# Does Ownership Structure Influence Regulatory Behavior? The Impact of Franchisee Free-Riding on Labor Standards Compliance

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## Abstract

This paper examines the effect of franchising on compliance with labor standards regulations in the U.S. 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 leading us to hypothesize that compliance is worse at franchisee-owned outlets than at comparable company-owned outlets as a result of the free-riding problem. By using a unique pooled cross-section of the top 20 branded fast food restaurants in the U.S., we observe that total back-wages (wage repayment equal to the difference between those received and those owed to workers by statute) found by per investigation at a given franchised outlet are $4,265 larger than at a comparable company-owned outlet. This franchise effect grows further in magnitude with the use of relevant instruments for franchising status.

# I. Introduction

The rapid growth of franchising over the last thirty years has been accompanied by an extensive theoretical and empirical literature on franchising, its incentive problems, and its consequence. In contrast, little empirical work exists exploring how franchising impacts on public policy outcomes. 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 franchising on compliance with labor standards regulations in the U.S. In particular, we focus on the effect of franchisee free-riding behavior on brand reputation as a crucial determinant of compliance.

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. 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 (i.e. outlets that the franchisor directly owns and manages) have a greater incentive to comply with the laws relative to franchised units where franchisees are likely to exert relatively less effort to comply given their incentives. Hence, we hypothesize that compliance is worse at franchisee-owned outlets than at comparable company-owned outlets as a result of the free-riding problem arising from ownership structure.

To estimate the impact of franchisee's free-riding behavior on compliance, we consider the twenty largest limited service restaurants in the fast food industry. The institutional features of the Top 20 brand restaurants provide unique conditions for analyzing the effect of franchising on compliance. Top 20 brand restaurants 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 earnings close to the minimum wage, and there is significant variation in franchise ownership across the top 20 brands. This provides us with the necessary variation for comparing the compliance level of company-owned outlets with franchisee-owned outlets. In addition, the Top 20 brand restaurants are a good fit for studying free riding behavior because they are likely to be more sensitive to brand reputation than relatively small 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 brand restaurants in the U.S., we observe that total back-wages (wage repayment equal to the difference between those received and those owed to workers by statute) found by per investigation at a given franchised outlet are, at least, $4,265 larger than at a comparable company-owned outlet. This 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. In addition, the findings imply that franchisors consider compliance with FLSA as a source of brand reputation even though it is only indirectly linked to brand image unlike other kinds of product quality such as of table service or hygiene quality.

Our findings enrich theoretical and empirical research on compliance by showing 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 the free-riding problem arising from ownership structure affects public policy outcomes which most literature has neglected.

The remainder of this paper is organized as follows. Section II discusses the institutional background of the fast food industry where franchising plays a significant role as well as FLSA and the Wage and Hour Division (WHD), the agency that enforces the Act. We then review the relevant literature and model franchisees free-riding behavior and derive the core hypothesis of the study. Section III describes our data sources and the matching procedure employed. Section IV presents the effects of

franchise ownership on compliance. Section V discusses alternative explanations for our findings and presents several robustness checks. Section VI concludes.

## II. Background and Model

### 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 employment or about 3.3 million workers.[1] The vast majority (88%) of jobs in the industry are low skilled and relate to food preparation and service. Employment is concentrated in small food establishments, which average about 17 workers per outlet.[2] Average hourly earnings for food preparation and servers in 2006 were $7.23 with a 10$^{th}$ percentile wage of $5.79 (well below the current federal minimum wage of $6.55).[3] 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 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

[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 places (NAICS 72221) are defined as "establishments primarily engaged in (1) providing food services where patrons generally order or select items and pay before eating or (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. Some establishments in this industry may provide these food services (except snack and nonalcoholic beverage bars) in combination with selling alcoholic beverages."

[2] U.S. Bureau of the Census, *County Business Patterns: The United States*. (Washington, DC: GPO, 2004). http://www.census.gov/epcd/cbp/download/dwncbp04.html

[3] U.S. Bureau of Labor Statistics, *Occupational Employment and Wage Estimates, NAICS 722211, Limited Service Restaurants*, May 2006.

are well known national—and international—brands, illustrating the importance of major chains to the industry. The top 20 firms in the industry accounted for $80 billion or 59 percent of the $117 billion of the fast food sector's revenue and about 65 percent of the total fast food outlets in the U.S.[4]

The fast food sector in the United States 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.[5]

Restaurants also represent the most highly franchised industry in the United States, making up 36 percent of all franchised establishments.[6] Under a typical franchise 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 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.[7] 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 the use of trademarks, operating policies, and recordkeeping. These provisions seek to protect the franchisor from franchisee activities that could erode the value of the brand. Specifically, franchisees are restricted in the way that they arrange and maintain stores, prepare and purchase products, and interact with customers. In some cases, franchisees are required to purchase all inventory and supplies from the franchisor. For the franchisor, this

[4] 2002 Economic Census: Food Services and Drinking Places, pp. x-xi. We sum the company-owned and franchised outlets of each of the major limited service companies to obtain these estimates.
[5] Economic Research Service, United States Department of Agriculture, CPI, Prices and Expenditures: Foodservice as a Share of Food Expenditures, Table 12: Food Away from Home as a Share of Food Expenditures, http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/Data/table12.htm (site accessed May 8, 2006).
[6] FranData 2000, Table 4-1.
[7] The upfront fee is usually between $10,000 and $50,000, and is often, but not always, required for each store a franchisee wishes to open. Most royalty fees are set as a constant percentage at all levels of sales, with some contracts specifying a minimum monthly royalty payment. See Blair and Lafontaine (2005). Most agreements also have a separate advertising fee, typically less than three percent of sales and paid with the royalty fee to fund any national or regional advertising conducted by the franchisor.

arrangement creates an additional revenue stream, increases the ability to monitor franchisee sales, and ensures internal consistency across all franchised outlets.[8] These restrictions help ensure that individual franchisees do not alter the desired brand image and that customers receive a uniform experience in all locations.

Franchising is an attractive ownership form given the industry's geographically dispersed, labor-intensive, and service-based nature. In such an industry, an enterprise's profitability is closely tied to the productivity and service delivery of its workforce. Assuring workforce productivity, in turn, requires effective management including careful monitoring of the workplace. A large company with geographically dispersed outlets can therefore use franchising—rather than relying on company-owned and managed outlets—to better align the incentives of the franchisee whose earnings are linked to the outlet's profitability.

