Does Ownership Structure Influence Regulatory Behavior? The Impact of Franchising on Labor Standards Compliance

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Version: November 3, 2009

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Acknowledgements: This research was funded by a contract from the U.S. Department of Labor and Mathematica Policy Research, Contract No. GS10F0050L, and a grant from the Russell Sage Foundation. The findings and conclusions do not necessarily reflect the views or the policies of those parties or any specific agency mentioned in the article. We are grateful to research assistance from Sam Kornstein, Ayumi Shimokawa, Huiging Wu, and Jie Zheng. Special thanks to Kevin Lang for his detailed comments and suggestions on the paper. We are also grateful to Libby Hendrix, Anne Klieve, Paul Osterman, Daniele Paserman, Amanda Pyles, James Rebitzer and seminar participants at Boston University, MIT, and the 14th Annual Meeting of the Society of Labor Economists for their comments.

Abstract

This paper examines the effect of franchising on compliance with labor standards regulations in the US. Franchisees who typically own and manage their own outlets seek to maximize profit of only their units whereas the franchisor benefits from increases in sales of all outlets in the chain, whether franchised or company-owned. Franchisors are therefore more concerned about the deterioration of brand reputation. This leads us to hypothesize that differences in sensitivity to brand reputation make compliance worse at franchisee-owned outlets than at comparable company-owned outlets. By using a unique pooled cross-section of the Top 20 fast food restaurants in the US, we find that total back-wages (wage repayment equal to the difference between those received and those owed to workers by statute) per investigation at a given franchised outlet are $4,265 larger than at a comparable company-owned outlet, which is roughly four times average back-wages. This franchise effect grows further in magnitude with the use of relevant instruments for franchising status. We argue that the empirical results are more consistent with differences in concern about brand reputation between franchisees and franchisors than other explanations of firm behavior.

I. Introduction

Franchising has become a ubiquitous form of ownership in the US, particularly in service sector industries like restaurants and hotels. These industries also employ a large number of low wage workers who are potentially affected by basic labor standards regulations, in particular minimum wage and overtime regulations. The rapid growth of franchising over the last thirty years has been accompanied by an extensive theoretical and empirical literature regarding its benefits, agency problems, and performance consequences. In contrast, surprisingly little empirical work explores how franchising impacts public policy outcomes like labor standards compliance. Similarly, although the economic repercussions of minimum wages or overtime regulations—especially their employment effects—have attracted intense academic interest over the past decade (for example, Card and Krueger, 1995; Hamermesh and Trejo, 2000; Hart, 2004), comparatively little empirical attention has been paid to the determinants of compliance with minimum wage laws or overtime regulations.

This paper examines the effect of franchise ownership on compliance with labor standards regulations in the U.S. We show how comparative ownership incentives lead to substantially lower compliance at franchisee-owned outlets than at company-owned outlets managed by franchisors.

Franchisees who typically own and manage their own outlets seek to maximize the profit of only their units whereas the franchisor benefits from increases in sales of all outlets in the chain, whether franchised or company-owned units. Franchisors are therefore more concerned about the deterioration of brand reputation because it potentially affects sales in all units. Given this, a franchisor has a greater incentive to comply with laws that affect consumers' perceptions of the brand. As a result, company-owned units have a greater incentive to comply with workplace regulations relative to franchised units where franchisees are likely to exert relatively less effort to comply given their incentive to maximize profits only at their outlets

In addition to diverging interests in brand reputation that may induce free riding behavior, franchisees have other reasons to comply less than franchisors with workplace regulations. First, a franchisee's probability of being caught from violating labor standards requirements is likely

lower than the franchisor's because franchisees own far fewer outlets than franchisors. Second, franchisors may face greater monitoring problem than franchisees because managers at company-owned outlets receive fixed salaries and therefore have lower-powered incentives to supervise their employees. To address this agency problem, franchisors tend to provide their employees with higher efficiency wages (Krueger, 1991). On the other hand, as both owner and manager, franchisees have lower incentives to pay an efficiency wage. Finally, franchisees have a different profit function from franchisors because they pay a portion of their revenues to the franchisors and therefore focus on cost savings. This gives franchisees incentives to hire less productive workers at the expense of revenues or to violate minimum wage or overtime requirements. All of these reasons would lead to lower compliance at franchisee-owned outlets than at comparable company-owned outlets.

To estimate the impact of franchising on compliance, we focus on the twenty largest national restaurant chains in the fast food industry. The Top 20 brands' outlets represent a significant portion of the eating and drinking industry, and franchising plays a major role in the sector. More importantly, there are high rates of non-compliance in this sector, as well as a large number of workers with hourly earnings close to the minimum wage, and there is significant variation in franchise versus company ownership across the Top 20 brands. This provides us with the necessary variation for comparing the compliance level of company-owned outlets with that of franchisee-owned outlets. In addition, the Top 20 brands are a good fit for studying compliance incentives arising from brand reputation because they are likely to be more sensitive to reputational effects than smaller or localized franchisors.

By using a unique pooled cross-section of outlet-level enforcement-data from the U.S. Department of Labor for the Top 20 brands' restaurants in the U.S., we observe that total back-wages (wage repayment equal to the difference between those actually received and those owed to workers by statute) found per investigation at a given franchised outlet are, at least, $4,265 larger than at a comparable company-owned outlet. This is roughly four times average back-wages. The franchise ownership effect becomes stronger with the use of the relevant instrument for franchising status, which adjusts for the effects of omitted bias due to missing factors that affect franchising decision and compliance level. Instrumental variable estimates are about 2.5

times greater than the corresponding franchise ownership effects. These ownership effects also hold with two alternative compliance measures. Moreover, we find that all but the very largest multi-unit franchisees owe much larger back-wages than company-owned outlets. All of the results suggest that our findings are more consistent with differences in sensitivity to brand reputation between franchisees and franchisors than other explanations.

Our findings enrich theoretical and empirical research on compliance by providing the first evidence that franchise ownership is a crucial determinant of compliance. In addition, they provide further evidence of the franchisee free-riding hypothesis which, other than Jin and Leslie (2009), has never been tested. Furthermore, the findings suggest that reputational incentives arising from franchise ownership profoundly affect public policy outcomes which most literature has neglected.

The remainder of this paper is organized as follows. Section II describes the institutional background regarding the fast food industry and the laws and enforcement agency that sets basic labor standards in it. We then review the relevant literature. Section III discusses a compliance model that compares compliance incentives between franchisees and franchisors. Section IV describes our data sources, the method for merging these sources and key variables of the study. Section V presents the Tobit and instrumental variable estimates of franchise ownership on compliance in the fast food industry and presents several robustness checks. Section VI revisits the alternative explanations for lower compliance among franchisees. Section VII concludes.

II. Background and Related Literature

A. Institutional background

1. *Fast food industry structure and the role of franchising*

The eating and drinking industry—an industry that includes everything from fast food outlets to the most upscale and exclusive restaurants in the country—employs close to nine million individuals. It is composed of two distinct sectors: full service restaurants and limited service (or fast food) restaurants which account for about 37 percent of the industry's

employment or about 3.3 million workers.[1] Most jobs (88%) in the industry are low-skilled and relate to food preparation and service and employment is concentrated in small food establishments, averaging about 17 workers per outlet (US Department of Commerce 2004). Average hourly earnings for food preparation and servers in 2006 were $7.23 with a 10th percentile wage of $5.79, well below the current federal minimum wage of $6.55 (US Bureau of Labor Statistics, 2006). The large number of low-wage jobs makes the industry particularly prone to minimum wage and hours of work violations.

Although the level of industry concentration (i.e. market share controlled by the Top 20 firms) is relatively low for the sector as a whole, the fast food sub-sector is much more concentrated. Major companies like McDonalds, Burger King, Subway, and KFC are well known national—and international—brands, illustrating the importance of major chains to the industry. The US industry is geographically dispersed. The large number of establishments—about 195,000 outlets—can be found in virtually every community in the United States. This should not be surprising given that eating out has become an important source of household daily food expenditures, constituting almost half of a typical family's food budget (US Department of Agriculture, 2006).

Restaurants also represent the most highly franchised industry in the United States, making up 36 percent of all franchised establishments (FranData 2000, Table 4-1). Under a typical agreement, the franchisee purchases the right to own and operate an establishment using the franchisor's brand name and products for a set period of time. In return, the franchisee pays an upfront franchise fee and agrees to provide a portion of revenues (typically around 6%, although it may go as high as 12% in the case of McDonalds) to the franchisor.[2]

[1] Full-service restaurants (NAICS 72211) are defined by the U.S. Census Bureau as, "establishments primarily engaged in providing food services to patrons who order and are served while seated (i.e., waiter/waitress service) and pay after eating. These establishments may provide this type of food services to patrons in combination with selling alcoholic beverages, providing carry out services, or presenting live non-theatrical entertainment." Limited-service eating establishments (NAICS 72221) are defined as "establishments primarily engaged in (1) providing food services where patrons generally order or select items and pa(2) selling a specialty snack or nonalcoholic beverage for consumption on or near the premises. Food and drink may be consumed on the premises, taken out, or delivered to customers' location." (US Department of Commerce, 2002).

[2] There are three components of the payments terms within a franchise agreement. One is the franchise fee, an upfront and one-time payment occurring when a franchisee opens the outlet. The upfront fee is usually

While the specific terms of a franchise agreement vary among firms, agreements are usually standardized within a firm's franchise system. Franchise agreements also include strict provisions regarding operating policies, the use of trademarks, and recordkeeping. These restrictions help ensure that individual franchisees do not alter the desired brand image and that customers receive a uniform experience in all locations. The companies in the Top 20 brands use similar franchise arrangements, utilizing a standard format of franchise agreements and contracts (Bond, 2004). In particular, the agreements hold the individual franchisee responsible for compliance with relevant laws including the FLSA. Franchisors do not explicitly monitor or punish franchisees for failure to comply. Employee characteristics at these Top 20 restaurants also appear to be fairly consistent with most starting wages close to the minimum wage (Krueger, 1991).

National fast food companies spend significant resources in creating a well-known brand for their products. This strategy also fits an industry where perceptions of the quality, consistency, and variety of the product are critical to competitive performance. By establishing a brand, a company can differentiate its product and create a loyal customer base willing to pay a premium for the product on an ongoing basis. In the fast food industry, the investment return on branding is partly based on the belief that any outlet in a given brand will share the same customer reputation.[3] A strong brand identity also benefits franchisees: by purchasing or operating a franchise of an established brand, a franchisee gains a proven business strategy with a known and trusted name.

Franchising, however, raises several types of agency problems. In particular, the franchisor benefits financially from increased revenues of all outlets including franchisees'

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between $10,000 and $50,000, and is often, but not always, required. Another is the royalty fee, a constant percentage of sales that is paid to the franchisor each week or month for the right to continue to operate the franchise (Blair and Lafontaine, 2005). There is also an advertising fee, a percentage (typically less than three percent) of sales that is paid with the royalty fee to fund any national or regional advertising conducted by the franchisor.

[3] This strategy was most famously pioneered by Ray Croc, founder of McDonald's who built the national chain originally around a narrow selection of products. The strategy was followed by others who sought to both emulate McDonald's consistent customer experience, but also differentiate products (e.g. Burger King's emphasis on "fla me-broiled" hamburgers) and the speed and convenience of service, including ubiquitous locations. See also Kaufmann and Lafontaine (1994).

outlets because franchisees pay royalties and advertising fees linked to revenues as opposed to profits whereas franchisees seek to maximize profits of their own outlets. This can lead to differences in terms of pricing, promotion, and cost control strategy.[4] Branding also creates agency tensions. Although the franchisee has some stake in the brand for the reasons cited above, it is not as great as that of the franchisor. Accordingly, a franchisee has incentives to free-ride on the established brand reputation and may be willing to cut corners to reduce costs or improve its individual bottom line, even if that has negative consequences for the franchisor.[5]

2. Compliance and the Fair Labor Standards Act

The Fair Labor Standards Act (FLSA) of 1938 sets minimum wages, overtime compensation for work exceeding 40 hours, and restrictions on child labor. As such, the FLSA creates the "floor" by which minimum working conditions can be measured. Enforcement of the FLSA is carried out by investigators of the Wage and Hour Division (WHD), located in 48 offices around the country. The vast majority of the WHD investigations are instigated in one of two ways. Directed investigations are conducted by inspectors via unexpected visits at establishments who are expected to have poor compliance. Complaint investigations, on the other hand, are made after complaints are lodged by employees who believe an employer is violating a labor regulation. If in the course of either type of workplace inspection, a violation of wage, hour, or child labor provisions is found, employers are liable for back pay to workers equal to the difference between actual earnings and those they were entitled. Employers may also be assessed liquidated damages equal to back pay, as well as civil penalties for repeat violations, violation of child labor prohibitions, and other serious infractions.

