	-0.551*** (0.149)	-0.626*** (0.160)	-0.449 (0.298)	-0.453 (0.293)
State Government Operating Ratio	0.471 (0.541)	0.820 (0.597)	0.294+ (0.171)	0.333+ (0.180)	0.139 (0.581)	0.326 (0.569)	0.381 (0.658)	0.951 (0.649)	0.282 (0.725)	0.522 (0.823)
<i>National Regulation</i>										
Regulation Restrictions (ln)	-1.259 (0.931)	-3.305*** (0.826)	0.131 (0.186)	0.015 (0.170)	-0.874 (0.568)	-2.193*** (0.503)	-2.376*** (0.763)	-3.749*** (0.611)	-0.398 (1.408)	-2.959* (1.317)
<i>State Economic Freedom</i>										
Economic Freedom (Overall)	0.275 (0.171)		0.065* (0.032)		0.115 (0.116)		0.326* (0.162)		0.193 (0.250)	
Tax Freedom		0.375* (0.155)		0.023 (0.030)		0.236+ (0.127)		0.763*** (0.194)		0.214 (0.201)
Gov't Size Freedom		0.052 (0.093)		-0.007 (0.012)		0.056 (0.065)		-0.078 (0.084)		0.132 (0.139)
Labor Market Freedom		-0.139 (0.213)		0.086 (0.054)		-0.229+ (0.123)		-0.171 (0.168)		-0.292 (0.303)
<i>Interactions</i>										
Regulation Restrictions x Economic Freedom	-0.012 (0.135)		-0.025 (0.023)		-0.048 (0.079)		0.054 (0.088)		-0.078 (0.208)	
Regulation Restrictions x Tax Freedom		0.444*** (0.156)		0.059*** (0.022)		0.207* (0.098)		0.417*** (0.101)		0.365 (0.233)
Regulation Restrictions x Government Size		-0.285* (0.132)		-0.019 (0.014)		-0.207* (0.083)		-0.069 (0.140)		-0.427* (0.185)
Regulation Restrictions x Labor Market Freedom		0.222+ (0.121)		-0.044* (0.017)		0.208* (0.100)		-0.041 (0.206)		0.491*** (0.161)
Observations	496084	496084	496084	496084	496084	496084	189628	189628	306456	306456
Counties	3137.00	3137.00	3137.00	3137.00	3137.00	3137.00	1164.00	1164.00	1973.00	1973.00
Widstat	7786.30	7688.22	7786.30	7688.22	7786.30	7688.22	2949.60	2440.07	4889.03	5563.54
Log-likelihood	-2321696.6	-2321698.4	-1730489.7	-1730496.7	-2174150.2	-2174133.7	-801446.7	-801433.7	-1482256.6	-1482264.4

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. All models include county, industry, and year fixed effects. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 10. Instrumental Variable 3: Reverse Use Share Other Industry Regulation Results