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, return business is partly based on the belief that the customer will receive the same experience in any outlet of the company visited.[9] 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, because franchisees pay royalties linked to revenues as opposed to profits, the franchisor benefits financially from increased sales (revenue), while the franchisee seeks to maximize profit (revenue less cost). This can lead to differences in terms of pricing,

[8] Franchisors that sell inventory to franchisees gain an increased monitoring ability by comparing the expected sales (based on purchased inventory) to royalty fees collected.

[9] 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 "flame-broiled" hamburgers) and the speed and convenience of service, including ubiquitous locations. See also Kaufmann and Lafontaine (1994).

promotion, and cost control strategy.[10] Branding also creates agency tensions. Although the franchisee has some stake in the brand for the reasons cited above, they are not as great as that of the franchisor. In particular, a franchisee has incentives to free-ride on the established brand and may be willing to cut corners to reduce costs or improve its individual bottom line, even if that has negative consequences for the branded company.[11]

*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, FLSA creates the "floor" by which minimum working conditions can be measured.[12] Enforcement of FLSA is carried out by investigators of the Wage and Hour Division (WHD), located in 48 offices around the country. The vast majority of 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, violation, of wage, hour, or child labor provisions are 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.

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[10] 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.

[11] 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 it believes that the majority of its customers represent non-repeat business (e.g. because most are simply driving 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 discussions of this issue, see Lafontaine and Slade (1998); Lafontaine and Kaufmann (1994); Lafontaine and Shaw (1999; 2005).

[12] 29 U.S.C. 201, et seq. SA.

The Wage and Hour Division devotes significant resources to the restaurant sector, accounting for a total of 35,902 of the 252,676 investigations (or about 14 percent) conducted between 1998 and 2005. The estimated amount of annual back-wages owed by the industry is also sizeable: in 2004 estimated back-wages exceeded $24 million. Many of the major companies in the fast food sector have been investigated repeatedly. For example, between 1998 and 2005, WHD completed a total of 677 Burger King and 358 Wendy's investigations, through a combination of complaint and directed investigations. Some of these investigations arose from directed investigations, but the majority (about 70 percent) arose from worker complaints.[13]

**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 consequence of franchising or franchise contracts.

Despite this large literature, relatively little empirical work exists exploring how franchising or franchise contracts have influences on labor market outcomes. In the most recent work examining working conditions in franchised workplaces, Cappelli and Harmori (2008) try to 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

[13] This total was comprised of 10,788 directed and 25,114 of all complaint investigations. Based on authors' analysis of WHISARD, FY 1998-2005.

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 than comparable managers paid by local franchisees 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.

Finally, Jin and Leslie (2009) investigate whether chain-affiliation is a source of reputational information in regard to restaurant hygiene quality for 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 own unit's profits and consumers are unable to distinguish company-owned and franchised units, 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 requirement by Los Angeles County in 1998 to post restaurant grades, 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, but this difference disappeared after the requirement to post grade cards was established. This finding suggests that chain-affiliation or brand name provides information about the product quality when full information about the quality is unavailable, and that franchisees tend to free-ride on the chain or brand reputation.

To the best of our knowledge, this is the first study to examine empirically how free-riding by franchisees affects labor compliance. Unlike Cappelli and Hamori who are interested in the comparison *between* franchised and independent businesses, we focus on ownership status *within* franchised companies. This allows us to reexamine Cappelli and Hamori's argument by examining variation in compliance level within a franchise chain. 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 that have less direct impact on customer choice.

## C. Model

*1. Franchisee free-riding and compliance with FLSA*

An extensive literature on principal-agent problems provides a number of reasons why franchisors use both forms of ownership in the same franchise brand. Several studies from that literature show that relative to the franchisor, franchisees under-invest in various activities, for example table service and hygiene quality, that foster brand reputation (Brickley and Dark, 1987; Blair and Kaserman, 1994). This so-called free-riding problem arises because franchisees maximize the profit of their own outlets, not those of the chain as a whole.

Whereas the restaurants in the brand share a uniform reputation, the factors that contribute to the profits of an individual outlet do not necessarily correspond to those that determine the profits of the brand. In particular, franchisees are 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 chain. Furthermore, consumers cannot distinguish between

outlets in terms of ownership or compliance status, and therefore judge them according to brand reputation only (Jin and Leslie 2009). One method for franchisors to prevent free-riding on brand reputation is to open company-owned outlets. Company-owned outlets hire managers whose actions are monitored more carefully in terms of the maintenance of brand reputation. The incentives of managers in company-owned outlets are not as high powered as those of franchisees because managers are typically paid a fixed salary that does not depend on their outlet's profits. Nonetheless, they also have less incentive to increase their profits at the expense of the brand reputation than do franchisees operating in a comparable market.

Extending the free-riding insight, we hypothesize that a similar free-riding problem exists leading franchisee owned outlets to be less likely to comply with the FLSA than comparable company-owned outlets. Consider the following simple labor compliance model which assumes workers are homogenous, employers maximize profits, and wage and other prices including output price are given.

$$\pi_i = W_i - P_i(W) \cdot [W_i + f_i] \qquad \text{(A-I)}$$

where:

$\pi_i$ is an employer's profit from the violation of the FLSA at outlet i;

$W_i$ is the benefit from the violation, (i.e. back wages the employer should have paid if in compliance with the law);

$P_i(W)$: probability of detection;

$f_i$: penalty owed for violation,

The second term of (A-1) is the standard expression of the expected cost of non-compliance which consists of two parts – $P_i(W) \cdot W_i$, the expected back-wages to be paid and $P_i(W) \cdot f_i$, the expected fine owed by the employer. The model implies that the incentive for the employer to comply depends on expected penalties and the possibility of being detected ($P_i(W)$). In other words, the employer will violate if, all else equal, the expected fines are smaller and it is easier to escape detection (Ashenfelter and Smith, 1979).

The different incentives driving compliance behavior of the franchisees versus franchisors can be shown by simply adding potential deterioration of brand reputation due to the violation ( $DBR_i$ ) as another component of the cost term of the violation.

$$\pi_i = W_i - P_i(W) \cdot [W_i + f_i + DBR_i] \qquad \text{(A-II)}$$

From the forgoing free-riding argument, franchisee-owned restaurants will consider (A-I) since they are not concerned about deterioration of reputation whereas company-owned restaurants will consider (A-II). This implies that franchisee's free-riding behavior on brand reputation leads to a lower perceived cost of violation and therefore to higher non-compliance at franchisee-owned outlets relative to comparable company-owned outlets.