[4] One of the reasons that franchisors use revenues rather than profits for this purpose is that they are more transparent for monitoring purposes. Since in many franchised relationships, the franchisee purchases its products from the franchisor, the larger company has an accurate means of monitoring franchisees' revenue. If the fee was related to profits, franchisors would require far more information about cost factors (particularly related to labor) and other inputs that are harder to monitor or more easily manipulated by the franchisee.

[5] To illustrate, imagine an individual fast food outlet along a major interstate highway. The franchisee who owns the outlet may be willing to cut corners in terms of service quality by hiring lower quality employees if he/she believes that the majority of its customers represent non-repeat business (e.g. most customers simply drive by on the highway and will not return). Although the franchisee might benefit from increased profits due to lower labor costs, the poor service experience at that outlet may lead customers to avoid the restaurant elsewhere. For a discussion of this issue, see Lafontaine and Slade (1998); Lafontaine and Kaufmann (1994); Lafontaine and Shaw (1999; 2005).

The Wage and Hour Division devotes significant resources to the eating and drinking industry, accounting for a total of 25,056 of the 165,785 investigations (or about 15 percent) conducted between 2003 and 2008. The estimated amount of annual back wages owed by the industry is also sizeable: the average amount of back-wages recovered during the 2003-2008 period was $12.9 million per year. The significant number of investigations and back-wage collection suggests that many of the major companies in this industry have been investigated repeatedly. For example, between 2003 and 2008 the WHD completed a total of 317 Burger King and 231 Wendy's investigations, through a combination of complaint and directed investigations.

B. Literature review

The rapid growth in franchising over the last thirty years has been accompanied by an extensive theoretical and empirical literature on franchising and franchise contracts. Going back to Caves and Murphy's (1976) and Rubin's (1978) seminal articles, economists have formulated and tested theories about why franchising exists, why the contracts are set up as they are, and the consequences of franchising or franchise contracts.

Despite this large literature, relatively little empirical work exists exploring how franchising or franchise contracts influence labor market outcomes. In the most recent work examining working conditions in franchised workplaces, Cappelli and Harmori (2008) challenge the common belief that franchise jobs are of low quality by comparing various job characteristics between franchised establishments and independent establishments. Once other variables such as industry and establishment size are controlled, they find that franchised businesses provide more extensive and intensive formal training to their employees than do non-franchise operations. Based on this finding, they reject the notion that franchised businesses offer low-quality jobs.

Krueger (1991) examines wage differentials between company-owned and franchisee-owned restaurants in the same chain and argues that observed wage differentials can be explained by monitoring differences. While fast-food restaurants in the Unites States are usually owned and operated by local franchisees, the national parent company also owns a substantial number of restaurants and has them supervised by managers who are paid fixed salaries. Due to

this form of compensation, the managers of company-owned outlets have less incentive to supervise their employees than do the owner-managers of franchised outlets. Based on efficiency wage theory, Krueger posits that the parent company pays higher wages to the managers at company-owned outlets than what local franchisees would pay comparable managers in order to resolve such an incentive issue. He finds that low-level managers hired in company-owned restaurants earn about 9 percent more than those hired in franchisee-owned restaurants. He concludes that because it is more difficult for the parent company to monitor the effort of employees than it is for the owners of local franchises who directly supervise their employees, franchisors use efficiency wages to compensate for less intensive monitoring. The paper, however, does not look directly at wage determination of food preparation and service workers who are covered by the FLSA.

Jin and Leslie (2009) investigate whether chain-affiliation is a source of reputational information for restaurant hygiene quality at a particular outlet. Within chain-affiliated organizations, they examine if franchised outlets free-ride on the chain reputation relative to company-owned outlets. The authors use the hygiene grade scores collected by the Los Angeles County Department of Health Services and, beginning in 1998, posted on the front windows of those establishments. In the absence of information on the quality of a given restaurant, chain-affiliated restaurants may share the reputation of the chain because customers who experience hygiene quality at one restaurant tend to infer hygiene quality for all restaurants in the chain. Since the owner of a franchised chain restaurant seeks to maximize his/her own unit's profits and consumers are unable to distinguish company-owned units from franchised units, and if chain-affiliation is a source of reputation, then franchisees may free-ride on the reputation by exerting less effort to maintain good hygiene. However, if better information for hygiene of restaurants is revealed to the consumers (as it was following the 1998 requirement by Los Angeles County), the importance of chain-affiliation as a signal for hygiene quality and therefore the benefits of franchisees' free-riding behaviors diminish. Jin and Leslie find that prior to the introduction of hygiene grade cards, chain-affiliated restaurants had higher hygiene scores than non-chain restaurants and franchised units of a given chain had lower scores than company-owned units. This difference disappeared after Los Angeles County established the requirement to post grade

cards, suggesting that chain-affiliation or brand name provides information about product quality when full information about quality is unavailable, and that franchisees tend to free-ride on the chain or brand reputation.

Our study is the first to examine empirically how comparative reputational incentives between franchisees and franchisors affect compliance with workplace regulations. Unlike Cappelli and Hamori who are interested in the comparison *between* franchise and independent businesses, we focus on ownership status *within* franchise companies. This allows us to reexamine their argument by examining variation in compliance level within a chain that consists of company-owned and franchised establishments. Among the incentive issues discussed in principal-agent theories, our study focuses on the free-riding problem whereas Krueger focused on the monitoring problem. Finally, our study examines whether the reputational factors that affect consumer choice in the hygiene case of Jin and Leslie extend to a social outcome like labor compliance which is less likely to have direct impact on customer choice.

III. Model

A. Simple compliance model for franchise ownership

We begin with a simple one-period labor compliance model similar to that used by Chang and Ehrlich (1985) where at the beginning of the representative period an expected-profit maximizing employer i with n number of identical outlets chooses either to pay earnings required by the statue to his/her employees or to underpay. At the end of the period, the government regulator targets investigations at the employer-level and investigates simultaneously all outlets of the employer who is one of the targets. Assume that each outlet j of the employer only uses homogeneous labor l in the production process, faces a given legally mandated wage w, and earns revenues r.[6] The employer maximizes expected profits $E(\pi)$ by

[6] In addition to the condition that all outlets of the employer are identical, these assumptions allow that the employer underpay the same level of wages at every outlet.

choosing, at the outlet level, back-wages (bw) – the difference between earnings the employer should have paid and wages he/she actually paid to employees hired at each outlet – as follows[7]:

$$E(\pi_i) = \sum_{j=1}^{n} \left\{ \left[1 - \varphi_j(n, bw_j) \right] \left[r_j - (w_j - bw_j) l_j \right] + \varphi_j(n, bw_j) \left[r_j - w_j l_j - f_j(bw_j) \right] \right\} \quad (1)$$

where:

$\varphi_j(n, bw_j)$: Probability of detection for the outlet j the employer owns, which is a function of both n number of outlets the employer owns and total back-wages owed bw_j at the outlet – which is identical for every outlet of the employer, $\partial\varphi_j / \partial n > 0$, $\partial^2\varphi_j / \partial n^2 > 0$, $\partial\varphi_j / \partial bw_j > 0$, $\partial^2\varphi_j / \partial bw_j{}^2 > 0$; $\partial^2\varphi_j / \partial bw_j \partial n = 0$ [8];

$r_j - w_j l_j$: Profits the employer would make at the outlet j if the he/she paid what is required by the statue to his/her employees (i.e. if he/she complied with the FLSA), which is the difference between revenues r_j and direct costs wl_j;

$f_j(bw_j)$: Level of civil penalties imposed on the outlet j of the non-compliant employer, which depends on total back-wages owed bw_j at the outlet (i.e. $\partial f_j / \partial bw_j > 0$);

Since all outlets of the employer are assumed to be identical, the expected profit function for the employer i becomes:

$$E(\pi_i) = \left\{ \left[r - (w - bw) l \right] - \varphi(n_i, bw) \left[bw + f(bw) \right] l \right\} n_i \quad (2)$$

The first term of equation (2) is the standard expression of expected benefits from non-compliant behavior when the employer is not caught. The second term represents the expected costs of non-compliance, which is the probability that the employer receives an investigation times the sum of back-wages returned to employees and civil penalties imposed by the statute.

[7] Additionally, for simplicity, we assume that number of employees per restaurant l is fixed technologically.
[8] This condition represents that change in the number of outlets the employer owns does not affect the change rates of his/her probability of being caught due to a very small change in total back-wages he/she owed.

The model implies that an employer's incentive to comply depends on the amount of civil penalties and the possibility of being detected. In other words, the employer will commit more violations if, holding other things equal, the penalties are smaller and it is easier to escape detection. It should be also noted that the employer's incentive to comply is larger as the number of outlets the employer owns increases: employers who own more outlets inevitably face a greater probability of being detected than those with fewer outlets as long as the government investigates all outlets of a given employer (i.e. $\partial\varphi_j / \partial n > 0$, $\partial^2\varphi_j / \partial n^2 > 0$).

To illuminate different incentives driving compliance behavior for franchisees versus franchisors, we extend the model by simply adding both the royalty fees that franchisees pay to the franchisor, equivalent to a tax rate t ($0 < t < 1$) on revenues, and the externality from potential deterioration of brand reputation due to the violation. Consider an economy where a franchisor c operates N number of total outlets for his / her brand and has k number of identical franchisees i who own n_i outlets each. In this economy, consumers have homogenous preferences for the brand's product (including its reputation Q) and non-compliance. Then, the expected profit functions of each franchisee i and the franchisor c to be maximized are given respectively by:

$$E(\pi_i) = \left\{\left[(1-t)r(Q) - (w - bw_i)l\right] - \varphi_i(n_i, bw_i)\left[bw_i + f(bw_i)\right]l\right\} n_i \quad (3)$$

$$E(\pi_c) = t\sum_{i=1}^{k} n_i r(Q) + (N - \sum_{i=1}^{k} n_i)\left\{\left[r(Q) - (w - bw_c)l\right] - \varphi_c(N - \sum_{i=1}^{k} n_i, bw_c)\left[bw_c + f(bw_c)\right]l\right\} \quad (4)$$

where:

$$Q = \frac{\sum_{i=1}^{k} n_i q_i(bw_i) + (N - \sum_{i=1}^{k} n_i) q_c(bw_c)}{N}$$

$(N - \sum_{i=1}^{k} n_i)$: Number of company-owned outlets;

Q : Brand reputation level, which is the weighted average of each outlet's reputation q that declines as total back-wages at the outlet increase

(i.e. $\partial q / \partial bw < 0$) and which affects equally revenues of every outlet of the brand (i.e. $\partial r / \partial Q > 0$);

The term $r(Q)$ in Equations (3) and (4) indicates that, if consumers become aware that *any* outlet of a given brand violated the FLSA, reputation of the brand will be lower, resulting in a reduction of consumption at *every outlet of the brand*. This reflects that all restaurants share the brand's reputation as a whole. Note also that the revelation of labor standards violations can affect brand reputation in two ways. First, consumers may reduce their consumption because they have preferences for labor standards compliance or more generally fair treatment of workers (e.g. Hiscox, Schwartz, and Toffel 2008). However, even if consumers are less sensitive to labor standards compliance than to issues like cleanliness and hygiene, there can still be indirect reputational consequences of non-compliance because of its impact on service quality. For example, requiring employees to work "off the clock" - e.g. clean up work stations after punching out for the day - could affect employees' morale and spillover to customer experience.[9] All that is required is that consumers perceive labor standards violations as an indicator of quality diminution.

