Local Effects of Franchise Contract Regulations*

Charles Murry† Peter Newberry‡

January 10, 2020

Abstract

Many U.S. states restrict the ability of franchisors to terminate or restructure franchise contracts through regulation. We estimate the local economic effects of these regulations. Using data from the quick-service restaurant industry, we find that franchise regulations are associated with 12% fewer franchises in the average zip-code. We find evidence that the impact of the regulation varies based on the local characteristics of a zip-code and can be as high as 16%.

KEYWORDS: Franchising, Entry, Regulatory Capture, Retailing

*We thank various seminar participants for helpful suggestions. Naibin Chen and Wenjing Ruan provided excellent research assistance. The authors are responsible for all errors.

†Boston College, Department of Economics, 324 Maloney Hall, Chestnut Hill, MA 02467, charles.murry@bc.edu.

‡Penn State University, Department of Economics, 510 Kern Building, University Park, PA, 16802, pwnewberry@psu.edu.

1 Introduction

States commonly regulate markets with the justification of protecting consumers, local business owners, or both. The industries targeted and types of regulations vary from state to state, but examples of regulations and protected industries include occupational certification or licensing (e.g. from personal hairdressers to medical professionals), antitrust exemptions for hospital systems, insurance, educational institutions, retail alcohol, car dealerships, and gas stations. The DOJ and FTC have recently focused on the potential anticompetitive effects of certain state regulations and the worry that these types of regulations represent regulatory capture by businesses.[1]

In this paper, we examine the effects of a common state regulation in franchised industries that restricts the ability of franchisors to terminate franchise agreements. These regulations, which are present in 16 US states, increase the potential costs to the franchisor of contracting with an entrepreneur by making it difficult to replace underperforming franchisees. The regulations have the support of various lobbying groups representing franchisees with the stated goal of protecting local entrepreneurs against "opportunistic" franchisors by guaranteeing franchisees can operate long enough to recover fixed costs of relationship-specific investments. But the laws may constitute a form of regulatory capture by limiting entry by nascent entrepreneurs, resulting in a reduction of competition and product variety in local markets.[2] Our contribution is to estimate the local economic consequences of state franchise contract regulations.

We specify a parsimonious two-period model where a franchisor chooses how many franchised outlets to open in a particular market. Each outlet is run by an entrepreneur who can be either high or low quality. In unregulated markets, the franchisor can replace an entrepreneur after their quality is revealed at the end of the first period. In regulated markets, the entrepreneur drawn in the first period operates the establishments for both periods. The model suggests two predictions that we bring to the data. First, there are fewer fran-

[1]This includes focus by the FTC on occupational licenses and attention by the DOJ on state antitrust issues. For example, in 2018, the US Department of Justice hosted a series of round-tables on the relationship between regulation and competition. See `https://www.justice.gov/atr/CompReg`. Additionally, Federal Trade Commissioner, Joshua Wright, discussed the importance of considering regulatory capture in high-tech industries in a speech in 2016. See `https://www.ftc.gov/system/files/documents/public_statements/634631/150402clemson.pdf`. State occupational licensing was successfully challenged in *North Carolina State Board of Dental Examiners v. FTC*. This is a difficult area for federal competition authorities because generally state action is immune from antitrust liability according to the Parker immunity doctrine, *Parker v. Brown*.

[2]The franchise lobbying groups The Coalition of Franchisee Associations (CFA) and The American Association of Franchisees and Dealers address franchise terminations in their respective 'Bill of Rights.' See `https://thecfainc.com/universal-franchisee-bill-of-rights/` and `https://www.aafd.org/fairness-initiatives/franchisee-bill-of-rights/`.

chised establishments in regulated markets. Second, the impact of the regulation varies across markets, where the effect depends on the market's profit potential and the pool of entrepreneurs.

To examine these predictions empirically, we collect cross-sectional establishment level data for four of the the largest US national quick-service restaurant chains in 2012. Using these data, we estimate a model of the chains' decisions of how many franchises to open in each zip-code and find that the existence of termination regulations significantly impact the number of franchises.[3] We then use the results of the model to predict the entry of franchise establishments if contract regulations were removed and find that there would be approximately 12% more establishments for the four national chains. This change is significant considering that 99% of markets have 2 or fewer establishments per chain and suggests that local competition and product availability are significantly limited in regulated markets. We break this down by chain and find that Wendy's is impacted the most (38%), followed by Taco Bell (17%) and McDonalds (9%). Burger King franchises would not substantially change if the regulations were removed.[4]

We also find that the marginal effects of the regulation vary significantly across zip-codes, where the variation is based on observable characteristics of the zip-code. Zip-codes that are above the median in terms of income, wages, and access to capital are impacted to a higher degree than zip-codes that are below the median. Specifically, the regulations are associated with 14 to 16% fewer outlets in zip-codes above the median and 4-7% fewer outlets in zip-codes below the median for these characteristics. Overall, the results suggest that the regulations have a significant impact on the extent of franchising, impacting both local competition and the product variety available to consumers.

Our study is most closely related to the other research examining the effect of franchise contract regulations. Brickley, Dark, and Weisbach (1991) provide a theoretical framework for qualitatively characterizing the costs or benefits of franchise contract regulation and show that the regulation has an ambiguous effect on the extent of franchising. The empirical analysis, which is performed both at the industry/state level and at the establishment level, shows that a franchisor is more likely to open a company-owned store in states which have a regulation. The model we present in Section 2 has a similar flavor to one of the variants of their model in that we argue that regulations impose a cost to the franchisor and this

[3]This is in contrast to existing research on franchise regulations that use aggregate data, see Brickley, Dark, and Weisbach (1991) and Klick, Kobayashi, and Ribstein (2012).