What if the violation of the FLSA does not affect the reputation of a restaurant brand? For example, one might argue that consumers may not be concerned if the employer violated minimum wage or overtime standards at the outlet where they purchased food. Assuming otherwise comparable cost and revenue structures, and a similar labor market, compliance should therefore differ little by ownership. In this case, both company-owned and franchisee-owned outlets face the same profit function for the violation (i.e. A-I).

Consumers may be less sensitive to labor standard compliance than issues like service and cleanliness that directly affect the quality of product and free-riding incentives (Jin and Leslie 2009). However, if non-compliance with FLSA at an outlet(s) negatively affects customers' overall perception of the brand (e.g. a perception of poor management practices generally) – which might be further exacerbated if compliance is correlated with service quality, the free-riding problem is once again present.[14] This would make franchisors very sensitive to threats to reputation than would most franchisees who have far less vested in the national reputation of the brand.

[14] For example, requiring employees to work "off the clock" (e.g. clean up work stations after punching out for the day) or not providing overtime pay could result in morale issues that in turn affect service. Individual franchisees may be more willing to accept lower morale given that they do not include DBR (A-II) in their decisions. A similar argument could be made if FLSA violations lead to higher turnover with similar impacts on service.

Alternatively, if consumers do have preferences for better labor standard compliance (e.g. Hiscox, Schwartz, and Toffel 2008) and are therefore sensitive to non-compliance even at the local level,[15] one would predict the emergence of compliance gaps between franchised and company-owned outlets. However, they would be smaller than those arising from the national brand reputation hypothesis described above. This is because franchisees who own multiple outlets in a particular geographic area should also be more concerned about consumers' reaction to FLSA violations since they could result in reduction in their own outlets' revenues (relative to single-unit franchisees).[16] Nevertheless, free-riding behaviors may still be present even if the reputation hypothesis operates at the local level because consumers may be aware that violations have occurred at a brand operating in the local area (e.g. through local news reports) but cannot distinguish between outlets with and without violations.

*2. Other possible associations between franchise ownership and compliance*

The compliance model shows how free-riding problems may arise in franchise ownership structures and influence compliance. However, there are additional reasons that ownership status might be correlated with noncompliance that must be considered.

A first explanation for the differences in compliance between company-owned and franchisee-owned restaurants is that franchisors might believe that their probability of detection by the government is higher than do franchisees. Clearly, owners with more restaurants will inevitably face a greater overall probability of being detected than one with few outlets. Since franchisors have more outlets they own and operate than individual franchisees, their expected cost of non-compliance will be higher (holding the DBR term in A-II constant) and, accordingly, they are more likely to comply with FLSA than individual franchisees.

Second, the basic monitoring problem arising from franchise ownership structure may affect compliance through a different mechanism than free-riding. As noted above, managers of company-owned outlets face lower-powered incentives to supervise and

[15] Even if non-compliance with FLSA is a major determinant of consumers' purchase decision, the effects may be restricted to the geographic area which is closely related with the local focus of consumers' consumption of fast food..

[16] Most franchisors tend to allow franchisees to add new outlets geographically close to the existing one(s) based on their performances (Kalnins and Lafontaine 2004, Blair and Lafontaine 2005).

monitor their employees from franchisees who typically own and manage their own restaurants. As both owner and manager, franchisees have a strong incentive to expend effort for 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 or her actions are not perfectly observed by the franchisor, thereby providing less incentive to closely supervise employees. If noncompliance with FLSA reflects the employer's resulting monitoring practices, differences in violation rates may reflect more intensive supervision of employees at franchised outlets.

Finally, the differences in compliance might be due to heterogeneity of workers employed at the outlets. Assuming that workers are heterogeneous in productivity and franchisees employ different screening mechanisms relative to company-owned managers, franchisees might be more likely to hire workers who have lower productivity at the expense of revenues. This may arise because the royalty and advertising fees that a franchisee is required to pay to the franchisor are in the form of a percentage of revenues rather than profits, making the franchisee focus on decreasing costs rather than increasing revenues by employing lower quality workers.[17] Consequently, this possibility can lead to gaps in compliance level between company-owned and franchisee owned outlets.

## III. Data

### A. Top 20 limited service restaurants

In order to estimate the effects of ownership on compliance, we use a sample consisting of the twenty largest 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, with McDonald's and Burger King topping the

[17] There are three components of the payments terms within a franchise agreement. One is franchise fee, upfront and one-time payment when a franchisee opens the outlet. Another is royalty fee, a percentage of sales that is paid to the franchisor each week or month for the right to continue to operate the franchise. And the other is advertising fee, a percentage of sales that is paid with the royalty fee to fund any national or regional advertising conducted by the franchisor. With rare exceptions, these payments are same for franchisees within a brand.

list. The table also reports the total number of U.S. outlets controlled by the companies and the number of investigations reported by the Wage and Hour Division during the study period. Top 20 limited service restaurants represent a significant portion of the restaurant sector. In 2002, Top 20 restaurants represent 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.[18]

We focus on the top 20 fast food restaurants for several reasons. First, because of the low wages paid to a large proportion of the workforce, with the 10$^{th}$ percentile wage currently below the current minimum wage, the sector has high rates of non-compliance relative to other industries as well as a large number of low wage workers. Second, 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 wages (Krueger, 1991).

There is also significant variation in ownership structure across the top 20 brands, which provides the necessary variation for comparing the compliance level of company-owned outlets with that of franchisee-owned outlets. Furthermore, since the large national companies making up the sample have made significant investments in their brand, they are likely to be more sensitive to brand reputation effects than relatively small or localized franchisors. Finally, we exclude branded full-service restaurants from our sample because many employees in those companies have earnings that are composed of both straight-time wages and tips. Since detecting compliance with minimum wages in workplaces with a significant portion of compensation in the form of tips is difficult, we focus on a sector where compensation is entirely based on a standard wage rate.

**B. Data sources**

The data for this paper represent a pooled cross-sectional sample arising from the following four sources for the period 2001 to 2005. The primary source of data is the

[18] 2002 Economic Census: Food Services and Drinking Places, pp. x-xi.