In this setting, the profit maximizing franchisee i and the franchisor c choose the optimal total back-wages at outlet level (bw_i^*, bw_c^*) respectively, which satisfy the following conditions:

For an outlet owned by franchisee i;

$$(1-t)\frac{\partial r}{\partial Q}\frac{\partial Q}{\partial q_i}\frac{\partial q_i}{\partial bw_i}+\left[1-\frac{\partial \varphi_i}{\partial bw_i}(bw_i + f_i(bw_i))-\varphi_i(1+\frac{\partial f_i}{\partial bw_i})\right]l=0 \qquad (5)$$

For a company-owned outlet owned by franchisor c;

$$(N-(1-t)\sum_{i=1}^{k} n_i)\frac{\partial R}{\partial Q}\frac{\partial Q}{\partial q_c}\frac{\partial q_c}{\partial bw_c}+\left[1-\frac{\partial \varphi_c}{\partial bw_c}(bw_c + f(bw_c))-\varphi_c(1+\frac{\partial f_c}{\partial bw_c})\right]l(N-\sum_{i=1}^{k} n_i)=0 \qquad (6)$$

[9] A notorious YouTube video involving disgruntled Domino's Pizza workers is indicative of the potential consequences of non-compliance on reputation through this indirect channel. A similar argument could be made if the FLSA violations lead to higher turnover with similar impacts on service.

$$\text{where:} \quad \frac{\partial Q}{\partial q_i} = \frac{n_i}{N}; \quad \frac{\partial Q}{\partial q_c} = \frac{N - \sum_{i=1}^{k} n_i}{N}$$

Setting (5) equal to (6) leads to equation (7) that sets out the key conditions driving the back-wage differential (our measure of the severity of non-compliance) between a franchisee- and a company-owned restaurant.

$$bw_i^* - bw_c^* = \left\{ \frac{(1-t)\frac{\partial R}{\partial Q}\frac{\partial q_i}{\partial bw_i} n_i}{\frac{\partial \varphi_i}{\partial bw_i} LN} - \frac{(N-(1-t)\sum_{i=1}^{k} n_i)\frac{\partial R}{\partial Q}\frac{\partial q_c}{\partial bw_c}}{\frac{\partial \varphi_c}{\partial bw_c} LN} \right\} + \left\{ \frac{\varphi_c}{\partial \varphi_c / \partial bw_c}(1+\frac{\partial f_c}{\partial bw_c}) - \frac{\varphi_i}{\partial \varphi_i / \partial bw_i}(1+\frac{\partial f_i}{\partial bw_i}) \right\} + \{ f_c(bw_c) - f_i(bw_i) \} \tag{7}$$

Given several straightforward assumptions,[10] the first term of equation (7) implies that the back-wage differential will be determined by the stake of franchisees in overall reputation which arises in turn from the number of outlets owned by a given franchisee as well as by the size of the royalty payment. The second term implies that the back-wage differential changes with the probability of inspection, arising from the number of outlets owned by a given franchisee relative to the number of company-owned outlets. Finally, the third term indicates that the differential is a function of the relative size of penalties faced by a franchisee- versus company-owned outlet.

The first term of (7) underlies our primary hypothesis about comparative compliance because franchised and company-owned outlets share a common reputation (*Q*). However, the factors that contribute to the profits of an individual outlet do not necessarily correspond to those that determine the profits of the brand. This makes franchisees less interested in brand reputation than the franchisor because the franchisees profit only from the brand to the extent it increases their local profits whereas the franchisor benefits from increases in sales of all outlets in the

[10] The assumptions are $\partial q_i / \partial bw_i = \partial q_c / \partial bw_c$, $\partial \varphi_i / \partial bw_i = \partial \varphi_c / \partial bw_c$, and $\partial f_i / \partial bw_i = \partial f_c / \partial bw_c$.

chain. Furthermore, since consumers cannot distinguish between outlets in terms of ownership or compliance status, they judge them according to brand reputation only (Jin and Leslie, 2009). The asymmetric consumer information therefore plays a significant role in exacerbating under-investments on brand reputation made by franchisees.[11]

Put somewhat differently, individual franchisees are more willing to accept negative effects of non-compliance on brand reputation because the number of outlets owned by a franchisee is much fewer than that of company-owned outlets and therefore his/her total revenues will be far less sensitive to potential deterioration of the brand reputation. Moreover, franchisees have a strong incentive to focus more on decreasing costs than increasing revenues due to royalty payments to the franchisor (e.g. each outlet of a franchisee earns revenues $[1-t]r$ rather r). This incentive can further promote franchisee free-riding on brand reputation. On the other hand, even if the externality from the erosion of brand reputation arising from non-compliance is small, franchisors are more likely to be concerned about the deterioration because they lose far more revenues than franchisees. The desire to prevent erosion of brand reputation is why franchisors open company-owned outlets even if the profitability of company-owned outlets is not as high as that of franchisees because of monitoring problems.

B. Other possible explanations of franchise ownership and compliance associations

Our compliance model provides additional reasons that ownership status might be correlated with noncompliance. The second term of equation (7) implies that franchise compliance differentials may arise from differences in the probability of detection for non-compliance. Clearly, owners with more restaurants will face a higher probability of being caught than one with few outlets as long as WHD investigates all outlets a given employer owns. Since franchisors own and operate more outlets than individual franchisees, their probability of detection by the government can be higher and, accordingly, they are more likely to comply with the FLSA than individual franchisees.

[11] Several studies on principal-agent problems show that relative to the franchisor, franchisees under-invest in various activities, such as table service and hygiene quality, that foster brand reputation (Brickley and Dark, 1987; Blair and Kaserman, 1994). Such activities of franchisees are generally called 'free-riding behaviors relying on brand reputation'

Differences in compliance between company-owned and franchisee-owned restaurants may also arise from the use of efficiency wages by franchisors to deal with the basic monitoring problem. Managers of company-owned outlets face lower-powered incentives to supervise and monitor their employees than franchisees who typically own and manage their own restaurants. As both owner and manager, franchisees have a strong incentive to expend effort in supervising and monitoring workers because they receive the residual profit generated by the outlet. On the other hand, a manager of a company-owned outlet is usually paid a fixed salary and his/her actions are not perfectly observed by the franchisor, thereby providing less incentive to closely supervise employees. To address the monitoring problem, franchisors use efficiency wages in company-owned outlets (Krueger, 1991). Higher efficiency wages provided by company-owned outlets can further promote the incentive for employees, including managers, not to shirk. On the other hand, franchisees have weaker incentives to use efficiency wages because the monitoring problem they face is relatively small and the positive marginal revenues arising from efficiency wages are reduced due to royalty fees imposed by franchisors. Considering wage differentials directly lead to back-wage differentials, as long as compliance with the FLSA reflects the employer's resulting wage scheme, higher efficiency wages would lead to better compliance at company-owned outlets than at franchisee-owned outlets.

Finally, the differences in compliance might be due to tighter budget constraints faced by franchisees. Since franchisees are required to pay the royalty fees to the franchisor in the form of a percentage of revenues rather than profits, they face stronger incentives to decrease costs rather than increase revenues. This may drive franchisees to employ lower quality workers at the expense of revenues (e.g. if we relax the assumption of homogeneous workers in productivity) and/or franchisees employ different screening mechanisms relative to company-owned managers. More constrained budgets faced by franchisees may also lead to lower compliance even absent the impact of fees on budget differentials between franchisees and franchisors.

IV. Data

A. Data sources

In order to estimate the effects of ownership on compliance, we use a sample consisting of the U.S. outlets of the Top 20 brands within the limited service sector of the eating and drinking industry, measured by each brand's total sales in 2003. Table 1 presents the twenty companies composing our sample. The table also reports the total number of U.S. outlets controlled by the companies, the number of investigations reported by the Wage and Hour Division during the study period, and the implied annual probability that the company received an inspection during the study period. Top 20 limited service restaurants represent a significant portion of the restaurant sector. In 2002, Top 20 restaurants accounted for 68% of annual sales and 54% of the total number of outlets in the limited service sector of the Unites States which, in turn, represents 48% of employment in the eating and drinking industry (US Department of Commerce 2002, pp. x-xi).

The data for this paper is a pooled cross-sectional sample arising from the following four sources for the period 2001 to 2005. The primary source of data is the Wage and Hour Investigation Support and Reporting Database (WHISARD). WHISARD records every workplace investigation conducted by the Wage and Hour Division of the U.S. (WHD). Each record contains basic information about characteristics of the establishment investigated, investigation details such as type, method, and timeframe of the investigation, and a detailed record of compliance outcomes. Because WHISARD includes the universe of cases conducted by the WHD and provides complete investigation records, we are able to construct a compliance measure for each establishment inspected during the time period, which is used as our dependent variable, and also to consider important explanatory variables such as the employers' beliefs about probability of being detected. We extracted all investigations initiated and completed between January 1, 2001 and December 31, 2005 for Top 20 fast food outlets.

We identify the ownership status for the investigated outlets using two different sources of data. FRANdata provides a complete list of all franchisee-owned restaurants for 18 of the Top 20 brands in the sample. Using owner names, addresses, zip codes and other fields, we match WHISARD and FRANdata to assign ownership status. However, FRANdata has only limited information on McDonald's and Burger King restaurants. Hence, we use data from Dun &

Bradstreet as a complementary source because it offers a list of company-owned restaurants for the Top 20 brands and of franchised restaurants for McDonald's and Burger King. The Top 20 chains' restaurants listed in FranData and D&B comprise 92% of all Top 20 restaurants in the U.S., enabling us to identify ownership of almost all restaurants in the WHISARD sample.[12] Finally, we match each outlet to local demographic information from the U.S. Department of Census 2000 by matching five or three-digit zip codes.

We only consider investigations involving the FLSA (specifically, those involving suspected violations of minimum wage or overtime provisions). We also only include inspections entailing physical investigation of premises or full two-year reviews of payroll records for employees. This results in 1,768 observations that represent full and limited investigations of establishments for our core analysis.[13]

B. Key variables

Main dependent variable: We measure the extent of non-compliance with the FLSA by using back-wages owed to workers. Back-wages are calculated as the difference between earnings to which an employee is legally entitled by the minimum wage, hour, and overtime requirements of the FLSA and the amount they were paid by the employer. Back-wages arise from failure to pay workers the minimum wage rate or 1.5 times their hourly wage for work in excess of 40 hours during per week. For our analysis, we measure total back-wages per investigation in a given outlet. Since a profit-maximizing employer primarily cares about the total amount of back-wages owed (with the number of employees for each outlet controlled), this provides a useful measure of non-compliance. We also use back-wages per employee paid in

[12] Each record within the WHISARD database of Top 20 outlets was matched to one of the two ownership sources using location and contact variables. This initial matching process resulted in the assignment of ownership of 85% of the records. In an effort to identify franchise status of the remaining unmatched WHISARD records, a phone call was placed to each outlet. A few brief questions were asked to verify establishment ownership status and related information. This procedure increased the percentage of matched records to 90%. We were unable to determine ownership status for 404 of 3825 restaurants in the original sample.

[13] Since investigation strategies are determined by the Wage and Hour Division, there is a possibility that establishments with worse compliance outcomes have been investigated among the population of establishments. The non-random characteristic of investigations underlying WHISARD can introduce problems in estimating the true franchise ownership effect on compliance outcomes, which we discuss in Section V-C.

violation, a measure of the severity of FLSA violations, to investigate the robustness of our findings.

Independent variables: Our key measure of franchise ownership is a dummy variable which is equal to one if the outlet is franchisee-owned and zero if owned by the company (franchisor).

Differences in compliance levels may arise from different perceptions of inspection probabilities between company-owned and franchisees. Accordingly, we use a measure to hold potential deterrence effects arising from past investigations constant. The measure for employer perceptions about the probability of being inspected is the total number of inspections for all Top 20 outlets at a given five-digit zip code in the year prior to the investigation of a particular outlet.