[4]Although we find that state franchise regulations are associated with fewer franchised establishments, the argument for these laws is that they encourage franchisees to make substantial relationship-specific investments, and could even attract a higher overall quality of entrepreneur to franchised industries. Using our data we cannot estimate this trade-off, although this is a direction for future research.

cost results in fewer franchises. However, our empirical strategy differs in that we examine how the regulations affect the number of franchised establishments rather than focus on the substitution between franchisee and company-owned establishments. In fact, we find no evidence of an increase in company-owned stores due to the regulations.

Similarly, Klick, Kobayashi, and Ribstein (2012) use changes to franchise regulations in Iowa and Washington, DC in the 1990s to show that the number of franchised establishments for two large quick service restaurant chains (Dominos and Burger King) decreases when the regulations are introduced. Their data allow them to utilize time series variation and a differences-in-differences empirical strategy, rather than the cross sectional analysis done in Brickley, Dark, and Weisbach (1991). While we rely on cross-sectional variation, our analysis has a couple of advantages over that of Klick, Kobayashi, and Ribstein (2012). First, our data are from more chains (four versus two) and include McDonalds for the full analysis, which is the largest franchisor in the world.[5] Second, because we have establishment level data, we can control for local observables that may impact entry decisions and estimate how the impact of the regulations varies across markets. This also allows us to speak to the effects of the regulations on competition and product availability at the local (zip-code) level.

Our paper is also related the literature examining the determinants of organizational form of franchise establishments. For example, Lafontaine and Shaw (2005) show that firms with higher valued brands tend to have more company owned stores, which is consistent with higher costs of making contracts incentive compatible as in Brickley, Dark, and Weisbach (1991), while Kosová, Lafontaine, and Perrigot (2013) compare the performance across franchised and company owned establishments, and Nishida and Yang (2018) look at a chain's strategic incentives to expand as a company owned or a franchised owned outlet.

More generally, our paper is related to the literature focused on the incentives in franchising and vertical contracts. Early theoretical work by Caves and Murphy (1976) and Rubin (1978) first connected the idea of franchising to agency problems. Since then, the dominant way franchising has been viewed by economists is through the lens of agency theory and downstream moral hazard, as in early empirical work by Lafontaine (1992). For a more recent review of downstream moral hazard and many related empirical papers that study franchising and vertical contracts more generally, see Lafontaine and Slade (2007) .

Finally, there are other studies that examine the effects of state regulations on competition and welfare. Blass and Carlton (2001) and Hastings (2004) examine contract divorce-

[5]Klick, Kobayashi, and Ribstein (2012) uses McDonald's data to examine the effect of a franchise regulation repeal in Washington, DC, but data restrictions do not allow them to examine the impact of the regulation change in Iowa. The results generally do not indicate that the DC repeal had an impact on franchising, something the authors attribute to the ease at which chains could contract around the regulations prior to the repeal.

ment laws for gas stations, Kleiner and Krueger (2010) examine state occupational licensing, Houde, Newberry, and Seim (2017) examine the impact of state 'nexus' sales tax laws on e-commerce, and Murry (2018) examines franchise termination regulations specific to car dealerships.

The remainder of the paper is organized as follows. In Section 2, we introduce the theoretical framework. Section 3 introduces the data and is followed by a presentation of the empirical strategy and a discussion the main results in Section 4. Finally, Section 5 concludes.

2 A Model of Franchising Decisions and Contract Regulation

> *The [International Franchise Association] and others argue that equity protection for the franchisees will hinder the franchisor's ability to expand strategically and could affect quality and consistency if the company is not able to close underperforming stores or terminate franchisees who are not maintaining standards.*[6]

In this section, we develop a two-period model of a chain's franchising decisions in order to motivate our empirical analysis. Each period represents the term length of a franchise contract. Before the first period, the chain decides how many establishments to open in a local market, where each establishment is run by an entrepreneur (franchisee). The revenue earned by each establishment in each period is a function of the quality of its entrepreneur, which is unobserved by the chain *ex ante*. During period one, the revenue of each of the establishments is realized, of which the chain earns a (fixed) share through a royalty rate. Before the start of the second period, the chain may have the option to fire any entrepreneur and hire a new one to operate a specific establishment, where the ability to fire depends on the whether or not there are contract termination restrictions in place. Finally, during period two, revenues of each establishment are again realized.

To simplify the exposition, we assume that the quality of each entrepreneur is either high ($\tau = h$) or low ($\tau = \ell$) and that there is a share of ϕ high quality entrepreneurs in the population. The realized market structure in a given market is then a tuple indicating the number of establishments managed by each type: $\mathcal{M} = \{N^h, N^\ell\}$. We denote the per period revenues from an establishment managed by type τ as $R^\tau_\mathcal{M}$, which is a function the market structure through the competitive effects of other establishments, and the share of revenues

[6] See "The Legal Issues That Could Change Franchising Forever," Entrepreneur Magazine 1/8/2015, `https://www.entrepreneur.com/article/240709`, accessed on 3/25/2017.

earned by the franchisor is given by $\gamma \in (0,1)$. Finally, there is a fixed operating cost for each establishment given by f which is known to the franchisor at time period 0. We assume that f is drawn for each market from a common distribution given by F_f.