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 compliance measures for each establishment inspected during the time period, which are used as our dependent variable and also 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 the 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 name, 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 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. 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.[19]

We focus on a subset of the universe of investigations for our core analysis. First, we only include investigations involving the FLSA (specifically those involving

[19] 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 4229 restaurants in the original sample.

suspected violations of minimum wage or overtime provisions).[20] There are 3,825 observations of such investigations. Second, not all inspections entail physical investigation of premises or full two-year reviews of payroll records for employees. Instead, "conciliations" are conducted over the phone and tend to be restricted to a particular employee who lodges a complaint with the WHD.[21] We focus on 1,768 observations that represent full and limited investigations of establishments for our core analysis.[22]

**C. Key variables**

*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. In our analysis, 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.[23] For our analysis, we measure total back-wages per investigation in a given outlet. Since a profit-maximizing employer can be assumed to primarily care about the total amount of back-wages owed and we control for the number of employees for each outlet in the analysis, this provides a good measure of non-compliance.

[20] We do not include investigations of child labor, Family Medical Leave Act, or record keeping violations.

[21] Conciliations are typically used in cases where the WHD believes the violation is limited to an individual case that can be resolved without a workplace visit. There are also a small number of other forms of investigations that do not involve physical investigations that are also excluded from the sample.

[22] Since investigation strategies are determined by the Wage and Hour Division, there is a possibility that establishments investigated have worse compliance outcomes than 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.

[23] The most prevalent cause of minimum wage violations leading to back-wages is failure to pay workers for time worked ("off the clock") such as requiring them to set up or clean their work station without compensation.

*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. Local outlets may estimate the possibility of being investigated via the inspection activity in the local area through news reports, information from business colleagues who own outlets of the same brand, or from those who own other top 20 fast food outlets and have been recently investigated. An explanatory variable is included in the analysis to control for employers' belief about probability of being detected: We measure these potential effects by counting 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 also 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 her capital investment made in the outlet (Lafontaine, 1992, 1995). In this scenario, since the agent would want her investment in the outlet to be fully insured, franchisors will tend to directly operate larger outlets. Because 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), any of the two principal-agent hypotheses regarding outlet size could be a source of bias if we do not include 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.[24] 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.[25]

Finally, we include investigation year dummies to capture time-varying effects, brand dummies for brand-specific effects, region dummies, and the state minimum wage dummy variable indicating whether state minimum wage is above the federal minimum wage. [26]

## D. Sample statistics

[24] Although five-digit zip code 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.

[25] 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.

[26] Region dummies and state minimum wage dummies are not considered when we include three-digit zip code dummies in the regression.

Means, 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. No violations of minimum wage or overtime were found in about 40% of the 1,768 investigations.

The average number of inspections 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 5 digit zip code level. 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 first row indicates significant differences in compliance in the predicted direction at 10% significance level: mean total back-wages per investigation are about $1,022 higher in franchisee- than in company-owned 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 Lafontaine's finding (1992, 1995) that franchisors have an incentive for larger outlets to be directly owned and managed[27].

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 roughly approximates the percent of franchisees reported in an industry measure (85%) shown in the last row of Table 3 and implies that 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

[27] The finding also holds in the regression results with IV approach. See the coefficients for number of employees in the first-stage results, which are shown in the second row of panel (C) in Table 5.

outlets are larger than that for company-owned outlets. Even more striking, almost one-half of the top 20 brands investigated by WHD owed no back-wages to workers in their company-owned outlets.

## IV. Empirical Results

### A. Tobit results

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

$$BW_{ijt}^{*} = \alpha F_{ij} + X_i\theta + \beta_j + \delta_t + \varepsilon_{ijt} \qquad (1)$$
$$BW_{ijt} = BW_{ijt}^{*} \quad \text{if } BW_{ijt}^{*} > 0$$
$$BW_{ijt} = 0 \qquad \text{if } BW_{ijt}^{*} \le 0$$

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; $X_i$ 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; $\beta_j$ is a region-specific component captured by three-digit zip code dummies and five-digit demographic variables; $\delta_t$ is a time-varying component controlled by investigation year dummy variables; and $\varepsilon_{ijt}$ is the error component containing unobserved shocks.

Table 4 reports the Tobit regression results on key variables discussed in Section III. 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-wages differential between franchisee-owned and company-owned restaurants is $4,265, all other factors held constant. This is over three times as large as the mean back-wages for the sample as a whole ($1,398).

We can also see the back-wage differentials between restaurants with two different types of ownership become larger as the possibility of region-specific effects is controlled. As shown in column 1 and 2, the back-wages differential increases by about $8 dollars with a number of five-digit zip code demographic variables. Furthermore, the back-wages differential in the last column 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. Again, in spite of the presence of the region-specific effects, the estimate for the franchise ownership variable is large and statistically significant at the .01 level in every specification.

Note also that the variable capturing employers' beliefs about the probability of being detected has the expected sign and is usually statistically significant. The coefficient for past inspections of all outlets is negative, which suggests that all else equal, compliance for a particular outlet improves as the number of past inspections 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 are of the expected sign but not significant in the last specification. As shown in the fourth row in Table 4, total back-wages per investigation increase with the number of Top 20 outlets in a geographic area although there is no statistical significance in specification (4). Interestingly, the sign of the variable total number of same brand outlets in a five-digit zip code is negative

although the estimates are marginally significant in most specifications. This implies that back-wage violations are less common in areas where a brand has opened more stores.

The coefficient for the number of employees is also interesting. It 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 models (3) and (4), implying a positive relation between total back-wages and outlet size

## B. An IV approach to estimating franchise effects

### *1. IV specification and estimation procedure*

The ideal starting point for isolating the true franchise ownership effect arising from free-riding 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 (1) does not rely on an explicit source of exogenous variation in the franchising decision, however, 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 faces a need 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 management systems) that facilitate 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. It is also likely that the management systems are correlated with compliance: for example, better management systems could be associated with better compliance via higher profitability. Hence, 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.

To obtain a consistent estimate of the true franchising effect from the equation (1), 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's reputation due to franchisees' 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 (1). We directly include past investigation information, competition-type, 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 FLSA occur and, therefore, makes it hard for us to find any other endogenous sources of variation in a given franchisor's franchising decision except for characteristics of each outlet like 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 a given observation in counting the percentage of company-owned restaurants of a particular brand at the three-digit zip code level. This makes the variable 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.[28] IV Tobit employs Tobit for the structural equation and a linear model for first-stage. Although the linear form for the first-stage 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).