We include two variables to control for market-level effects on compliance. Relevant agency theories predict that franchisors assign company-owned units to areas in which accessing sales information of local agents is difficult due to factors like severe sales fluctuations (Anderson and Schmittlein, 1984; Anderson, 1985; John and Weitz, 1988; Norton, 1988). Other agency theorists argue that franchised units are assigned to areas where monitoring efforts of local agents is difficult (Brickley and Dark, 1987; Norton, 1988; Minkler, 1990). Since competition tends to not only increase local agents' efforts but also makes sales more volatile, franchisors have incentives to locate company-owned units in areas with more competition. At the same time, competition is likely to aggravate noncompliance by lowering profits of outlets. Hence, failure to control for these market-level competition effects could bias the estimated compliance differential downward. We control for these competition effects with two variables: the total number of Top 20 restaurants in a given five-digit zip code and the total number of restaurants with same brand as the observation in the five-digit area.

We control for outlet size by including the number of employees at the outlet in the regression. Franchising is the preferred form of ownership for larger-sized establishments because large organizations are inherently more difficult to monitor and therefore benefit from diligent management by franchisees (Norton, 1988). In addition, outlet size is regarded as related to the risk faced by an agent with regard to the capital investment made in the outlet (Lafontaine, 1992, 1995). In this scenario, since the agent would want investments in the outlet

to be fully insured, franchisors tend to directly operate larger outlets. Considering that smaller establishments have been shown in general to provide worse working conditions (Brown, Hamilton and Medoff, 1990; Fenn and Ashby, 2004; Mendeloff et al., 2006), the number of employees at the outlet could be an influential source of bias if we do not include it as a relevant proxy for outlet size in the regression.

Much of the literature argues that franchise ownership decision for a particular outlet is determined by geographic factors (Kalnins and Lafontaine, 2004; Yeap, 2006). The best way to get true franchise ownership effect on compliance is to compare, in the same brand, the compliance measure between franchisee-owned and company-owned restaurants located at a particular region where both local product market and local labor market conditions are the same. Accordingly, we include three-digit zip code dummies in the regressions.[14] We also include a number of five-digit zip code level demographic variables from the 2000 Economic Census: population, population density, urban composition, racial composition, native composition, median household income, per-capita income, household income distribution, age distribution, crime rates, round trip commute time etc.[15]

Finally, we include investigation year dummies to capture time-varying effects, region dummies, the state minimum wage dummy variable indicating whether state minimum wage is above the federal minimum wage, and brand dummies to control brand-specific effects.[16] It is worth pointing out that, in our sample, inclusion of entries of 7 brands where all outlets are franchisee-owned (or company-owned outlets were never investigated) helps to estimate the franchise ownership variable more precisely by better identifying parameters of other independent variables when we include brand dummies in the regression.

C. Sample statistics

[14] Although five-digit zip code dummies would be an even better control for unobserved local market characteristics, we cannot use them because of small sample limitations at the five-digit level.

[15] The following demographic variables are additionally included in the regression: percentage of households with one person; percentage of households with children; percentage of households who only work at home; percentage of public transportation use for work.

[16] In the regression where three-digit zip code dummies are controlled, we exclude region dummies and the state minimum wage dummy variable.

Means and standard deviations of key variables for the sample are presented in the first column of Table 2. There were a total 1,768 inspections by either full or limited investigation methods of the Top 20 fast food outlets in the U.S between 2001 and 2005. The mean total back-wages per investigation for a given outlet are $1,350. About 40% of the 1768 investigations found one or more violations of minimum wage or overtime standards.

The average number of investigations for all Top 20 outlets in a given five-digit zip code during one year prior to the investigation for a particular restaurant is 0.54. This figure indicates that one investigation was conducted at any of the Top 20 outlets every two years, implying very low annual inspection probabilities at the five-digit zip code level.[17] On the other hand, the number of outlets in most areas is quite large: the average number of Top 20 fast food outlets located in a given five-digit zip code area is nearly 11, while the number of restaurants with the same brand is less than 2.

Table 2 also presents difference-of-means tests between franchisee and company-owned outlets for the dependent variables. The results indicate significant differences in compliance in the predicted direction at 10%, 5% and 1% significance levels: mean total back-wages per investigation are about $1,022 higher in franchisee- than in company-owned outlets while average probability of violation per investigation at company-owned outlets is 19% lower than that at franchised outlets. The table also presents differences by ownership for the main independent variables in the analysis. The total number of same brand restaurants in a given five-digit zip code is significantly higher for franchisee- than for company-owned outlets. Interestingly, Top 20 company-owned restaurants tend to employ more workers than franchisee-owned restaurants. This finding is consistent with the argument that franchised outlets tend to be smaller than company-owned outlets because franchisees are risk-averse for large capital investments on their outlet (Lafontaine 1992, 1995).

[17] Since the average number of Top 20 fast food outlets located in a given five-digit zip code area is 11.13, the average investigation rates for the Top 20 outlets in a given five-digit zip code during one year prior to the investigation for a particular restaurant is 4.85% (i.e. $100 * 0.54 / 11.13$). It should be noted that these rates only consider *the five-digit zip code areas in which an inspection(s) occurred*, excluding five digit-zip code areas which never received any inspection for Top 20 outlets. In other words, these rates do not reflect the fact that in some areas where one or more Top 20 outlets exist, no investigations were made. Indeed, the actual annual investigation rate for Top 20 outlets is 0.76% (Over the five-year period, 3,825 units out of about 502,000 Top 20 outlets were investigated).

Table 3 provides background information on franchise ownership and compliance for the Top 20 fast food companies in the sample. About 95% of the restaurants investigated are franchisee-owned, which is slightly higher than the percent of franchisees reported in an industry measure (85%) shown in the last row of Table 3 and implies that the WHD investigations were somewhat skewed toward franchised outlets. In terms of comparative compliance, Table 3 indicates that in all brands except for McDonald's, the average back-wages per employee paid in violation for franchised outlets are larger than that for company-owned outlets. Even more striking, almost one-half of the Top 20 brands investigated by the WHD owed no back-wages to workers in their company-owned outlets.

V. Empirical Results

A. Tobit results

Since employers who comply with the FLSA pay no back-wages, we estimate the following Tobit specifications:

$$
\begin{aligned}
BW_{ijt}^{*} &= \alpha F_{ij} + X_{ijt}\theta + \beta_j + \delta_t + \varepsilon_{ijt} \\
BW_{ijt} &= BW_{ijt}^{*} \quad \text{if } BW_{ijt}^{*} > 0 \\
BW_{ijt} &= 0 \qquad \text{if } BW_{ijt}^{*} \le 0
\end{aligned}
\tag{8}
$$

where

BW_{ijt}^{*} and BW_{ijt} denote latent and observed total back-wages found by per investigation in the restaurant i located at the region j by the inspection at year t, respectively;

F_i is a dummy variable indicating whether the restaurant i is franchisee-owned;

X_{ijt} is a vector of other independent variables affecting back-wages per employee paid in violation owed in the restaurant i such as the number of employees variable and 20 brand dummy variables;

β_j is a region-specific component captured by three-digit zip code dummies and five-digit demographic variables;

δ_t is a time-varying component controlled by investigation year dummy variables;

ε_{ijt} is the error component containing unobserved shocks.

Table 4 reports the Tobit regression results on key variables discussed in Section IV. The first specification (column 1) contains the franchise ownership variable with the variable capturing the employer's belief about the probability of being detected at a five-digit zip code level, two measures for the number of Top 20 outlets at a five-digit zip code area, number of employees for a given outlet, state minimum wage indicator, four region dummies, and investigation year dummy variables. In the second column, a number of five-digit demographic are added. The third column includes the brand dummy variables. Finally, the fourth column controls for region-specific effects by including three-digit zip code dummy variables in the regression.

In all specifications, the franchise ownership variable is positive and statistically significant at the .01 significance level. The result is robust across specifications, including column (4) which controls for all covariates including three-digit zip code dummies. In that specification, the back-wage differential between franchisee-owned and company-owned restaurants is $4,265, suggesting that holding other things constant at their mean, total back-wages found per investigation are over $4,265 higher at franchisee-owned restaurants than at the company-owned restaurants. This is over three times as large as the mean back-wages for the sample as a whole ($1,350).

We can also see the back-wage differential between restaurants with two different types of ownership becomes larger as the potential region-specific effects are controlled: the back-wage differential in the column (4) is nearly $195 dollars larger than that in the column 3 which does not control three-digit zip code dummies. This suggests that there are unobserved regional factors that simultaneously affect franchise ownership status and compliance level and, in particular, that franchisors locate company-owned outlets in areas where compliance is worse. This finding supports the arguments of previous literatures regarding the comparative reputational incentive between franchisees and franchisors (Brickley and Dark, 1987; Lafontaine and Slade, 1998; Jin and Leslie, 2009): franchisors avoid using franchisees at locations where negative externalities from free-riding on brand reputation is expected to be high. Again, even

after controlling for these region-specific effects, the estimate for the franchise ownership variable is large and statistically significant at the .01 level.

The variable for past inspections of all top 20 outlets in geographic proximity (our measure for employer beliefs regarding investigation probabilities) has the expected negative sign and is statistically significant. This suggests that, all else equal, compliance for a particular outlet improves as the number of past investigations increases in a given five-digit zip code. It appears that employers update the probability of being detected based on information from business colleagues in the local area who also own Top 20 fast food outlets and have been recently investigated or on local news reports about such investigations.

The values of the competition variables have the expected signs but mixed statistical significance. The first variable (third row of Table 4), measuring the number of top 20 outlets in the area, has an expected positive sign and is significant in all but the final specification. This implies that greater competition (larger number of competitors) is associated with lower compliance. Interestingly, the sign of the second competition variable, the total number of same brand outlets in a five-digit zip code, is negative and borderline significant in most specifications.

The coefficient for the number of employees is negative and statistically significant when we exclude brand dummies, which is consistent with Brown, Hamilton and Medoff's (1990) argument that smaller establishments tend to provide worse working conditions. However, the sign of the variable is reversed in specifications (3) and (4), implying a positive relation between total back-wages and outlet size.

B. Robustness checks

1. An IV approach to estimating franchise effects IV

The ideal starting point for isolating the true franchise ownership effect on compliance would be to compare two identical restaurants located next to each other geographically, where one is franchisee-owned and the other is company-owned. So far, we have included potential covariates including a number of five-digit zip code demographic and three-digit zip code dummy variables for this purpose. Since equation (8) does not rely on an explicit source of

exogenous variation in the franchising decision, there may be other differences between company-owned and franchised units that also impact the compliance measure.

Agency theories suggest that characteristics of a given outlet largely contribute to franchising. Of particular concern is variation in the capacity of franchisees to establish effective management practices or systems. The incentive to increase revenues is higher-powered at franchisee-owned than at company-owned outlets because managers in company-owned outlets are typically paid a fixed salary that does not depend on their outlet's revenues. On the other hand, a franchisor still needs to monitor the activities of franchisees, including their maintenance of brand standards. Accordingly, if a franchisor finds in the process of recruiting potential franchisees in a given local area a candidate who seems likely to engage in practices (e.g. setting up effective management systems) that facilitate the franchisor's monitoring, thereby providing the franchisor greater confidence in their ability to maintain standards relative to other franchisees, the franchisor will be more likely to grant a franchise even if other conditions would favor opening a company-owned outlet. This possibility is consistent with the recent trend that franchisees who own multiple outlets are the modal form of franchising (Kaufmann and Dant, 1996; Kalnins and Lafontaine, 2004): based on high performance including management practices of the existing units, franchisors grant their franchisees to get additional outlets. Since better management systems are likely correlated with better compliance, omission of a relevant proxy capturing heterogeneity among the pool of franchisees with respect to outlet characteristics like management systems could result in a biased estimate of the franchise ownership effect.[18]

To obtain a consistent estimate of the true franchising effect from equation (7), we therefore need to find an instrument that affects franchise ownership but not the compliance measure. For reasons described below, we use the percentage of the same brand outlets that are company-owned for the particular restaurant investigated at a three-digit zip code level as our instrument.