When there are no termination restrictions in place, the chain has the option to fire a low quality entrepreneur. The franchisor will always take this option because it is costless to hire a new entrepreneur who might be a high quality type. Therefore, the *expected* profit of choosing N establishments in this unregulated (U) environment is:

$$\begin{aligned} E[\pi^U(N)] &= \gamma \sum_{n=0}^{N} \underbrace{\Phi(N,n)}_{Pr(\mathcal{M}=\{N-n,n\})} \Bigg(\underbrace{\Big((N-n)R^h_{(N-n,n)} + nR^l_{(N-n,n)}\Big)}_{\text{Period 1 Revenues}} \\ &+ \underbrace{\sum_{r=0}^{n} \Phi(n,r)\Big((N-r)R^h_{(N-r,r)} + rR^l_{(N-r,r)}\Big)}_{\text{Period 2 Revenues}} \Bigg) - 2Nf \end{aligned} \tag{1}$$

where $\Phi(N,n)$ is the probability of drawing n low quality entrepreneurs when the chosen number of establishments is N. Under the binomial distribution with parameter ϕ, this is given by:

$$\Phi(N,n) = \frac{N!}{n!(N-n)!}\phi^{N-n}(1-\phi)^n$$

The second term of Equation 1 represents the option value of the ability to fire the n entrepreneurs who are revealed to be low quality. In the regulated (R) environment, the franchisor cannot fire the low quality entrepreneur, so the expected value of choosing N establishments is:

$$E[\pi^R(N)] = 2\gamma \sum_{n=0}^{N} \Phi(N,n)\Big(\Big((N-n)R^h_{(N-n,n)} + nR^l_{(N-n,n)}\Big) \Big) - 2Nf.$$

Our goal is to demonstrate that the franchisor is more likely to choose a larger N in an unregulated environment. For this, it is sufficient to show that:

$$E\Big[\pi^U(N+1)\Big] - E\Big[\pi^U(N)\Big] > E\Big[\pi^R(N+1)\Big] - E\Big[\pi^R(N)\Big]$$

The term on the right hand side, which is the benefit of adding an additional outlet in the regulated environment, can be expressed as:

$$E[\pi^R(N+1)] - E[\pi^R(N)] = \sum_{n=0}^{N} 2\gamma\left(\phi H(n;N) + (1-\phi)L(n;N)\right) \tag{2}$$

where $H(n;N)$ is the value of adding adding an outlet run by a high quality entrepreneur when there are already n and $N-n$ low and high quality entrepreneurs in the market, respectively:

$$H(n;N) = R^h_{(N-n+1,n)} + (N-n)(R^h_{(N-n+1,n)} - R^h_{(N-n,n)}) + n(R^\ell_{(N-n+1,n)} - R^\ell_{(N-n,n)})$$

The first term of this expression is the revenue from the additional outlet, while the second and third term are the lost revenue of the other N outlets from competing against the additional outlet. Equivalently, $L(n;N)$ is the value of adding an outlet with a low quality manager. The franchisor will choose to add an additional outlet in the regulated environment as long as:

$$E[\pi^R(N+1)] - E[\pi^R(N)] > 2f$$

meaning that the probability of adding a store before the realization of f is:

$$P^R(N) = F_f\left(\frac{\pi^R(N+1) - \pi^R(N)}{2}\right)$$

In the unregulated environment, the benefit of adding an additional outlet is:

$$E[\pi^U(N+1)] - E[\pi^U(N)] = \sum_{n=0}^{N} \gamma\Bigg(\phi 2H(n;N) + (1-\phi)\underbrace{\Big(L(n;N) + \phi H(n;N) + (1-\phi)L(n;N)\Big)}_{\text{Benefit from the option to fire}}\Bigg) \quad (3)$$

The difference between this expression and the expression for the regulated environment is the second term in the parentheses, which is the expected profit if the additional establishment is run by a low quality entrepreneur in the first period. The franchisor fires this entrepreneur and hires a new one, which is high quality with probability ϕ. The franchisor will choose to add an additional outlet in the unregulated environment as long as:

$$E[\pi^U(N+1)] - E[\pi^U(N)] > 2f$$

meaning the probability of adding a store in the unregulated environment before the realization of f is:

$$P^U(N) = F_f\left(\frac{\pi^U(N+1) - \pi^U(N)}{2}\right)$$

Taking the difference between Equation 3 and Equation 2 results in:

$$\begin{aligned}&\Big(E[\pi^U(N+1)] - E[\pi^U(N)]\Big) - \Big(E[\pi^R(N+1)] - E[\pi^R(N)]\Big) \\ &= \gamma\phi(1-\phi)\sum_{n=0}^{N}\Phi(N,n)(H(n;N) - L(n;N))\end{aligned} \tag{4}$$

which is positive under the assumption that the value of adding a high quality outlet is always better than adding a low quality outlet.[7] Therefore, the probability of adding an additional store is higher in the unregulated environment than the regulated environment at all levels of N:

$$P^U(N) > P^R(N)$$

The level of equation 4, which is representative of the difference in the probability of adding an additional outlet, is a function of three primary factors. First, a higher royalty rate implies a bigger difference in profits between the two environments. Second, a larger difference between the benefits of adding a high quality versus a low quality outlet increases the relative benefits of adding stores in the unregulated environment. Finally, the difference in the benefit of adding an outlet is a function of the share of entrepreneurs who are high quality. However, ϕ can either increase or decrease this difference. The reason is that a high level of ϕ means that the franchisor is more likely to draw a high quality entrepreneur in both period 1, lowering the value of being in the unregulated environment, and in period 2, increasing the value of being in the unregulated environment.

The are two main implications of the model that we take to the data. First, we are likely to observe fewer establishments in regulated markets conditional on factors that determine revenues. Second, the impact of the regulation varies across markets, where the variation is a function of differences in both the relative profitability of a high quality entrepreneur over a low quality entrepreneur and the proportion of high quality entrepreneurs across markets.