*2. IV Results of Franchising Effects*

The first panel of Table 5 summarizes the basic sample statistics for the instrumental variable. The sample mean of the instrument is 10.03, implying that about 10% of the restaurants, on average, are predicted to be company-owned at a three-digit zip code level in the sample. 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, at least, at .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,

[28] 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.

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-wages differential between franchisee-owned and company-owned restaurants is $10,204, suggesting that holding other things constant at their mean, total back-wages found per investigation are over $10,200 higher at franchisee-owned restaurants than at the company-owned restaurants. 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 represents that franchisors may avoid using franchisees in settings where expected noncompliance is high.

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 lowest panel, 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 equation (3) is 11.32 which is above the threshold whereas it is only 2.65 for specification (4).[29] The small F-statistic in equation (4) arises from the smaller 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 considering franchisees' free-riding behavior (LaFontaine and Shaw 2005). Finally, for the specification (3) and (4), the p-values for tests of franchise ownership variable exogeneity are 0.154 and 0.078 respectively, implying that the hypothesis cannot be rejected at conventional significance levels. While one might therefore argue that the five-digit zip code demographic variables are sufficient to control for other omitted bias, the large increase in the

[29] 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).

magnitude of the coefficients for franchise ownership variable suggest the value of the IV approach.

## V. Discussion and Extensions

### A. Re-assessing the free-riding hypothesis

The estimates in Tables 4 and 5 suggest the presence of large and significant franchise ownership effects on compliance. Furthermore, the estimates support the argument that these effects arise from free-riding rather than the other three alternative explanations for the differential discussed in the section II.

First, the argument that differences in compliance level may arise from lower productivity of workers hired by franchisees relative to those hired at company-owned outlets would require very large productivity differences to explain the estimates in Tables 4 and 5. The presence of such large and unmeasured productivity differences within three digit zip code areas seems also implausible given Krueger's (1991) empirical finding that workers characteristics were almost identical (e.g. years of schooling and high school grade point) in his studies of a fast food workers.

A second explanation for the effect of franchising on compliance relates 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 two past inspection variables. What is more, it is hard to account for the very large back-wage differences found above given that the annual investigation rates for the Top 20 company-owned outlets and for Top 20 franchisee-owned outlets are 0.36%, and 0.72% respectively.[30] Assuming that each owner calculates the probability of being detected based on the number of outlets he or she owns relative to the annual number of investigations, that each franchisee owns only one Top 20 restaurant,[31] and

[30] Over the five-year period in the data, 238 units out of about 65,000 company-owned outlets were investigated, whereas 3,183 units out of about 437,000 franchised outlets were inspected.

[31] Under these assumptions (Indeed, a majority of franchisees owns multiple units), the probabilities of being detected for a given franchisor and franchisee would be 0.00024 and 0.000000083,

that other components in expected profit function from the violation of the FLSA shown section II are constant, on average, differences in probability of being detected between franchisee-owned and company-owned outlets only account for $0.279 back-wage differentials.[32] The tiny size of back-wage differentials 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 fact that 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 those effects.

Finally, the above franchise effect might be attributed to Krueger's argument that franchisors address the monitoring problem by using efficiency wages in company-owned outlets (Krueger, 1991). As a result, higher efficiency wages provided by company-owned outlets may lead to better compliance at company-owned outlets than at franchisee-owned outlets. This explanation, however, seems inconsistent with the magnitude of the back-wage differentials estimated above. According to Krueger's own estimates, wage differentials between company-owned and franchisee-owned outlets for full-time workers are 1.7% and for part-time workers 0.5%. This would imply far smaller back-wage differentials than those reported here (particularly in our IV estimates).[33]

There is an additional way to distinguish the free-riding and monitoring explanations of 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 and should therefore adopt efficiency wages to internalize the problem. Specifically, a

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respectively. These probabilities are calculated based on the following: 0.00024 = 0.0036 / 15 (15 brands operate company-owned outlets); 0.000000083 = 0.0072 / 87398 (the average of annual number of franchisee-owned outlets in Top 20 brands).

[32] This estimate arises from the equation (A-I) shown in section II with the average of back-wages per employee paid in violation ($1,398.06) in Table 2. This expected back-wages gap ($0.047) is calculated as follows: $0.279 = 0.00024*$1,398.06 (the expected costs for a given franchisor conditional on his own probability of being detected) – 0.000000083*$1,398.06 (the expected costs for a given franchisee conditional on her own probability of being detected).

[33] Krueger also reports an estimated wage differential for assistant and shift managers of 8.7%. However, considering that most managers and line managers are exempt from the Fair Labor Standards Act due to their duties and responsibilities, the wage differential for them does not seem relevant to the FLSA violations studied here.

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 amount they owe in back-wage relative to comparable company-owned units should diminish since they adopt efficiency wages to deal with monitoring problems. This would also suggest that the franchise effect of multi-unit franchisees would be discernable from that of single-unit or very small franchisees. In contrast, if national brand reputation drives free-riding, 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 national brand image deterioration.

In order to test for the presence of franchisee scale effects, we re-estimate compliance models, breaking the franchise variable into several variables that differ by the number of outlets owned by the franchisee. The franchisee coefficients, estimated in each case relative to company-owned outlets, are presented in Table 6 (complete model results are available from the author). 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 very large MUFs who own more than 110 units in multiple states. We also see in the lower panel of Table 6 that back-wage differentials for any other MUFs excluding the very large MUFs operating in multiple states are higher[34] or no different than those for SUFs. The coefficient for the very large, multi-state MUFs is significantly different from that of each of the other franchisee groups.

The fact that only very large multi-state MUFs owe back-wages that differ insignificantly from company-owned outlets is consistent with a national brand reputation story and inconsistent with a monitoring explanation. 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. This result is also inconsistent with a local

[34] 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 other theories including national brand reputation hypothesis.

brand reputation story where one would expect large MUFs operating in a single state to have greater incentives to comply.