Franchisors are capital constrained in their early stages and sell outlets to franchisees to raise capital (Caves and Murphy, 1976; Ozanne and Hunt, 1971). As this capital constraint relaxes over time, in order to hinder the deterioration of a brand reputation due to franchisees'

[18] If this source of omitted bias was mixed with the Tobit estimates of franchise ownership status but completely controlled by our instrument, IV estimates will be larger than the corresponding Tobit ones.

free-riding behavior, franchisors strategically set a percentage of company-owned outlets in advance at the national level and actively achieve the target over time by adding and subtracting both franchisee-owned and company-owned outlets (Shaw and Lafontaine, 2005). Based on this argument, for a given brand, the percentage of company-owned restaurants at a particular geographic level is likely strongly correlated with the franchisor's franchising strategy.

It also seems plausible that the percentage of company-owned restaurants for each brand at a given geographic area is uncorrelated with the error term of the equation (8). We directly include the number of past investigations, two competition variables, outlet size, brand-specific, and region-specific factors that can affect back-wages for a given outlet in the regression. This enables us to rule out the incentives for each franchisor to allow franchisees to own and manage outlets in areas where higher violations of the FLSA occur. In so doing, we control for other endogenous sources of variation in a given franchisor's franchising decision except for characteristics particular to each outlet such as the presence of better management systems. In addition, the percentage of company-owned restaurant for each brand is unlikely to be systematically associated with those characteristics. Nevertheless, to ensure that the characteristics of the restaurants are not included in the instrument, we exclude the franchise status of the observation in calculating the percentage of company-owned restaurants of a particular brand at the three-digit zip code level. This makes the instrument unrelated to the compliance level of the observation and, therefore, protects our results from any other omitted biases that arise from the factors contributing to franchise ownership decision and also associated with compliance level. We construct the instrument at a three- rather than five-digit level because of sample size considerations. This leads to a decrease in total number of observations from 1,768 to 1,692, because of the cases where an outlet is the only one of the brand in the three-digit zip code.

We use IV Tobit with two-stage least square estimator.[19] IV Tobit employs Tobit for the structural equation and a linear model for first-stage. Although the linear form for the first-stage

[19] We also used IV Tobit estimator with maximum likelihood except for the specification analogous to (4) in Table 4. The estimates and conclusions are not qualitatively different when the structural equation is estimated by the maximum likelihood IV estimator. A table containing the maximum likelihood estimator is available on request.

ignores the binary nature of the endogenous regressor, it only requires the standard conditions for the validity of the instrument to create consistent estimates, i.e. the instrument should be strongly correlated with the endogenous regressor but unrelated with the error term of the structural model (Cameron and Trivedi 2005).

The top panel of Table 5 summarizes the basic sample statistics for the instrumental variable and the second panel of Table 5 presents IV Tobit results. Each specification is analogous to that in Table 4.

As in the standard Tobit regression results, the franchise ownership effect is positive and statistically significant, well below the .05 level in every specification. The effects of other independent variables are also similar in sign, size, and significance to those in the Tobit regressions. The striking difference from the Tobit results is the magnitude of the estimates for the franchise ownership variable. In every specification, the coefficient for the franchise ownership variable when IV Tobit is used is far larger than the comparable Tobit estimate. In specification (4), in particular, the back-wage differential between franchisee-owned and company-owned restaurants is $10,204, all other factors held constant. This value is about 2.5 times greater than the corresponding Tobit estimate. The dramatic increase in the size of this coefficient when we instrument for franchising suggests that the characteristics of restaurants we fail to control for in the Tobit regression influence both franchise ownership status and the compliance level. Moreover, the IV estimate may imply that franchisors grant franchises to operators who have better management systems at locations where creating a company-owned outlet would otherwise be favorable.

Test statistics for the instrumental variable listed in specifications (3) and (4) allow us to determine which estimation result best represents true franchise ownership effects. From the first-stage results shown in the bottom panel (C), we find that the estimated coefficient of the instrument is significantly different from zero at the .001 level, which implies that percentage of company-owned outlets at a three-digit zip code area is a highly relevant instrument for franchise ownership status. On the other hand, it is uncertain that the instrument is strong enough for franchise ownership. The F-Statistic in specification (3) is 11.32 which is above the significance

threshold whereas it is only 2.65 for specification (4).[20] The small F-statistic in specification (4) arises from lower variation in franchise ownership by inclusion of the large number of three-digit zip code dummies. More importantly, we believe the instrument is strong and supported on theoretical grounds because the percentage of company-owned outlets for each brand at a three-digit zip code level reflects the franchisor's active strategy in protecting overall brand reputation (Lafontaine and Shaw, 2005). Finally, for the specification (3) and (4), the p-values for exogeneity tests for franchise ownership variable are 0.154 and 0.078 respectively, implying that the hypothesis cannot be rejected at conventional significance levels. While one might argue that the five-digit zip code demographic variables are therefore sufficient to control for other omitted bias, the large increase in the magnitude of the coefficients for franchise ownership variable suggest the value of the IV approach.

2. Alternative measures of compliance

As another robustness check, we use two alternative compliance measures.[21] First, we use a dummy variable for the presence of one or more violations in an investigation. The second measure, back-wages per employee paid in violation, is created by dividing the total back-wages found per investigation by the total number of employees that were found to be owed back-wages. Since we control for the number of employees for each outlet in the analysis, the latter dependent variable provides a scaled measure of the average severity of violations per affected worker. This measure represents a useful alternative compliance measure for directly testing for reputational effects since the presence of severe underpayment of wages may increase the possibility that the local or national media report such violations. If branded companies are particularly sensitive to such news stories, company-owned outlets should have lower severity of violations per outlet as well as the lower back-wages per investigation found above.

[20] As a rule-of-thumb, the instrument is judged to be weak if the F-statistic of the first-stage regression is below 10 (Staiger and Stock, 1997).

[21] In addition to these robustness checks, we estimated franchise ownership effects on the log form of total back-wages found per investigation to deal with the possible effects of a small number of large back-wage findings as well as on the main dependent variable using OLS. The large differences in these compliance measures between franchised outlets and company-owned outlets still hold (these results are available from the authors upon request).

The left panel of Table 6 reports the Probit and implied marginal effects for the first measure while the right panel presents the Tobit and IV results for the second measure.[22] Specification (1) includes all independent variables except for three-digit zip code dummy variables in the regression whereas specification (2) controls for them as well. Similarly to Table 4 and 5 results, franchise ownership effects remain positive and statistically significant in every specification. The Probit estimate for the compliance dummy variable for specification (2), implies that the probability of finding a violation at franchised restaurants is about 24% higher than at company-owned restaurants, holding other variables constant at their mean. The large differences in the magnitude of effects between the Tobit and IV results also remain. As shown in the right panel, in every specification, the coefficient for the franchise ownership variable when IV Tobit is used is far larger than the comparable Tobit estimate: the IV estimate of $1,223 in specification (2) for BW/EEPIV means that on average, back-wages per employee paid in violation are over $1,220 larger at franchisee-owned restaurants than at the company-owned restaurants. This value is about 70 percent greater than the corresponding Tobit estimate ($717).

C. Addressing potential sample selection bias

The WHD undertakes two types of investigations: directed and complaint. Directed investigations are conducted by inspectors via unannounced visits at establishments in targeted industries. Complaint investigations, on the other hand, arise from complaints lodged by employees who believe an employer is violating the FLSA. The dissimilar nature of the triggers for the two investigation types can lead to different outcomes of an investigation. Complaint investigations are more likely to result in positive back-wage findings than are directed investigations because those investigations are conditional on the presence of a potential violation. Indeed, of all FLSA cases concluded in 2000 and 2001, 83% of complaint investigations found the FLSA violations, compared with only 35% of directed cases.

We can test for selection bias in our dataset by using the distinct characteristics of the two separate samples. Complaint investigations arise from a worker allegation of an FLSA violation and the WHD's subsequent decision to investigate based on the claim. In contrast, directed

[22] Unlike the case where a dependent variable is continuous, many observations are dropped due to multi-collinearity between samples in the Probit estimations.

investigations reflect a decision to focus on a sector or industry (e.g. eating and drinking) but are not generally targeted based on specific employer- or workplace-level information. Since the WHD's complaint investigations create a tendency for establishments to be drawn disproportionately from the tail of the distribution that commits violations, we cannot rule out the possibility that the conditional mean of our full sample is biased towards the group which is more likely to commit violations. In particular, because complaint investigations are more likely to be affected by sample selection bias than the directed investigations—which can be regarded as random within a selected industry group—comparing the estimated franchising effect separately for complaint versus directed investigations can illuminate the extent of such biases.[23]

Table 7 reports Tobit and IV Tobit results for two separate samples with the similar specifications shown in Table 6.[24] The magnitude of the franchisee effect obtained from the directed investigations sample is of particular interest. In the case of Tobit specification (2), the coefficient for the franchise ownership variable is $8,424. The magnitude of the estimate is about 2.2 times as large as that of the corresponding Tobit estimate with the full sample ($4,071). Given that directed investigations are unlikely to be targeted at an employer-level, this estimate suggests very large back-wage differentials between two otherwise similar outlets differing only in terms of ownership. These dramatic differences are highlighted by a comparison of the incidence of any FLSA violations between franchised versus company-owned outlets: the percent of investigations with no violations is 95% for company owned versus 73% for franchised outlets within the directed sample.

In contrast, the coefficient for the franchise variable for the complaint investigations sample is still positive, but statistically insignificant in most specifications. Since complaint investigations are conducted after employees who believe an employer is violating a labor regulation complain to the WHD, most cases find violations. The resulting smaller variations in compliance levels not surprisingly reduce the franchise ownership coefficients. Consequently,

[23] In addition, there is no sign that the WHD sets investigation strategies based on franchise ownership information (which is not known a priori to them).

[24] Unlike Table 6, specification (2) does not control for three-digit zip code variables because of small sample size at the 3-digit zip code level. In the directed investigation sample, for example, the number of three-digit zip code dummy variables is 340 whereas the number of company-owned outlets is only 34. The large number of three-digit zip code dummy variables relative to sample size creates convergence problem whenever we include in these zip code dummies in the regressions with Tobit or IV Tobit estimator.

the larger significant estimates for franchise ownership variable in the directed sample suggest the presence of even larger franchise effects in the less biased portion of the sample.

VI. Discussion and Extensions

A. Explaining the company-owned / franchisee compliance gap

The estimates presented in the tables above suggest the presence of large and significant franchise ownership effects on compliance. In this section, we present evidence that the estimates arise from differences in concern about brand reputation between franchisees and franchisors rather than other explanations noted in Section III.

First, the above franchise effect might be attributed to the argument that franchisors might believe that they face a higher probability of being detected by the government than do franchisees. We have controlled for the impact of differing perceptions of inspection probabilities on estimated franchise effects through incorporation of the past inspection variables. What is more, it is hard to account for the very large compliance differences found above given that the actual annual investigation rates for the Top 20 franchised-owned outlets and for Top 20 company-owned outlets are 0.72%, and 0.36% respectively.[25]

The following calculation is indicative: assume that each owner calculates the probability of being detected based on the number of outlets he/she owns relative to the annual number of investigations for the owner and that each franchisee owns only one outlet. If so, the average difference in probability of being detected between a franchisee-owned outlet and a company-owned outlet is 0.4%.[26] If other components in the expected profit function developed in Section III are constant, these differences would lead to differentials in probability of a violation per

[25] Over the five-year period, 3,183 units out of about 436,988 franchised outlets were investigated, whereas 238 units out of about 64,967 company-owned outlets were inspected.

[26] Since we have the complete information on number of investigations and number of outlets by ownership for Top 20 brands, we can calculate the average of annual investigation rates for a franchised outlet and for a company-owned outlet per brand. Under these assumptions, the probability of being detected for a franchised outlet is 0.00000409 versus 0.0040780 for a company-owned outlet. Because the majority of franchisees own multiple units, the differences between our inspections probabilities are smaller than implied by the above calculation.

investigation between franchisee-owned outlets and company-owned outlets. Compared to the estimates for marginal effects presented in left panel of Table 6 (23.9% in specification (2)), this magnitude is miniscule. The tiny size of the compliance differential arises because of the very low annual investigation rates in absolute terms. Thus, even though the annual investigation rates for a given franchisor is much larger relative to the rates for a franchisee, the chance of detection in a given year is close to zero for both types of outlets, leading to minimal expected differences in compliance arising from the probability of detection effects.