3 Data

Our empirical analysis focuses on the quick service restaurant industry. Quick service restaurant franchises (i.e., fast food) comprise over 20% of the top 500 franchises according to industry sources.[8] It is estimated that these restaurants generated $570 billion globally and $200 billion in the United States in 2015.

We collect data on four of the top franchises in this industry: McDonald's, Burger King,

[7] This might not be true if the competitive effects of adding high quality outlets are large.

[8] Source: `https://www.entrepreneur.com/article/240720`

Wendy's and Taco Bell.[9] We construct a cross section of all establishments that were open in 2012 for these four chains using two sources. The first source is a private firm, AggData, which provided the list of the addresses of all stores listed on each firms' website in late 2012, or early 2013. We merge this information with information from Franchise Disclosure Documents (FDD) for each firm. A FDD is the contract between the franchiser and franchisee and typically contains a listing of the addresses of all franchised locations in the country. In many states, franchisors must report their FDDs to a government agency that, in turn, posts them on-line in portable document format.[10] Therefore, the AggData information allows us to observe the location of every establishment, while the FDD allows us to identify which of those establishments are owned by a franchisee.

We define the collection of all establishments, both franchised and company owned, as the list of provided by AggData. We define an establishment as franchised if it appears in both the AggData and in the FDD. In order to determine the intersection of these two lists, we merge them using multiple methods.[11] First, we match common variables in both lists such as store phone number, zip code, and address. Second, we geo-code each address using MapQuest and Google Maps API and merge on latitude and longitude (at different levels of precision). Finally, we hand check those addresses that did not match and manually match them to provide the most complete coverage as possible.

In theory, every address in an FDD should also be listed in the list provided by AggData. We do not get a 100% match and there are likely two reasons. The first is that the different lists are compiled at slightly different dates.[12] Second, there could be mistakes in how the raw lists are collected and merged. This is especially true for the FDD's that are read from hard-copies by an optical scanner. To make sure that our sample is representative of the true franchise structure, we compare the total number of stores in our sample to the counts provided by each firm in their 2012 Annual Report. The results presented in Table 1 show that our count of franchises is smaller than the count in the annual reports for both McDonald's and Burger King, but bigger for Wendy's and Taco Bell. This pattern exists for the count of overall establishments for these chains as well.

One might worry that these differences are due to mistakes in our raw data and/or problems with the merging the two data sources. However, the fact that these patterns also

[9]Subway is the other chain in the top five but they have a policy to open only franchisee-owned establishments.

[10]We collected our data from the Minnesota Commerce Department at `https://mn.gov/commerce/industries/securities/franchises/`.

[11]The Burger King FDD lists all current company-owned stores as well, so there is no need to merge with AggData information.

[12]For example, our Wendy's FDD that lists all active franchises is from December 2012, and our total store directory list for Wendy's is from mid February, 2013.

exist when comparing the pre-merged raw data and the data in the annual reports suggests that these discrepancies are likely due to differences in the timing of the data collection and do not reflect a data quality issue.

Table 1 also provides a summary of the size of each chain along with the mix of franchisor and franchisee-owned establishments. McDonald's is the largest franchisor in our sample with around 14,000 restaurants, with the other three chains all having about half that number. Taco Bell has the smallest rate of franchisee ownership, followed by Wendy's, McDonalds, and then Burger King. In recent years, Burger King has started to sell off many of their company-owned restaurants in favor of franchises, meaning the rate of franchise ownership has increased since the data collection period.

Table 1: Establishments by Franchise Status

	FDD	AggData	Post-Merge Sample		2012 Annual Report	
Firm	Franchised	Total	Franchised	Total	Franchised	Total
McDonald's	12,601	14,062	12,190	13,874	12,605	14,157
Burger King[a]	7,170	–	6,895	6,981	7,293	7,476
Wendy's	5,564	6,200	5,224	6,116	4,528	5,817
Taco Bell	4,846	6,160	4,809	6,145	4,670	5,695

Note: Table presents counts of establishments as of the end of 2012 based on our sample and information from each chain's annual report. The Burger King report does not separate Canadian establishments from United States establishments, so this information includes 293 total stores in Canada. Source: Company FDD's, AggData, and company 10Ks.

3.1 Franchise Contract Regulations

We collect the regulatory statuses of each state from Klick, Kobayashi, and Ribstein (2009).[13] States started to enact franchise termination regulation in the early 1970's following concerns about franchisor opportunism (Klick, Kobayashi, and Ribstein (2009)). As of 2012, 16 states had some form of franchise termination regulation, which, depending on the state may have included the following provisions: (1) the franchisor is required to provide "good cause" for contract termination; (2) the franchisor is required to provide "good cause" for non-renewal of contract; (3) the franchisee has the "right to cure" the cause for termination within a specified time-frame. The terminology "good cause" is typically left vague without specific definition in many of the regulations and its meaning is a primary point of argument in franchise litigation.[14]

[13]To the best of our knowledge, the information in Klick, Kobayashi, and Ribstein (2009) are updated up to the early 2000s. We searched extensively for states that may have changed their regulation status between the early 2000s and 2012 and did not find evidence that any changes occurred.

[14]For example, a 7-11 franchisee in New Jersey recently lost a case in which he claimed that his contract termination was without good cause. See `https://franchiselaw.foxrothschild.com/tags/`

The first provision is the basic form of the regulation, whereas the second and third provisions provide further protection for the franchisee from a legal standpoint. In recent years, there has been a push to pass similar legislation in additional states and at the federal level.[15] In Table 2, we list the states which had franchise termination regulations and separate them by the included provisions. Of the 16 states that had the basic regulation, ten had the renewal provision, and ten had the right to cure provision. Five of the states that had the renewal provisions also had right to cure provision.