**B. Robustness checks**

*1. Alternative measures of compliance*

As a first robustness check, we use a different compliance measure: back-wages per employee paid in a violation. The measure is created by dividing the total back-wages found by 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, this dependent variable provides a scaled measure of the average severity of violations per affected worker. This measure represents a useful alternative for directly testing our hypothesis of franchisees' free-riding on brand reputation. The presence of very large back-wages per employees may increase the possibility that local or national media report such violations, in particular, in stories that concentrate on brand name. 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.

Table 7 reports the Tobit and IV results, which use back-wages per employee paid in a violation as a dependent variable. Franchise ownership effects remain positive and statistically significant in every specification. The large differences in the magnitude of effects between the Tobit and IV results also remain: In every specification, the coefficient for the franchise ownership variable when IV Tobit is used is far larger than the comparable Tobit estimate. The estimate of $1,223 in specification (4), for example, means that holding other things constant at their mean, back-wages per employee paid in violation are over $1,200 higher at franchisee-owned restaurants than at the company-owned restaurants. This value is about 70 percent greater than the corresponding Tobit estimate ($717). All of these franchise effects indicate that company-owned outlets have greater pressure to keep back-wages per employee as well as total back-wages per investigation lower for protecting brand reputation given the general assumption that profit-maximizing employers only take care of total back-wages instead off back-wages per employee.

*2. Directed versus complaint investigations*

As mentioned in Section II, the WHD undertakes two types of investigations: directed and complaint. Directed investigations are conducted by inspectors via unannounced visits at establishments who are expected to have poor compliance. 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 FLSA violations, compared with only 35% of directed cases. Since heterogeneous compliance may arise from the distinct characteristics of the two investigation types, it is useful to divide the sample into the two groups and re-estimate them as a robustness check.

Table 8 reports Tobit and IV Tobit results for the directed investigation sample with the same specifications as the prior regressions. The findings regarding franchise effects are similar to those obtained using the entire sample. In every specification, the coefficient for the franchise ownership variable is positive and statistically significant.[35] Regardless of specification types, the larger coefficients for the variable estimated by IV Tobit relative to corresponding coefficients by Tobit, one of remarkable findings by the entire samples, are found as well. The estimates for the other key variables also display little difference from the estimates created by the comparable specifications in the entire sample. For example, the coefficients for the number of past inspections for all outlets which is shown in row 2 of Table 4, 5, and 8, have similar signs, significance levels, and magnitudes.

[35] Unlike Table 4 through 7, the estimates for specification (4) are dropped because of small sample size at the 3-digit zip code level. In the directed investigation sample, 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 the specification (4) is estimated with Tobit or IV Tobit estimator.

The magnitude of the franchisee effect obtained from the directed investigation samples is worth noting. In the case of IV specification (3), our most reliable estimates with the directed investigation sample, the coefficient for the franchise ownership variable is $22,688. The magnitude of the estimate is about 2.2 times as large as that of the corresponding IV Tobit estimate with the full sample ($10,204). This estimate implies that large back-wage differentials exist when two otherwise identical outlets differing only in terms of ownership are unexpectedly investigated. Considering that many directed investigations find no FLSA violations, this finding suggests that most violations detected in directed investigations of this sector occur at franchised outlets. A comparison of the incidence of violations between franchised versus company-owned outlets shows this to be true: the percent of investigations with no violations is 95% for company owned versus 73% for franchised outlets within the directed sample.

Table 9 presents Tobit and IV Tobit results for the complaint investigation sub-sample. The coefficient on the franchise variable is still positive, but insignificant in specification (3) unlike the directed or full sample results. Since compliant investigations are conducted after employees who believe an employer is violating a labor regulation complain to WHD, most cases find violations. The resulting smaller variations in compliance levels caused by the characteristics of complaint investigations reduce the franchise ownership coefficients. IV estimates for the complaint sub-sample are closer in magnitude to those for the full sample, although they become smaller and less significant than the corresponding estimates.

The differences of estimates for the franchise ownership variable between directed and complaint sample have implications about the potential sample selection bias in our dataset. Since WHD's investigation strategies create a tendency for establishments to be drawn disproportionately from the tail of the distribution that commits violations, the conditional mean from the samples can be more biased for the group that is less likely to commit violations. We cannot rule out the possibility that such an overall sample selection bias exists in our dataset. Even so, the bias is unlikely to undermine estimating a true franchise ownership effect on compliance. As discussed above, complaint investigations are more likely to result in positive back-wage findings than are directed investigations. As a result, the potential selection bias is likely to be worse for complaint

investigations than for the directed investigations.[36] Based on this, the larger coefficients for franchise ownership variable in the directed sample is striking because it suggests larger franchise effects in the less biased of the two sub-samples.

*3. Conciliation investigations*

In the prior estimates, we excluded fast food outlets that were investigated using conciliation procedures.[37] The WHD undertakes conciliations in response to employee complaints by resolving violations via phone contacts with the employer. Conciliations therefore focus on resolution of an individual violation or claim where the WHD believes the incoming complaint does not suggest more serious, workplace-wide problems. They therefore have the characteristic of being more likely to be associated with a violation, but that violation of a singular nature. Conciliations account for 47% of all WHD enforcement activity. Despite their very different nature, we perform an additional robustness check by including the 1,653 conciliation-based observations in the full sample. Table 10 provides Tobit and IV Tobit results using the entire sample including Top 20 outlets investigated by these methods.

Except for the decrease in the magnitude of franchise effects which is expected given the less serious nature of conciliation cases, we find no major difference in the coefficients for the franchise ownership variable before and after excluding the cases with these investigation methods. Our hypothesis that compliance is worse at franchised restaurants than at company-owned restaurants is still statistically valid in every specification. Estimates for the other key variables also are similar to the estimates in Tables 4 and 5. Because the inclusion of cases inspected by conciliations increases the noise in measured compliance, this finding implies that overall fit of the compliance equation is very similar in both samples and reinforces the robustness of the franchisees' free-riding behavior impact on compliance levels.

[36] Typically, for directed investigations, either certain *industries* with low rates of compliance or types of *business* with characteristics associated with poor compliance are targeted. Therefore, unlike complaint investigations, the directed investigations do not necessary lead to detection of noncompliance at *establishment-level*. In addition, there is no sign that WHD have set investigation strategies based on franchise ownership information.

[37] We also include self-audits in these estimates which have similar characteristics as conciliations.