One might still argue that the large compliance gaps may arise from the franchisor's concern about the higher probability of being investigated, particularly if penalties for a company-owned outlet are much higher than those for a franchised outlet. However, civil penalties for repeat violations and serious infractions of the FLSA imposed by the WHD are very low. Table 8 presents civil penalties assessed by the WHD on Top 20 outlets during the study period. Civil penalties were applied to only 28 cases of the 2,247 total violation cases and 21 cases out of the 67 repeated violation cases. Furthermore, the maximum of the penalty paid by a Top 20 outlet was $3,600.

A second explanation for the compliance gaps relates to monitoring problems arising at company-owned outlets. Since franchisors address the monitoring problem by using efficiency wages in company-owned outlets (Krueger, 1991), the higher efficiency wages provided by company-owned outlets may lead to better compliance at company-owned outlets than at franchisee-owned outlets.

There is an additional way to distinguish between the reputational and monitoring explanations in our franchising effects. The monitoring story leads to different predictions about the relationship between the magnitude of the franchise effect and franchisees' scale (i.e. number of outlets each franchisee owns). A multi-unit franchisee faces the same monitoring problem posited by Krueger as it grows in scale and geographic scope. They should therefore adopt efficiency wages to internalize the problem. Specifically, a monitoring story would predict that as franchisees grow in terms of the number of units they own or the geographic dispersion of their operations, the back-wages they owe relative to those at comparable company-owned units should diminish because they adopt efficiency wages to deal with monitoring problems. This

would also suggest that compliance levels of multi-unit franchisees would differ from those of single-unit or very small franchisees. In contrast, if the brand reputation story holds, one would not expect to find appreciable differences in the incentives to comply among franchisees of different scale until a franchisee becomes very large and operates in multiple states, thereby giving it comparable incentives to prevent brand image deterioration.

In order to test for the presence of franchisee scale effects, we re-estimate compliance models, breaking franchised outlets into several groups that differ by the number of outlets owned by a given franchisee. Each franchisee group's coefficients, relative to company-owned outlets, are presented in Table 9. The outlets owned by single-unit franchisees (SUFs) and multi-unit franchisees (MUFs) owe higher levels of back-wages than comparable company-owned outlets for all groups except for the outlets operated by very large MUFs who own more than 110 units in multiple states. We also see in the lower panel of Table 9 that back-wages for any other MUFs (group A, B, and C) excluding the very large MUFs operating in multiple states (group D) are not significantly different from that for SUFs.[27] On the other hand, the coefficient for group D is significantly different from that of each of the other franchisee groups.

The fact that only very large multi-state MUFs have back-wages that do not differ significantly from those at company-owned outlets is consistent with the brand reputation story and inconsistent with monitoring explanations.[28] In addition, the finding that back-wages for MUFs who own between 11 units (mean of this group) and 173 units (maximum of this group) in only a single-state are not significantly different from those for SUFs is also counter to a story that differentials in compliance arise as a result of differences in the probability of detection.

It is important to also consider the argument that differences in compliance level may arise from tighter budget constraints for franchisees. Since franchisees pay a portion of revenues to their franchisor, they have strong incentives to minimize costs by hiring lower productivity workers at the expense of revenues. If the argument is true, lower productivity of workers hired

[27] The larger size of the coefficient for small single state franchisees relative to that for SUFs is a puzzle, which cannot be explained by any of the alternative theories including the brand reputation hypothesis.

[28] Note that our argument does not mean that wage gaps arising from the higher-efficiency wage scheme have nothing to do with the back-wage differentials. There are many reasons that larger franchisees and franchisors might pay higher wages. For example, they could provide higher wages for their own employees in order to maintain brand reputation, which in turn reduces the chance that employees provide poor service thereby reducing revenues at other of their outlets.

by franchisees relative to those hired at company-owned outlets would require very large productivity differences to explain the estimates presented in tables above. The presence of such large and unmeasured productivity differences within three digit zip code areas seems implausible given Krueger's (1991) empirical finding that workers' characteristics were almost identical (e.g. years of schooling and high school grade point average) in his studies of fast food workers. Of course, the much tighter budget constraint itself might directly lead to worse compliance.[29] However, it is also hard to explain the finding presented in Table 9 that back-wages for SUFs have no significant difference from those for MUF groups B and C who likely face less restrictive budget constraints.[30]

B. Why do franchisors tolerate noncompliance among franchisees?

If franchisees engage in activities that could potentially undermine a franchisor's brand reputation, why would the brand let such practices persist? Given the resources that franchisors devote to protecting their brand through monitoring the activities of franchisees, why would they tolerate human resource policies that could jeopardize brand reputation?

A glib answer would be that, prior to this study, franchisors were unaware of substantial differences in compliance behavior between franchisee and company-owned operations. While this might be true, it begs the fundamental question: If franchisors seek to protect reputation, any activity that might jeopardize it should be fair game for monitoring. Yet most franchisors do not monitor payroll practices of their franchisees (and explicitly note in most franchise agreements that such activities are the domain of franchisee and not the franchisor).

[29] This hypothesis is not easy for us to accept. Unless the firm is on the edge of bankruptcy, it can choose to reduce other costs first before paying employees less than the requirements of the FLSA. In order for a severe budget constraint to affect the employer's likelihood of violating the FLSA, we may need to consider that the employer also disregards erosion of brand reputation due to the violation.

[30] This argument is also inconsistent with the finding that back-wages for company-owned outlets are not significantly different from those for group D. Very large multi-unit franchisees may face tighter capital constraints than the franchisor, in that they typically pay the same portion of revenues as other franchisees. Accordingly, there should still be back-wage gaps between these two groups. Furthermore, assuming that the number of employees at an outlet is a relevant proxy for the tightness of the outlet's budget constraint, the argument predicts that there would have been a significant increase for franchise effects, presented in column (4) of Table 4 and 5, if we do not control for the number of employees in the specification (these model results will available from the author upon request).

A deeper answer is that franchisors fear the consequence of asserting greater oversight of franchisees in regard to their operational policies because of the doctrine of vicarious liability. Vicarious liability refers to liability imposed upon one party because of the actions of another. Under tort law, according to Arlen and MacLeod (2005),

> "Vicarious liability holds organizations (and other principals) liable for their agents' torts, committed within the scope of the agency relationship, such as an employer-employee relationship. Organizations generally are not liable for torts by independent contracts, even if committed within the scope of the agent's authority. The central distinction between a master-servant agency relationship and a non-master-servant (e.g. independent contractor) agency relationship turns on whether the principal had the capacity to control the physical conduct of the job… (Arlen & MacLeod, 2005: p. 4).

Vicarious liability affects the degree that in a principal-agent relationship the principal attempts to influence behavior by asserting more direct control on the agents' activities. Franchisors would expose themselves to a wider set of liabilities (and potential costs) if they begin to treat franchisee employees as their own: Monitoring payroll records or imposing closer monitoring scrutiny could be interpreted as evidence of a "master-servant" relationship and therefore expose the franchisor to tort liabilities going far beyond the employment relationship itself (for example, suits by customers arising from a franchisee employee who failed to warn customers of a wet floor that led to a fall and injury).

Reluctance to monitor franchisee behavior is consistent with behavior documented in other research. Rebitzer (1995) found that in the wake of a series of major petrochemical explosions and worker fatalities linked to the use of independent contractors to undertake "turn-around" operations on petrochemical plants, those companies sought to distance themselves from the training and supervision of independent contractors in their plants who were hired to provide short term labor in order to change the mix of products produced by the facilities. Despite the potentially devastating impact of improperly performed work, major petrochemical companies sought to insulate themselves from asserting "master-servant" relationships with turnaround

contractors in order to avoid tort claims arising from those contractors' activities. Jin and Leslie (2009) findings concerning the gap between franchisee and company-owned restaurant hygiene prior to the imposition of mandatory grade cards can be similarly understood through the lens of vicarious liability, even given the clear costs of such behavior to the brand and franchisor.

Thus, although there could be reputation effects arising from their franchisees' poor compliance, franchisors' reluctance to actively monitor them arises because such behavior could potentially subject them to even higher costs arising from tort liability.[31] This would explain the persistence of large compliance gaps between franchisee- and company-owned outlets.

VII. Conclusion

A significant literature (Rubin, 1978; Mathewson and Winter, 1985; Lafontaine and Shaw, 2005) concerns different investments in brand reputation between franchisees and franchisors. Outlets in a chain share the same consumer reputation of the brand as a whole. On the other hand, franchisees profit only from the brand to the extent it increases their local profits unlike a franchisor who benefits from increases in sales of all outlets in the chain induced by the brand reputation. Hence, the franchisees under-invest in various activities that foster brand reputation relative to the franchisor.

We find that differences in the reputational incentives arising from franchise ownership structure have major impacts on compliance with minimum wage and overtime laws in the eating and drinking industry. Compliance is significantly lower at franchisee-owned outlets than at company-owned outlets directly owned and managed by the franchisor. Total back-wages found by per investigation at franchisee-owned restaurants are at least, $4,265 more than at comparable

[31] A legal website providing advice to franchisors nicely illustrates this balancing act. In an article title "Franchisor Vicarious Liability" the author notes: "It has been recommended that this [liability] exposure can be reduced by including disclaimers and waivers of control within the franchise agreement. Too often, the issues of franchisor liability for franchisee actions are covered in standardized clauses covering liability and indemnification that are inserted into franchise agreements without much thought. However, a carefully written agreement will seek to retain control in certain vital areas (financial reporting, for instance), while disclaiming or waiving any degree of control over certain day to day operations of a franchisee that might give rise to liability." (Dunn 2009).

company-owned restaurants. This estimate becomes 2.5 times larger when we use the instrument for franchising status.

Our findings have several implications regarding the three prior studies discussed in Section II. First, our finding challenges the conclusion in Capelli and Hamori (2008) that "once industry, size, and other control variables are taken into account, franchise operations appear to have offered better jobs with more sophisticated systems of employee managements than did similar non-franchise operations." (p. 147). Since franchised operations are found primarily among branded companies, their conclusion confounds the effect of branding and franchising—that is, they extrapolate that the higher levels of training provided by establishments that are franchised arise from that form of ownership, rather than the overarching effect of branding on franchisors generally. Our data explicitly control for branding and then measures direct franchising effects. Our main finding indicates that within a given brand, violations of the FLSA are indeed far more severe at franchised outlets than those at company-owned outlets. Defining "good" and "bad" jobs is a normative matter, but our results clearly indicate holding aside branding effects, franchisees have far worse compliance with labor standards.

Second, company-owned outlets' better compliance provides an alternative interpretation of the wage differentials between company-owned and franchisee-owned restaurants studied by Krueger (1991). Our results show that even though franchisors fail to internalize franchisee's free-riding behavior, the outlets which they directly own and manage play a significant role in maintaining their own brand reputation. This implies that company-owned outlets seek to maximize long-run profits including the reputation of their brand among all outlets while franchisees focus on profit maximization without considering deterioration of the reputation arising from noncompliance. The resulting difference in attitudes toward profit maximization between company-owned outlets and franchised outlets could give rise to the finding that workers hired in company-owned outlets earn more than workers hired in franchisee-owned outlets.

Finally, our study provides evidence consistent with Jin and Leslie (2009) of the free-riding problem arising from ownership structure. In particular, our finding is striking because it suggests that franchisors consider compliance with the FLSA as a source of brand reputation

even though it is not as centrally related to consumer service and quality as are the hygiene factors studied by Jin and Leslie. This could imply that consumers are far more sensitive about treatment of the local workforce than commonly thought. Alternatively, it may imply a strong link between service quality and compliance with basic labor standards. Furthermore, while Jin and Leslie and our results suggest that franchisors have good cause to be concerned about franchisee behavior that could undermine reputation (whether from poor hygiene or compliance with workplace regulations), they seem unwilling to risk the potential costs arising from tort liability that could accompany greater oversight of franchisee operational activity.