The regulations are regularly backed by franchisee lobbying groups like the American Association of Franchisees and Dealers (AAFD) and the Coalition of Franchisee Associations (CFA), citing the need to protect franchises from large franchise corporations.[16]

Table 2: States with Franchise Regulations

"Good cause" required for termination
Arkansas, **California**, Connecticut, Delaware, **Hawaii**, **Illinois**, Indiana, **Iowa**, New Jersey, **Michigan**, **Minnesota**, Nebraska, Virginia, **Washington**, **Wisconsin**, **Tennessee**
"Good cause" required for renewal
Arkansas, Connecticut, Delaware, **Hawaii**, Indiana, **Iowa**, Nebraska, New Jersey, **Wisconsin**, **Tennessee**

Note: The table presents the states which have franchise contract regulations. States in bold also allow the franchisee the right to cure the franchisor complaint. Information from Klick, Kobayashi, and Ribstein (2009).

3.2 Additional Data

We also collect data to control for factors other than franchise regulations that may affect a franchisor's decision to franchise in a local market. First, we obtain demand and cost shifters such as population, the population density, and the median income for all of the zip-codes in the United States in 2012 using publicly available data from the US Census Bureau. We merge this with zip-code level wage data for the fast-food industry available from the Bureau of Labor Statistics. Second, similar to Brickley and Dark (1987), we proxy for franchisor monitoring cost using the distance from the establishment to the chain's headquarters. In order to determine this, we collect the location of each chain's headquarters

new-jersey-franchise-practices-act/

[15] See https://www.dlapiper.com/en/us/insights/publications/2013/11/states-propose-revising-the-relationship-between__/ and https://www.congress.gov/bill/115th-congress/house-bill/470/text

[16] See https://www.entrepreneur.com/article/236565.

from the company's website and calculate the driving distance from this location to each establishment using the MapQuest API. Additionally, we collect information on whether or not the zip-code has an interstate highway passing through it in order to control the importance of repeat customers. Finally, we collect a state level ranking of the 'access to capital' published by CNBC.[17] The idea is that the pool of local entrepreneurs, both in quantity and quality, might be impacted by how easy it is to obtain the capital requirements to open a franchise.[18] Table 3 presents descriptive statistics of these controls. Notably, the average number of franchises in a zip-code is 1.82, 36% of zip-codes have the contract termination regulation present, and 16% have the renewal provision present.

Table 3: Summary Statistics

Variable	Mean	Q25	Median	Q75
Total Franchises	1.82	0	0	2
Regulation: Termination	0.36	–	–	–
Regulation: Renewal	0.16	–	–	–
Log Population	7.90	6.60	7.92	9.43
Log Population Density	6.67	6.19	6.56	6.95
Log Median Income	10.76	10.56	10.75	10.97
Log Wage	9.53	9.38	9.51	9.67
Log Dist. to HQ	7.04	6.85	7.04	7.28
Interstate Highway	0.25	–	–	–

Note: The table presents the descriptive statistics for the covariates used in our empirical analysis. The unit of observation is a zip-code. There are 32,634 zip-codes. Total franchises is the number of franchises across Burger King, McDonald's, Taco Bell, and Wendy's. Source: US Census Bureau, Company 10Ks and FDDs, and AggData.

4 The Impact of Franchise Contract Regulations

In what follows, we estimate the impact of the contract regulations on the number of franchised locations. According to the raw data, states with franchise regulations have 20.72 franchises per 100,000 people and states without regulations have 20.06 franchises per 100,000 people. While this suggests that regulations play a role in franchising decisions, it may be the case that other factors that are correlated with the regulations are contributing to this

[17] See `https://www.cnbc.com/id/100016697`

[18] To open a franchise, the franchisee typically needs to pay substantial startup costs that include a fixed payment to the franchisor and the funding for the purchase of equipment. Typically, franchise contracts will specify an asset level for new franchisees.

relationship. We control for these other factors in a series of regressions where the dependent variable is the number of establishments for a given chain/zip-code and the independent variables include the regulation status of the zip-code and and other covariates that may be correlated with chain entry. The covariates we include are the log of the zip-code population, the log of the zip-code land area, zip-code median income, zip-code average wage of quick service restaurant employees, the distance from the zip-code centroid to the chain headquarters, a state-wide measure of entrepreneurial access to capital, and a dummy variable indicating whether or not an interstate highway passes through the zip-code. We also include fixed effects for census region and chain.

We present the results in Table 4 with standard errors clustered at the state level. In the first column, we take a similar strategy to Brickley, Dark, and Weisbach (1991) and run the analysis at the state-level.[19] The results suggest that the termination regulation is not significantly correlated with the number of franchises. In the second column, we add an indicator that is equal to one in the states that also have the renewal provision, which is also not significant. One possible reason for this negative result is that, by aggregating to the state level, we are missing some important market level variation in franchising decisions.

We present the zip-code level regressions in the third and fourth columns, which show that the regulations are significantly related to the number franchises (at the 10% level). Specifically, the termination regulation is associated with 0.03 fewer franchises, which translate to a reduction of 12.5% from the average level of 2.4.[20] Similar to the state level regressions, adding the renewal provision to the termination regulation does not impact the number of franchises in a local market. Additionally, we find that the regulations are not significantly related to the number of company owned outlets (see columns 5 and 6), which suggests that chains are not substituting franchise ownership for company ownership in regulated areas.

The results also indicate that zip-codes with a higher population and those with higher wages have more franchises, while median income and the distance to the chain's headquarters are negatively related to the number of outlets. Access to capital and the land area are not significant.