## VI. Conclusion

A significant literature (Rubin, 1978; Mathewson and Winter 1985; Lafontaine and Shaw, 2005) concerns the problem of franchisees' free-riding on brand reputation. 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 franchisees' free-riding behavior has 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 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 explicitly measures direct franchising effects. Our main finding indicates that within a given brand, violations of 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, franchises 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 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 stronger link between service quality and compliance with basic labor standards.

The empirical evidence of this study also has important policy implications. The Wage and Hour Division (WHD), the part of the Department of Labor responsible for enforcement of FLSA including minimum wages and overtime laws, has devoted significant resources to the fast-food sector. However, the division 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 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.

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**<Table 1> Top 20 Limited-Service Brands (Year: 2003)**

| | Ranks | Total Sales | Total Outlets | Number of Investigations |
|---|---|---|---|---|
| McDonald's | 1 | $22,122,001,078 | 13,609 | 267 |
| Burger King | 2 | $7,900,000,576 | 7,904 | 108 |
| Wendy's | 3 | $7,480,001,746 | 5,761 | 79 |
| Subway | 4 | $5,699,002,085 | 16,499 | 374 |
| Taco Bell | 5 | $5,300,001,484 | 5,989 | 68 |
| Pizza Hut | 6 | $4,999,996,444 | 7,523 | 58 |
| KFC | 7 | $4,899,997,912 | 5,524 | 147 |
| Domino's Pizza | 8 | $3,003,400,856 | 4,904 | 59 |
| Dunkin Donuts | 9 | $2,975,001,447 | 4,139 | 173 |
| Arby's | 10 | $2,639,998,719 | 3,303 | 57 |
| Sonic | 11 | $2,360,400,504 | 2,706 | 79 |
| Jack in the Box | 12 | $2,305,000,731 | 1,947 | 19 |
| Dairy Queen | 13 | $2,199,997,956 | 4,836 | 75 |
| Hardee's | 14 | $1,761,700,479 | 2,121 | 38 |
| Papa John's | 15 | $1,706,798,808 | 2,574 | 29 |
| Popeye's | 16 | $1,313,100,408 | 1,447 | 43 |
| Little Caesars | 17 | $1,210,000,029 | 2,877 | 26 |
| Quizno's | 18 | $896,100,797 | 2,501 | 44 |
| Baskin Robbins | 19 | $510,001,212 | 2,604 | 13 |
| Blimpie | 20 | $250,000,428 | 1,623 | 12 |

Source: QSR TOP 50 (2004)

**<Table 2> Descriptive Statistics for Key Variables**

| | N | Mean [St.D] | Mean Franchisee Owned (1) | Mean Company Owned (2) | Difference (1) – (2) |
|---|---|---|---|---|---|
| **Dependent Variable** | | | | | |
| Total Back-Wages Per Investigation ($) | 1,768 | 1350.07 [5068.43] | 1398.06 (126.23) | 375.80 (119.58) | 1022.27* (569.51) |
| **Independent Variables** | | | | | |
| Franchise Ownership Dummy | 1,768 | 0.95 [0.21] | 1 (0.00) | 0 (0.00) | 1 (–) |
| No. of Past Inspection for All Outlets in a five-digit zip code (during one year) | 1,754 | 0.54 [1.07] | 0.55 (0.03) | 0.44 (0.11) | 0.11 (0.03) |
| No. of Total Outlets in a five-digit zip code | 1,760 | 11.13 [6.50] | 11.08 (0.16) | 11.98 (0.80) | -0.90 (0.73) |
| No. of Same Brand Outlets in a five-digit zip code | 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) |

Notes: Standard error in parentheses

*** Statistically significant at the 1% level, ** at the 5% level, *** at the 1% level**.

**<Table 3> Franchise Ownership Status and Compliance Findings by Top 20 Limited Service Brands in eating and drinking industry**

| Brand | % of Franchisee | | Total Back-Wages Per Investigation | | | |
|---|---|---|---|---|---|---|
| | (Our Data) | (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 | 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 | 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 | 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 | 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 | 100% | 100% | $338.06 | $338.06 | N.A. | N.A. |
| Baskin Robbins | 100% | 100% | $227.64 | $227.64 | N.A. | N.A. |
| Blimpie | 100% | 100% | $278.10 | $278.10 | N.A. | N.A. |
| Total | 95% | 85% | $1,350.07 | $1,398.06 | $375.80 | $1,022.27 |

Notes: Source for '% of Franchisee (QSR)' is QSR Top 50 (2004).

**<Table 4> Tobit Regression Results**
**Dependent Variable:** Total Back-Wages Per Investigation

| Variables \ Functional Form | (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 Inspections** | -1,113.995 | -872.001 | -948.893 | -696.357 |
| **for All Outlets** | (266.586) | (263.532) | (260.576) | (283.611) |
| (In a given five-digit zip code during one year) | [0.000] | [0.001] | [0.000] | [0.014] |
| **Number of Top 20 Outlets** | 134.604 | 107.433 | 134.533 | 13.948 |
| (In a given five-digit zip code) | (43.262) | (52.555) | (52.391) | (59.708) |
| | [0.002] | [0.041] | [0.010] | [0.815] |
| **Number of Same Brand's Outlets** | -471.100 | -523.904 | -928.634 | -622.950 |
| (In a given five-digit zip code) | (278.907) | (272.727) | (294.679) | (336.502) |
| | [0.091] | [0.055] | [0.002] | [0.064] |
| **Number of Employees for a given 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 | 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** | | | | |
| McKelvey & Zavoina's R2 | 0.031 | 0.042 | 0.064 | 0.260 |
| N | 1,701 | 1,654 | 1,654 | 1,654 |

Notes: Standard error in parentheses and P-value in bracket

**<Table 5> IV 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** (In a given Three-digit zip code) | 1,692 | 10.03 | 21.59 | 0 | 100 |

| **(B) IV Tobit Regression Results** | | | | |
|---|---|---|---|---|
| Variable \ Functional Form | (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 All Outlets** | (292.027) | (287.779) | (285.173) | (298.203) |
| (In a given five-digit zip code during one year) | [0.000] | [0.000] | [0.000] | [0.012] |
| **Number of Top 20 Outlets** | 150.640 | 117.786 | 152.686 | 36.130 |
| (In a given five-digit zip code) | (44.889) | (53.885) | (53.549) | (59.981) |
| | [0.001] | [0.029] | [0.004] | [0.547] |
| **Number of Same Brand's Outlets** | -546.655 | -610.439 | -1,015.393 | -613.686 |
| (In a given five-digit zip code) | (286.380) | (279.919) | (298.768) | (338.290) |
| | [0.056] | [0.029] | [0.001] | [0.070] |
| **Number of Employees for a given 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 in a given Three-digit zip code** | (0.000) | (0.000) | (0.000) | (0.000) |
| (Excluding a given observation) | [0.000] | [0.000] | [0.000] | [0.000] |
| **Number of Employees for a given 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] |

Notes: (1) The coefficients for the instrument and for the variable for number of employees are only shown in the first-stage results. But, in the first-stage, we additionally controlled for all independent variables that are included for structural model of each column.