The empirical evidence of this study has important policy implications. The Wage and Hour Division (WHD), the part of the Department of Labor responsible for enforcement of the FLSA, has devoted significant resources to the fast-food sector. Like other regulatory agencies, the WHD has paid little attention to franchise ownership in constructing its enforcement strategies. Given that the WHD seeks to improve targeting of its limited investigation resources, the evidence provided here can provide it (and other agencies facing franchised operations) with new means to establish and implement better strategies to improve compliance based on ownership structure. For example, since our findings indicate that franchisees free-ride on brand reputation, increased disclosure about past violations (e.g. in the form of posting 'violation of the FLSA cards' in restaurant windows) or refocusing enforcement based on franchise status may lead to better compliance in the industry without incurring substantially increased enforcement costs. More generally, regulators might benefit from more explicit recognition of how ownership and industry structure may affect business behavior and compliance incentives in fashioning enforcement strategies.

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<Table 1> Company Size and Inspection Probabilities of Top 20 Fast Food Brands

Brand	Rank	Total Sales [a]	Total Outlets	Number of Investigations	Implied Annual Probability of Being Investigated Per Outlet [b]
McDonald's	1	$22,122,001,078	13,609	630	0.0093
Burger King	2	$7,900,000,576	7,904	330	0.0084
Wendy's	3	$7,480,001,746	5,761	205	0.0071
Subway	4	$5,699,002,085	16,499	781	0.0095
Taco Bell	5	$5,300,001,484	5,989	162	0.0054
Pizza Hut	6	$4,999,996,444	7,523	140	0.0037
KFC	7	$4,899,997,912	5,524	226	0.0082
Domino's Pizza	8	$3,003,400,856	4,904	123	0.0050
Dunkin Donuts	9	$2,975,001,447	4,139	235	0.0114
Arby's	10	$2,639,998,719	3,303	111	0.0067
Sonic	11	$2,360,400,504	2,706	169	0.0125
Jack in the Box	12	$2,305,000,731	1,947	26	0.0027
Dairy Queen	13	$2,199,997,956	4,836	147	0.0061
Hardee's	14	$1,761,700,479	2,121	159	0.0150
Papa John's	15	$1,706,798,808	2,574	59	0.0046
Popeye's	16	$1,313,100,408	1,447	129	0.0178
Little Caesars	17	$1,210,000,029	2,877	49	0.0034
Quizno's	18	$896,100,797	2,501	93	0.0074
Baskin Robbins	19	$510,001,212	2,604	22	0.0017
Blimpie	20	$250,000,428	1,623	29	0.0036

Data sources: Sales and outlets – QSR TOP 50 (2004); Number of investigations – WHISARD dataset described in Section IV.

[a] Sales revenue and number of outlets for 2003.

[b] Annual inspection activity calculated as average annual number of investigations between 2001-2005 divided by number of outlets for each brand.

<Table 2> Franchisee- versus. Company-Owned Compliance Measures and Key Independent Variables, Top 20 Fast Food Brands, 2001-2005

	N	Mean [Standard Dev.]	Mean Franchisee Owned (1)	Mean Company Owned (2)	Difference (1) – (2)
Dependent Variable					
Total Back-Wages Per Investigation ($) [a]	1,768	1350.07 [5068.43]	1398.06 (126.23)	375.80 (119.58)	1022.27* (569.51)
Incidence of Employer Non-Compliance [b]	1,768	0.40 [0.49]	0.41 (0.01)	0.21 (0.04)	0.19*** (0.05)
Back-Wages Per Employee Paid In Violation ($)	1,768	177.87 [541.67]	185.08 (13.49)	31.59 (7.49)	153.49** (60.81)
Independent Variables					
Franchise Ownership Dummy	1,768	0.95 [0.21]	1 (0.00)	0 (0.00)	1 (–)
No. of Past Inspections for Top 20 Outlets At Five-Digit Zip Code Level (within a year)	1,754	0.54 [1.07]	0.55 (0.03)	0.44 (0.11)	0.10 (0.12)
No. of Top 20 Outlets At Five-Digit Zip Code Level	1,760	11.13 [6.50]	11.08 (0.16)	11.98 (0.80)	-0.90 (0.73)
No. of Same Brand Outlets At Five-Digit Zip Code Level	1,760	1.61 [1.12]	1.62 (0.03)	1.31 (0.08)	0.31** (0.13)
Number of Employees	1,710	21.63 [14.16]	21.37 (0.35)	26.90 (1.37)	-5.52*** (1.64)

Data source: See Section IV. Standard error in parentheses.

[a] Back-wages calculated as the difference between earnings to which all employees in the investigation were legally entitled by the minimum wage, hour, and overtime requirements of the Fair Labor Standards Act and the amount they were actually paid by the employer. Amount based on comprehensive payroll review conducted by the US Department of Labor, Wage and Hour Division.

[b] Dependent variable equal to 1 if number of violations found in the investigation ≥ 1.

*** Statistically significant at the 1% level; ** at the 5% level; * at the 10% level

<Table 3> Franchisee- versus Company-Owned Back-Wage Findings
Top 20 Fast Food Brands in eating and drinking industry

Brand	% of Franchisee		Total Back-Wages Per Investigation			
	(Estimate)	(QSR)	Mean	Franchisee Owned (1)	Company Owned (2)	Difference (1) – (2)
McDonald's	97%	85%	$577.87	$574.99	$670.93	-$95.94
Burger King	91%	92%	$940.23	$990.48	$447.77	$542.71
Wendy's	89%	77%	$1,712.11	$1,881.18	$397.14	$1,484.04
Subway [a]	100%	100%	$1,720.67	$1,720.67	N.A.	N.A.
Taco Bell	85%	79%	$1,318.96	$1,546.37	$0.00	$1,546.37
Pizza Hut	86%	76%	$169.79	$196.96	$0.00	$196.96
KFC	97%	77%	$1,089.86	$1,120.34	$0.00	$1,120.34
Domino's Pizza	95%	88%	$2,160.42	$2,171.98	$1,944.66	$227.32
Dunkin Donuts [a]	100%	100%	$2,678.25	$2,678.25	N.A.	N.A.
Arby's	96%	93%	$1,629.42	$1,684.14	$124.61	$1,559.53
Sonic	91%	82%	$1,844.32	$1,967.60	$576.21	$1,391.39
Jack in the Box	68%	20%	$974.50	$1,424.26	$0.00	$1,424.26
Dairy Queen [a]	100%	99%	$934.28	$934.28	N.A.	N.A.
Hardee's	63%	66%	$804.22	$954.38	$546.80	$407.58
Papa John's	97%	78%	$1,450.92	$1,502.74	$0.00	$1,502.74
Popeye's [a]	100%	94%	$1,637.33	$1,637.33	N.A.	N.A.
Little Caesars	96%	87%	$399.32	$415.29	$0.00	$415.29
Quizno's [a]	100%	100%	$338.06	$338.06	N.A.	N.A.
Baskin Robbins [a]	100%	100%	$227.64	$227.64	N.A.	N.A.
Blimpie [a]	100%	100%	$278.10	$278.10	N.A.	N.A.
Total	95%	85%	$1,350.07	$1,398.06	$375.80	$1,022.27

Data Sources: '% of Franchisee (QSR)' – QSR TOP 50 (2004); Back-wages – WHISARD (see Section IV for details).

[a] Brand does not have any company-owned outlets. See text for discussion.

<Table 4> Impact of Franchise Ownership on Compliance
Tobit Results

Dependent Variable: Total Back-Wages Per Investigation [a]

Variables \ Specifications	(1)	(2)	(3)	(4)
Franchise Ownership	4,615.014	4,621.851	4,071.459	4,265.430
(Franchisee-Owned vs. Company-Owned)	(1409.145)	(1388.119)	(1440.414)	(1568.375)
	[0.001]	[0.001]	[0.005]	[0.007]
Number of Past Investigations	-1,113.995	-872.001	-948.893	-696.357
for Top 20 Outlets	(266.586)	(263.532)	(260.576)	(283.611)
(At a Five-Digit Zip Code Level within a Year)	[0.000]	[0.001]	[0.000]	[0.014]
Number of Top 20 Outlets	134.604	107.433	134.533	13.948
(At a Five-Digit Zip Code Level)	(43.262)	(52.555)	(52.391)	(59.708)
	[0.002]	[0.041]	[0.010]	[0.815]
Number of Same Brand Outlets	-471.100	-523.904	-928.634	-622.950
(At a Five-Digit Zip Code Level)	(278.907)	(272.727)	(294.679)	(336.502)
	[0.091]	[0.055]	[0.002]	[0.064]
Number of Employees in an Outlet	-38.444	-37.338	42.668	88.093
	(18.610)	(18.137)	(25.274)	(25.538)
	[0.039]	[0.040]	[0.092]	[0.001]
Inclusion of the following covariates:				
State Minimum Wage Dummy [b]	Yes	Yes	Yes	Absorbed
Region Dummy [b]	Yes	Yes	Yes	Absorbed
Year Dummy	Yes	Yes	Yes	Yes
Demographic Variables	No	Yes	Yes	Yes
Brand Dummy	No	No	Yes	Yes
Three-Digit Zip Code Dummy	No	No	No	Yes
Statistics				
McKelvey & Zavoina's R2	0.031	0.042	0.064	0.260
N	1,701	1,654	1,654	1,654

Data source: See Section IV. Standard error in parentheses and P-values in brackets.

[a] Mean back-wages per investigation for the sample: $1,350. See Table 2 for definition of back-wages.

[b] State and regional dummies excluded where detailed, 3-digit zip code dummy variables used in estimation.

<Table 5> Impact of Franchise Ownership on Compliance
IV Estimation Results
Dependent Variable: Total Back-Wages Per Investigation

(A) Sample Statistics for the Instrument

Instrument	N	Mean	St.D.	Min	Max
Percentage of Each Brand's Company-Owned Outlets [a] (At a Three-Digit Zip Code Level)	1,692	10.03	21.59	0	100

(B) IV Tobit Regression Results

Variables \ Specifications	(1)	(2)	(3)	(4)
Franchise Ownership	8,962.627	9,409.418	8,333.446	10,204.326
(Franchisee-Owned vs. Company-Owned)	(2784.561)	(2818.975)	(3348.576)	(3711.592)
	[0.001]	[0.001]	[0.013]	[0.006]
Number of Past Inspections	-1,296.142	-1,033.222	-1,128.115	-748.487
for Top 20 Outlets	(292.027)	(287.779)	(285.173)	(298.203)
(At a Five-Digit Zip Code Level within a Year)	[0.000]	[0.000]	[0.000]	[0.012]
Number of Top 20 Outlets	150.640	117.786	152.686	36.130
(At a Five-Digit Zip Code Level)	(44.889)	(53.885)	(53.549)	(59.981)
	[0.001]	[0.029]	[0.004]	[0.547]
Number of Same Brand Outlets	-546.655	-610.439	-1,015.393	-613.686
(At a Five-Digit Zip Code Level)	(286.380)	(279.919)	(298.768)	(338.290)
	[0.056]	[0.029]	[0.001]	[0.070]
Number of Employees in an Outlet	-35.038	-33.537	45.925	87.672
	(19.071)	(18.620)	(25.984)	(26.043)
	[0.066]	[0.072]	[0.077]	[0.001]
Inclusion of the following Covariates:				
State Minimum Wage Dummy	Yes	Yes	Yes	Absorbed
Region Dummy	Yes	Yes	Yes	Absorbed
Year Dummy	Yes	Yes	Yes	Yes
Demographic Variables	No	Yes	Yes	Yes
Brand Dummy	No	No	Yes	Yes
Three-Digit Zip Code Dummy	No	No	No	Yes
Statistics				
Regressor Exogeneity	[0.063]	[0.045]	[0.154]	[0.078]
F-Value of first-stage	31.720	14.900	11.320	2.650
N	1,634	1,589	1,589	1,589

(C) First-stage Results

	(1)	(2)	(3)	(4)
Pct. of Each Brand's Company-Owned	-0.005	-0.005	-0.005	-0.005
Outlets at a Three-Digit Zip Code Level [b]	(0.000)	(0.000)	(0.000)	(0.000)
(Excluding a given observation)	[0.000]	[0.000]	[0.000]	[0.000]
Number of Employees in an Outlet	-0.001	-0.001	-0.001	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)
	[0.091]	[0.051]	[0.039]	[0.087]

Data source: See Section IV. Standard error in parentheses and P-values in brackets.