4.1 Empirical Model of Franchise Decisions

In what follows, we diverge from the linear regression approach and estimate the effects of the regulations using an ordered probit model. We then use the estimates of the model to simulate outcomes under different regulatory regimes. Specifically, we consider a quick-service chain deciding how many franchised establishments to open in a market, where we

[19] The zip-code level covariates are aggregated to the state level.

[20] Descriptive statistics for this sample are in Table 3 in the Appendix.

Table 4: Impact of Regulations on the Number of Franchised Establishments

	State-level		Zip-code-level			
Dependent Variable:	# Franchises	# Franchises	# Franchises	# Franchises	# Company-Owned	# Company-Owned
	(1)	(2)	(3)	(4)	(5)	(6)
Regulation – Termination	-8.973	48.018	-0.027	-0.030	-0.004	-0.007
	(34.619)	(70.330)	(0.018)	(0.026)	(0.003)	(0.005)
Regulation – Renewal		-90.067		0.005		0.006
		(67.585)		(0.027)		(0.005)
Log Population	187.281	188.748	0.195	0.195	0.015	0.015
	(37.413)	(37.640)	(0.012)	(0.012)	(0.001)	(0.001)
Log Median Inc.	143.387	177.009	-0.068	-0.068	0.000	-0.000
	(143.271)	(147.625)	(0.011)	(0.011)	(0.002)	(0.002)
Log Land Area (sq. mi.)	34.342	30.769	0.016	0.016	0.004	0.004
	(30.107)	(31.498)	(0.014)	(0.014)	(0.002)	(0.002)
Log Wage	105.686	86.635	0.123	0.123	0.021	0.022
	(129.885)	(126.582)	(0.027)	(0.027)	(0.004)	(0.004)
Access to Capital	0.461	1.462	-0.001	-0.001	-0.000	-0.000
	(2.019)	(2.506)	(0.001)	(0.001)	(0.000)	(0.000)
Log HQ Distance	48.879	45.816	-0.036	-0.036	-0.013	-0.013
	(47.060)	(46.924)	(0.019)	(0.019)	(0.006)	(0.006)
Interstate Highway			0.177	0.177	0.016	0.017
			(0.012)	(0.012)	(0.003)	(0.003)
Constant	-5962.568	-6122.410	-1.696	-1.697	-0.257	-0.259
	(2629.758)	(2647.003)	(0.395)	(0.394)	(0.060)	(0.060)
R^2	0.628	0.633	0.259	0.258	0.047	0.047
Observations	240	240	130,052	130,052	130,052	130,052

Note: The table presents the results of OLS regressions of the number of establishments on regulation dummies and other covariates. For columns (1) and (2) the unit of observation is a state and chain in 2012. In columns (3)-(6), unit of observation is zip-code-chain in 2012. All regressions include Census region effects and firm effects. Robust standard errors are clustered at the state level.

define a market as a zip-code. The latent payoff from opening k stores in market m for chain j is:

$$Y_{jm}(k) = f(X_{jm}, Reg_m; \beta_k) + \epsilon_{jmk} \qquad \forall k \in \mathbb{N}. \tag{5}$$

The payoff for a chain j in market m from taking option k is a function of market and chain observables, X_{jm}, a dummy for whether the zip code is located in a state with a franchise termination (or renewal) regulation, Reg_m, payoff preferences, β_k, and an error term that is distributed according to a standard normal distribution. We also include interactions between some of the zip-code level elements of X_{jm} and Reg_m in order to allow for the impact of the regulations to vary across markets. Under these assumptions, the problem is an ordered probit model where we estimate the latent profit threshold for opening an additional franchise establishment at each level of k. The key identifying assumption is that the existence of a franchise regulation in market m is exogenous to any payoff shifter in ϵ_{jmk}. Note that, under this specification, we abstract away from competition across chains.

The list of variables we include in X_{jm} are the same as in the liner regressions from the previous section. We also include chain effects and chain-region effects to account for differences in franchising decisions across chains and regional favoritism of chains.[21] The marginal effects based on the estimates are presented in Table 5, where each cell is the marginal effect of the covariate on the probability of having the number of franchised establishments listed across the top row of the table. Note that we top-code establishment openings and set the top category as five or more franchises. Above the marginal effects, we list the percentage of zip code/chain observations in which we observe the indicated outcome in our sample.

The results show that the probability of a chain having zero franchised establishments in a zip-code increases by about 0.007 percentage points due to the termination regulation, which represents a 1% increase, while the probability of having one franchise decreases by 0.004 percentage points, which represents a 3% decrease. Both these effects are significant at the 10% level. The probability of the larger outcomes also decrease, but the impacts are small and/or not significant. The impact of the other covariates are mostly in line with the regression analysis.

These results demonstrate that the regulations significantly decrease the number of franchised establishments in a market. However, in order for this to limit competition and local variety, it must be the case that the franchisors are not just substituting company-owned establishments for franchised establishments in regulated markets. To test for this, we run the same model, but with the number of company-owned establishments in the zip-code as the outcome variable. Table 6 presents the results, with the effects for the other covariates

[21] Even though our four chains are large national chains, there is a clear pattern of denser establishment networks closer to the original company headquarters.