DV: Net Job Creation (DHS)	All Firms		Young Firms		Mature Firms		Metro Counties		Nonmetro Counties	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Controls</i>										
Median Household Income	-9.474*** (2.781)	-9.171*** (2.850)	-0.938 (0.694)	-0.951 (0.716)	-5.467*** (1.610)	-5.230*** (1.652)	-1.701 (1.260)	-1.037 (1.395)	-11.424*** (3.657)	-11.160*** (3.712)
Poverty rate	0.246 (1.765)	0.307 (1.782)	-0.512 (0.552)	-0.517 (0.556)	0.887 (0.894)	0.932 (0.903)	0.953+ (0.549)	1.019+ (0.560)	-0.516 (2.909)	-0.471 (2.923)
Population	-9.419*** (2.986)	-9.772*** (2.931)	-0.938 (0.784)	-0.894 (0.748)	-5.540*** (1.580)	-5.872*** (1.562)	-3.750*** (1.249)	-4.219*** (1.225)	-19.475*** (6.188)	-19.985*** (6.147)
Unemployment rate	-4.837*** (0.541)	-4.889*** (0.540)	-0.322*** (0.087)	-0.320*** (0.089)	-3.379*** (0.450)	-3.422*** (0.446)	-3.069*** (0.514)	-3.149*** (0.502)	-5.432*** (0.714)	-5.494*** (0.720)
Establishments per capita	-8.561 (5.990)	-8.366 (6.045)	-0.660 (1.333)	-0.668 (1.351)	-3.243 (2.771)	-3.091 (2.799)	-3.728+ (2.210)	-3.063 (2.324)	-9.982 (7.930)	-9.885 (7.961)
Union Membership rate	0.566* (0.258)	0.317 (0.270)	0.083+ (0.049)	0.149*** (0.051)	0.359 (0.240)	0.075 (0.235)	0.241 (0.254)	-0.095 (0.313)	0.610+ (0.358)	0.261 (0.357)
Annual Oil Production	-0.614*** (0.228)	-0.653*** (0.228)	-0.005 (0.040)	-0.016 (0.042)	-0.375*** (0.126)	-0.385*** (0.133)	-0.546*** (0.149)	-0.621*** (0.160)	-0.451 (0.300)	-0.459 (0.300)
State Government Operating Ratio	0.472 (0.537)	0.815 (0.596)	0.290+ (0.171)	0.329+ (0.181)	0.148 (0.580)	0.328 (0.569)	0.381 (0.658)	0.963 (0.655)	0.279 (0.716)	0.500 (0.821)
<i>National Regulation</i>										
Regulation Restrictions (ln)	-0.786 (1.713)	-3.002+ (1.537)	-0.144 (0.378)	-0.213 (0.332)	0.363 (0.840)	-1.135 (0.760)	-1.148 (0.781)	-3.045*** (0.775)	-0.315 (2.664)	-2.926 (2.543)
<i>State Economic Freedom</i>										
Economic Freedom (Overall)	0.276 (0.169)		0.064* (0.031)		0.119 (0.115)		0.329* (0.162)		0.191 (0.247)	
Tax Freedom		0.378* (0.155)		0.022 (0.031)		0.245+ (0.127)		0.771*** (0.194)		0.218 (0.200)
Gov't Size Freedom		0.051 (0.093)		-0.008 (0.012)		0.058 (0.066)		-0.081 (0.085)		0.129 (0.141)
Labor Market Freedom		-0.138 (0.220)		0.090 (0.056)		-0.236+ (0.125)		-0.170 (0.167)		-0.289 (0.313)
<i>Interactions</i>										
Regulation Restrictions x Economic Freedom	-0.031 (0.258)		0.026 (0.053)		-0.177 (0.125)		-0.069 (0.107)		-0.046 (0.401)	
Regulation Restrictions x Tax Freedom		0.399+ (0.214)		0.062+ (0.034)		0.111 (0.120)		0.368*** (0.122)		0.278 (0.327)
Regulation Restrictions x Government Size		-0.311+ (0.178)		-0.011 (0.022)		-0.275*** (0.098)		-0.165 (0.106)		-0.444+ (0.257)
Regulation Restrictions x Labor Market Freedom		0.307+ (0.157)		-0.011 (0.026)		0.277* (0.113)		0.081 (0.143)		0.638* (0.263)
Observations	496084	496084	496084	496084	496084	496084	189628	189628	306456	306456
Counties	3137.00	3137.00	3137.00	3137.00	3137.00	3137.00	1164.00	1164.00	1973.00	1973.00
Widstat	4550.27	4443.50	4550.27	4443.50	4550.27	4443.50	4550.27	4443.50	4550.27	4443.50
Log-likelihood	-2321695.5	-2321696.5	-1730497.0	-1730498.1	-2174167.8	-2174147.5	-801450.1	-801428.9	-1482255.4	-1482266.7

Notes: Except for economic freedom measures, all variables are transformed using the natural logarithm and are mean-centered based on their global mean. Standard errors are presented in parentheses, robust to heteroscedasticity, and clustered at the county-level. All models include county, industry, and year fixed effects. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.