[a] Instrument defined as the percentage of each brand's company-owned outlets at a 3-digit zip code level, excluding the given observation.

[b] First-stage estimates control for all independent variables that are included in the structural model. Full results available from the authors.

<Table 6> Franchise Impacts on Compliance Using Alternative Measures of Compliance

Dependent Variable: Dummy for a Violation and Back-Wages Per Employee Paid in a Violation (BW/EEPIV)

Dependent Variables	**Presence of Non-compliance [a]**				**Back-Wages Per Employee Paid in a Violation [b]**			
	Probit		**Marginal Effects [c]**		**Tobit**		**IV [d]**	
Variables \ Specifications	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Franchise Ownership	0.537	0.733	0.183	0.239	572.945	716.881	1,278.563	1,222.884
(Franchisee-Owned vs. Company-Owned)	(0.180)	(0.272)	(0.052)	(0.070)	(191.015)	(224.826)	(427.095)	(497.779)
	[0.003]	[0.007]	[0.000]	[0.001]	[0.003]	[0.001]	[0.003]	[0.014]
Number of Past Inspections	-0.161	-0.099	-0.061	-0.038	-88.461	-52.887	-119.075	-46.028
for Top 20 Outlets	(0.039)	(0.065)	(0.015)	(0.025)	(33.755)	(39.748)	(35.708)	(39.546)
(At a Five-Digit Zip Code Level within a Year)	[0.000]	[0.129]	[0.000]	[0.129]	[0.009]	[0.183]	[0.001]	[0.244]
Number of Top 20 Outlets	0.008	-0.012	0.003	-0.005	6.205	-9.863	9.709	-7.009
(At a Five-Digit Zip Code Level)	(0.007)	(0.012)	(0.003)	(0.005)	(6.922)	(8.540)	(6.810)	(8.052)
	[0.283]	[0.323]	[0.283]	[0.323]	[0.370]	[0.248]	[0.154]	[0.384]
Number of Same Brand Outlets	-0.107	-0.109	-0.041	-0.042	-102.774	-51.899	-108.212	-45.981
(At a Five-Digit Zip Code Level)	(0.037)	(0.068)	(0.014)	(0.026)	(38.054)	(47.823)	(37.068)	(45.263)
	[0.004]	[0.106]	[0.004]	[0.106]	[0.007]	[0.278]	[0.004]	[0.310]
Number of Employees in an Outlet	0.003	0.012	0.001	0.005	1.599	5.382	2.137	5.379
	(0.003)	(0.005)	(0.001)	(0.002)	(3.346)	(3.669)	(3.31)	(3.515)
	[0.468]	[0.026]	[0.468]	[0.026]	[0.633]	[0.142]	[0.519]	[0.126]
Inclusion of the following Covariates:								
State Minimum Wage Dummy	Yes	Absorbed	Yes	Absorbed	Yes	Absorbed	Yes	Absorbed
Region Dummy	Yes	Absorbed	Yes	Absorbed	Yes	Absorbed	Yes	Absorbed
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Brand Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Three-Digit Zip Code Dummy	No	Yes	No	Yes	No	Yes	No	Yes
Statistics								
Regressor Exogeneity (for only IV)	–	–	–	–	–	–	[0.060]	[0.259]
McKelvey & Zavoina's R2 / F-Value (IV)	0.232	0.480	–	–	0.054	0.169	11.320	2.650
N	1,654	1,051	1,654	1,051	1,654	1,654	1,589	1,589

Data source: See Section IV. Standard error in parentheses and P-values in brackets.

[a] Sample Mean (s.d.): 0.40(0.49). Dependent variable equal to 1 if the number of violations found in the investigation ≥ 1.

[b] Sample Mean (s.d.): $177.87 (541.67). Back-wages per employee paid in a violation calculated as back-wages per investigation divided by the number of workers found to be paid in violation of the Fair Labor Standards Act.

[c] Marginal effect on outlet level non-compliance based on reported Probit coefficients with all other independent variables evaluated at their mean.

[d] IV is the percentage of each brand's company-owned outlets at the 3-digit zip code level (see Table 5).

<Table 7> Franchise Impacts on Compliance: Directed Investigation vs. Complaint Investigation Sample

Dependent Variable: Total Back-Wages Per Investigation

Sample by Investigation Type	**Directed Investigation Sample [a]**				**Complaint Investigation Sample [b]**			
	Tobit [c]		**IV [c]**		**Tobit [c]**		**IV [c]**	
Variables \ Specifications	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Franchise Ownership	9,239.093	8,423.719	21,510.146	22,687.876	2,171.835	1,113.123	7,619.223	3,896.458
(Franchisee-Owned vs. Company-Owned)	(2793.016)	(2778.261)	(5473.596)	(6171.778)	(1775.467)	(1913.311)	(3666.634)	(4465.496)
	[0.001]	[0.003]	[0.000]	[0.000]	[0.222]	[0.561]	[0.038]	[0.383]
Number of Past Inspections	-766.115	-770.037	-831.398	-882.230	489.346	347.555	-31.148	-171.928
for Top 20 Outlets	(315.259)	(315.323)	(343.155)	(349.043)	(483.972)	(477.575)	(572.300)	(557.279)
(At a Five-Digit Zip Code Level within a Year)	[0.015]	[0.015]	[0.015]	[0.011]	[0.312]	[0.467]	[0.957]	[0.758]
Number of Top 20 Outlets	255.316	268.429	297.281	336.933	-5.968	32.321	6.041	60.782
(At a Five-Digit Zip Code Level)	(72.661)	(72.844)	(81.711)	(83.756)	(74.228)	(73.999)	(75.498)	(74.656)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.936]	[0.662]	[0.936]	[0.416]
Number of Same Brand Outlets	-579.804	-927.083	-796.904	-1,080.252	-46.400	-562.958	-173.693	-722.915
(At a Five-Digit Zip Code Level)	(320.148)	(347.528)	(350.184)	(377.478)	(443.289)	(484.952)	(454.987)	(487.379)
	[0.070]	[0.008]	[0.023]	[0.004]	[0.917]	[0.246]	[0.703]	[0.138]
Number of Employees in an Outlet	19.722	61.650	31.574	87.034	-58.920	67.887	-54.577	62.838
	(23.937)	(33.857)	(25.884)	(37.615)	(25.687)	(35.717)	(26.351)	(36.188)
	[0.410]	[0.069]	[0.223]	[0.021]	[0.022]	[0.058]	[0.038]	[0.082]
Inclusion of the following Covariates:								
State Minimum Wage Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Brand Dummy	No	Yes	No	Yes	No	Yes	No	Yes
Three-Digit Zip Code Dummy	No	No	No	No	No	No	No	No
Statistics								
Regressor Exogeneity (for only IV)	–	–	[0.005]	[0.006]	–	–	[0.077]	[0.471]
McKelvey & Zavoina's R2 / F-Value (IV)	0.253	0.655	8.910	6.420	0.080	0.161	8.370	8.130
N	892	892	853	853	762	762	736	736

Data source: See Section IV. Standard error in parentheses and P-values in brackets.

[a] Directed investigations are conducted by inspectors via unannounced visits at establishments in targeted industries.

[b] Complaint investigations arise from complaints lodged by employees who believe an employer is violating the FLSA.

[c] Specification (2) does not control for three-digit zip code variables because of small sample size at the 3-digit zip code level. The large number of three-digit zip code dummy variables relative to sample size creates convergence problem whenever we include in these zip code dummies in the regressions with Tobit or IV Tobit estimator.

<Table 8> Civil Monetary Penalties ($) Paid by Top 20 Brand Outlets (2001-2005)

($)	Violation Cases by Top 20 Brand Outlets (2001-2005) [a]											
	First Violation [b]				Repeated Violations [c]				Total			
	N	Mean (St.D)	Min	Max	N	Mean (St.D)	Min	Max	N	Mean (St.D)	Min	Max
No Penalties Cited	2,173	0 (0.00)	0	0	46	0 (0.00)	0	0	2,219	0 (0.00)	0	0
Positive Penalties[d]	7	948.29 (614.84)	140	1,878	21	994.76 (937.72)	100	3,600	28	983.14 (857.77)	100	3,600
Total	2,180	3.04 (62.61)	0	1,878	67	311.79 (694.72)	0	3,600	2,247	12.25 (144.03)	0	3,600

Source: WHISARD data set for (2001-2005), see Section IV for details; Standard deviations in parentheses.

[a] Civil monetary penalties are incurred as a result of significant non-compliance with FLSA by an employer. Results in table are based on all violation cases among the Top 20 brands' outlets which have been investigated by the WHD during the study period.

[b] First time workplace cited during study period. Note that an employer might have had a prior investigation before the study period.

[c] Repeat investigation record lists employer as a repeat violator (prior violation history with the Wage and Hour Division).

[d] Civil monetary penalties greater than zero cited in the investigation.

<Table 9> Comparison of Compliance Behavior Among Single-, Multi-Unit Franchisee-, and Company-Owned Outlets
Tobit Analysis
Dependent Variable: Total Back-Wages Per Investigation

	Estimated Impact of Franchisee Group on Back-Wages relative to Company-Owned Outlets [a]	
Variables \ Specifications	(1)	(2)
Single-Unit Franchisees (SUFs)[b]	3,452.576 (1551.165) [0.026]	3,574.403 (1675.287) [0.033]
Multi-Unit Franchisees (MUFs) Operating in a Single State		
Group (A): MUFs Below Mean # Outlets Owned (Less than 11 units in a Single State)[c]	4,886.305 (1466.660) [0.001]	4,959.763 (1587.487) [0.002]
Group (B): MUFs Above Mean # Outlets Owned (11 or Greater than 11 units in a Single State)[d]	3,181.411 (1653.268) [0.054]	3,486.555 (1758.406) [0.047]
Multi-Unit Franchisees (MUFs) Operating in Multiple States		
Group (C): MUFs Below Mean # Outlets Owned, (Less than 110 Units)[e]	3,185.066 (1489.031) [0.032]	2,814.809 (1667.959) [0.091]
Group (D): MUFs Above Mean # Outlets Owned (110 or Greater than 110 Units)[f]	-801.634 (2193.958) [0.715]	-75.320 (2333.759) [0.974]
Inclusion of other covariates		
All covariates in Table 4 (Except Three-Digit Zip code dummy)	Yes	Yes
Three-Digit Zip Code Dummy	No	Yes
N	1,514	1,514

P-Values of Tests for Back-Wage Difference between Each Franchisee Groups

	(1)	(2)
SUF – Group (A)	[0.044]	[0.051]
SUF – Group (B)	[0.813]	[0.942]
SUF – Group (C)	[0.760]	[0.451]
SUF – Group (D)	[0.022]	[0.062]
Group (A) – Group (D)	[0.002]	[0.003]
Group (B) – Group (D)	[0.041]	[0.090]
Group (C) – Group (D)	[0.026]	[0.124]

Data source: See Section IV. Standard error in parentheses and P-values in brackets.
[a] Models include all covariates in Table 4 except where noted above. Complete results available from the authors.
[b] Franchisee owns only one outlet of the brand.
[c] Mean (s.d.) number of outlets owned by Group (A): 4.2 (2.3)
[d] Mean (s.d.) number of outlets owned by Group (B): 29.1 (25.9)
[e] Mean (s.d.) number of outlets owned by Group (C): 31.9 (27.5)
[f] Mean (s.d.) number of outlets owned by Group (D): 345.1 (244.7)