Table 5: Marginal Effects of Regulations on Franchises

	Number of Franchises in Zip-Code					
	0	1	2	3	4	5+
% in population	0.828	0.134	0.290	0.007	0.002	0.001
Marginal Effects						
Termination Regulation	0.007	-0.004	-0.002	-0.001	-0.000	0.000
	(0.004)	(0.003)	(0.001)	(0.001)	(0.000)	(0.001)
Log Population	-0.129	0.079	0.034	0.011	0.003	0.001
	(0.002)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Log Median Inc.	0.039	-0.024	-0.010	-0.003	-0.002	-0.003
	(0.004)	(0.003)	(0.001)	(0.001)	(0.000)	(0.000)
Log Land Area (sq. mi.)	-0.003	0.002	0.001	0.001	0.000	0.000
	(0.003)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)
Log Wage	0.042	-0.026	-0.011	-0.004	-0.001	-0.000
	(0.011)	(0.007)	(0.003)	(0.001)	(0.000)	(0.000)
Access to Capital	-0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log HQ Distance	0.015	-0.009	-0.004	-0.001	-0.000	-0.000
	(0.006)	(0.003)	(0.001)	(0.000)	(0.000)	(0.000)
Interstate Highway	-0.039	0.024	0.010	0.003	0.001	0.000
	(0.003)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)

Note: The table presents the marginal effects of each variable on the probability of observing the outcome at the top of the table. The effects are based on the estimates of the probit model introduced at the beginning of this section. In addition to the covariates listed, the model includes Census region effects and firm effects. The prevalence of the outcome in the population is listed above each outcome. Standard errors clustered by state in parentheses.

omitted. Similar to the linear regression model, we find no significant effect of regulations on the number of company-owned establishments. Together, the results imply that the regulations result in fewer franchises and fewer establishments overall, which limits the amount of competition and variety in local markets.

Table 6: Marginal Effects of Regulations on Company-Owned Establishments

	Number of company-owned Outlets in Zip-Code					
	0	1	2	3	4	5+
% in population	0.974	0.022	0.003	0.000	0.000	0.000
Termination Regulation	0.003	-0.002	-0.001	-0.000	-0.000	-0.000
	(0.003)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)

Note: The table shows effects of the termination regulation on company-owned establishments. Standard errors clustered by state in parentheses.

The previous specifications assume a homogeneous effect of the regulation variable across all zip-codes, even zip-codes that are not viable options for quick service restaurants, which could be the reason for the relatively imprecise estimates. Further, the model presented in Section 2 suggests that the impact of the regulation may vary across markets. Therefore, we explore the heterogeneity in the effect of the regulation across zip-codes. In Table 7, we present the marginal effects of the termination regulation on the number of franchises for zip-codes that are above and below the median value of a set of covariates. Note that we define a zip-code to be above the median value of 'access to capital' if it is in a state that is ranked from 1 to 25 according to CNBC rankings, where a lower number indicates a better ranking. Recall that we include interactions between each of these covariates and the regulation dummy in order to estimate the heterogeneous effects. The table excludes the outcomes that are greater than two establishments, as these are generally small and insignificant.

Across all the covariates, the effects of the regulation in zip-codes above the median are significant and larger than those in zip-codes below the median. This is especially true for population, income, and wage, all of which have effects that are about twice as large as the effect across all zip codes. This suggests that the impact of the regulations vary significantly across markets, and more specifically, markets that have higher values of the covariates. The results of the model suggest that this variation may be due to variation in the relative profitability of high quality versus low quality franchisees or the quality of the pool of possible franchisees. While our covariates are not direct measures of these, they can be considered proxies for variation in demand (income, population), costs (wage, HQ distance), and the size of the entrepreneur pool (capital access). Therefore, we believe that the results

of this exercise provide suggestive evidence that the impact of the regulation is stronger in markets that have higher profit potential and a larger pool of entrepreneurs. More generally, the results imply that franchisors may respond to franchise contract regulations at the local level (i.e. within a state), meaning it is important to take this variation into account when quantifying the effect of the regulations.

Table 7: Heterogeneous Marginal Effects of Regulation

	Number Franchises in Zip-Code					
	0	1	2	0	1	2
	Below Median			Above Median		
Population	0.000	-0.000	-0.000	0.015	-0.009	-0.004
	(0.002)	(0.002)	(0.000)	(0.008)	(0.004)	(0.003)
Income	-0.000	0.000	0.000	0.017	-0.010	-0.005
	(0.003)	(0.003)	(0.001)	(0.006)	(0.004)	(0.002)
Wage	0.002	-0.001	-0.000	0.014	-0.008	-0.004
	(0.004)	(0.004)	(0.001)	(0.007)	(0.004)	(0.003)
Capital Access	0.006	-0.004	-0.002	0.009	-0.005	-0.003
	(0.005)	(0.003)	(0.002)	(0.004)	(0.003)	(0.001)
HQ Distance	0.007	-0.003	-0.002	0.009	-0.006	-0.002
	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.002)

Note: Presented are the marginal effects broken down by zip-codes that are above and below the median of the covariates in the left column. The effects are based on the estimates of the probit model introduced at the beginning of this section. Standard errors clustered by state in parentheses.

4.2 Quantifying the Impact of Franchise Regulations

In order to quantify the effects of the franchise regulations, we use the results of the model to compute the change in the number of franchises in regulated markets if the regulations were removed. In other words, we compare the model's prediction of the baseline number of franchises in regulated markets to the model's prediction if we set $Reg_m = 0$. The results are displayed in Table 8.

Focusing on the effects of the termination regulations, we see that the total number of franchises increases by about 12% in these markets, implying that zip-code level competition is restricted by an average of 12% due to the regulations. This represents a significant reduction in the number of competitors, considering nearly 99% of the markets have 2 or fewer franchises for each chain. The effects are the largest for Wendy's (38%), followed by Taco Bell (17%) and McDonald's (9%).

Table 9 explores the heterogeneity in these effects. We display only the baseline number for these zip-codes and the percentage change. It shows that the average reduction in the number of franchises for zip-codes that are above the median value in terms of income, wage

Table 8: Impact of Termination Regulation

	Franchise Establishments (% Change)	
	Baseline	Remove Reg.
Burger King	2,706	2,637 (-3%)
McDonald's	4,491	4,875 (+9%)
Taco Bell	2,028	2,374 (+17%)
Wendy's	1,655	2,282 (+38%)
Total	10,881	12,168 (+12%)

Notes: Presented are the counts of franchised establishments predicted by our model, separated by chain. The effects are based on the estimates of the probit model introduced at the beginning of this section. Column (1) shows the total count in markets that currently have a termination regulation and column (2) shows the count in these markets if the regulation were removed. In parentheses are the percentage changes between the regulated and unregulated environment.

and access to capital is somewhere between 14% and 16%, which are significantly larger than the effects for zip-codes below the median value of these characteristics. The effect of the regulation doesn't vary significantly across zip-codes that are above and below the median value of population and distance to the company's headquarters. The results of this exercise again suggest the importance of taking into account variation in the effect of the regulation across local markets.

Table 9: Heterogeneity in the Impact of Termination Regulation

	Baseline (% Change)	
	(Below Median)	(Above Median)
Population	197 (+6%)	10,682 (+5%)
Income	3,975 (+4%)	6,905 (+16%)
Wage	3,067 (+5%)	7,810 (+14%)
Capital Access	3,070 (+7%)	7,831 (+15%)
HQ Distance	5,541 (+11%)	5,336 (+12%)

Notes: Presented are the counts of franchised establishments predicted by our model, separated by observed characteristics of zip-codes. The effects are based on the estimates of the probit model introduced at the beginning of this section. Column (1) shows the total count in markets that currently have a termination regulation and are below the median value of the covariate in the left hand column. Columns (2) shows the same but for zip-codes that are above the median value. In parentheses are the percentage changes between the regulated and unregulated environment.

5 Conclusion

We estimate the local impacts of state franchise contract termination regulations in the quick-service restaurant industry. The results of the analysis suggest that the regulations result in a significant reduction in the average number of franchises in a local market (12%) and that the impact can be even greater for zip-codes that are above the median value in terms of local characteristics (up to 16%).

The importance of our analysis lies in the fact that we estimate the extent to which the regulations reduce the level of competition in local markets. The relevance of this is further enhanced by the fact that these types of regulations have recently been proposed by more states and at the federal level. While lobbying groups for franchisees often argue that the regulations help protect franchisees from unfair treatment by franchisors, we show that the regulations also benefit the franchisees by limiting the amount of competition each franchisee faces. Therefore, we provide evidence that the regulations may represent a form of regulatory capture, something which has been of interest to the regulatory agencies in the federal government. One shortcoming of our analysis is that we are not able to estimate other effects of these regulations. For example, the regulations that we study may encourage higher quality entrepreneurs to become franchisees of national chains, or the regulations might foster greater relationship-specific investments by franchisees. This is clear and important direction for future research in this area.

References

Blass, Asher A and Dennis W Carlton. 2001. "The choice of organizational form in gasoline retailing and the cost of laws that limit that choice." *The Journal of Law and Economics* 44 (2):511–524.

Brickley, James A and Frederick H Dark. 1987. "The choice of organizational form the case of franchising." *Journal of financial economics* 18 (2):401–420.

Brickley, James A, Frederick H Dark, and Michael S Weisbach. 1991. "The Economic Effects of Franchise Termination Laws." *Journal of Law and Economics* 34 (1):101–132.

Caves, Richard E and William F Murphy. 1976. "Franchising: Firms, markets, and intangible assets." *Southern Economic Journal* :572–586.

Hastings, Justine S. 2004. "Vertical relationships and competition in retail gasoline markets: Empirical evidence from contract changes in Southern California." *American Economic Review* 94 (1):317–328.

Houde, Jean-François, Peter Newberry, and Katja Seim. 2017. "Economies of Density in E-Commerce: A Study of Amazon's Fulfillment Center Network." *working paper* .

Kleiner, Morris M and Alan B Krueger. 2010. "The prevalence and effects of occupational licensing." *British Journal of Industrial Relations* 48 (4):676–687.

Klick, Jonathan, Bruce Kobayashi, and Larry Ribstein. 2009. "Federalism, Variation and State Regulation of Franchise Termination." *Entrepeneurial Business Law Journal* 3 (2):355–379.

Klick, Jonathan, Bruce H Kobayashi, and Larry E Ribstein. 2012. "The effect of contract regulation on franchising." *Journal of Institutional and Theoretical Economics JITE* 168 (1):38–53.

Kosová, Renáta, Francine Lafontaine, and Rozenn Perrigot. 2013. "Organizational form and performance: evidence from the hotel industry." *Review of Economics and Statistics* 95 (4):1303–1323.

Lafontaine, Francine. 1992. "Agency theory and franchising: some empirical results." *The Rand Journal of Economics* :263–283.

Lafontaine, Francine and Kathryn L Shaw. 2005. "Targeting managerial control: evidence from franchising." *RAND Journal of Economics* :131–150.

Lafontaine, Francine and Margaret Slade. 2007. "Vertical integration and firm boundaries: the evidence." *Journal of Economic Literature* :629–685.

Murry, Charles. 2018. "The effect of retail competition on relationship-specific investments: evidence from new car advertising." *International Journal of Industrial Organization* 59:253–281.

Nishida, Mitsukuni and Nathan Yang. 2018. "Strategic Franchising in Expansion: Evidence from the Convenience-Store Industry." *working paper* .

Rubin, Paul H. 1978. "The Theory of the Firm and the Structure of the Franchise Contract." *Journal of law and Economics* :223–233.