(2) Standard error in parentheses and P-value in bracket

**<Table 6 > Tobit Analysis for Impact of Each Franchisee Group Relative to company-owned outlets**
**Dependent Variable:** Total Back-Wages Per Investigation

| Variable \ Functional Form | (1) | (2) |
|---|---|---|
| **Single Unit Franchisees (SUFs)** | 3,452.576<br>(1551.165)<br>[0.026] | 3,574.403<br>(1675.287)<br>[0.033] |
| **Multi Unit Franchisees (MUFs) operating in single state** | | |
| **Group (1): MUFs below mean # outlets owned (less than 11 units in the state)** | 4,886.305<br>(1466.660)<br>[0.001] | 4,959.763<br>(1587.487)<br>[0.002] |
| **Group (2): MUFs above mean # outlets owned (11 or greater than 11 units in the state)** | 3,181.411<br>(1653.268)<br>[0.054] | 3,486.555<br>(1758.406)<br>[0.047] |
| **Multi Unit Franchisees (MUFs) operating in multiple states** | | |
| **Group (3): MUFs below mean # outlets owned, (less than 110 Units)** | 3,185.066<br>(1489.031)<br>[0.032] | 2,814.809<br>(1667.959)<br>[0.091] |
| **Group (4): MUFs above mean # outlets owned (110 or greater than 110 Units)** | -801.634<br>(2193.958)<br>[0.715] | -75.320<br>(2333.759)<br>[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 SUFs and each following MUFs**

| | (1) | (2) |
|---|---|---|
| **SUF – Group (1)** | [0.044] | [0.051] |
| **SUF – Group (2)** | [0.813] | [0.942] |
| **SUF – Group (3)** | [0.760] | [0.451] |
| **SUF – Group (4)** | [0.022] | [0.062] |
| **Group (1) – Group (4)** | [0.002] | [0.003] |
| **Group (2) – Group (4)** | [0.041] | [0.090] |
| **Group (3) – Group (4)** | [0.026] | [0.124] |

Notes: Standard error in parentheses and P-value in bracket

Top 20 U.S. Census Sample averages number of units owned by MUFs who operate in only one state and by MUFs who operate in multiple states are 10.64 and 109.38, respectively.

**<Table 7> Tobit and IV Results with Alternative Measure of Compliance**
**Dependent Variable:** Back-wages per employee paid in a violation

| | Tobit | | | | IV | | | |
|---|---|---|---|---|---|---|---|---|
| Variable \ Functional Form | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| **Franchise Ownership** | 605.556 | 654.444 | 572.945 | 716.881 | 1,187.118 | 1,333.313 | 1,278.563 | 1,222.884 |
| (Franchisee-Owned vs. Company-Owned) | (177.792) | (182.992) | (191.015) | (224.826) | (337.546) | (355.884) | (427.095) | (497.779) |
| | [0.001] | [0.000] | [0.003] | [0.001] | [0.000] | [0.000] | [0.003] | [0.014] |
| **Number of Past Inspections** | -98.614 | -80.464 | -88.461 | -52.887 | -126.428 | -108.132 | -119.075 | -46.028 |
| **for All Outlets** | (32.824) | (33.821) | (33.755) | (39.748) | (34.702) | (35.673) | (35.708) | (39.546) |
| (In a given five-digit zip code during one year) | [0.003] | [0.017] | [0.009] | [0.183] | [0.000] | [0.002] | [0.001] | [0.244] |
| **Number of Top 20 Outlets** | 10.976 | 3.382 | 6.205 | -9.863 | 12.749 | 6.258 | 9.709 | -7.009 |
| (In a given five-digit zip code) | (5.439) | (6.889) | (6.922) | (8.540) | (5.421) | (6.790) | (6.810) | (8.052) |
| | [0.044] | [0.624] | [0.370] | [0.248] | [0.019] | [0.357] | [0.154] | [0.384] |
| **Number of Same Brand's Outlets** | -40.814 | -57.808 | -102.774 | -51.899 | -48.057 | -67.087 | -108.212 | -45.981 |
| (In a given five-digit zip code) | (34.415) | (35.009) | (38.054) | (47.823) | (33.906) | (34.495) | (37.068) | (45.263) |
| | [0.236] | [0.099] | [0.007] | [0.278] | [0.156] | [0.052] | [0.004] | [0.310] |
| **Number of Employees for a given Outlet** | -7.118 | -6.766 | 1.599 | 5.382 | -6.373 | -5.978 | 2.137 | 5.379 |
| | (2.346) | (2.376) | (3.346) | (3.669) | (2.310) | (2.345) | (3.31) | (3.515) |
| | [0.002] | [0.004] | [0.633] | [0.142] | [0.006] | [0.011] | [0.519] | [0.126] |
| **Inclusion of the following Covariates:** | | | | | | | | |
| State Minimum Wage Dummy | Yes | Yes | Yes | Absorbed | Yes | Yes | Yes | Absorbed |
| Region Dummy | Yes | Yes | Yes | Absorbed | Yes | Yes | Yes | Absorbed |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Demographic Variables | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Brand Dummy | No | No | Yes | Yes | No | No | Yes | Yes |
| Three-Digit Zip Code Dummy | No | No | No | Yes | No | No | No | Yes |
| **Statistics** | | | | | | | | |
| Regressor Exogeneity (for only IV) | – | – | – | – | [0.034] | [0.021] | [0.060] | [0.259] |
| McKelvey & Zavoina's R2 / F-Value (IV) | 0.024 | 0.038 | 0.054 | 0.169 | 31.720 | 14.900 | 11.320 | 2.650 |
| N | 1,701 | 1,654 | 1,654 | 1,654 | 1,634 | 1,589 | 1,589 | 1,589 |

Notes: Standard error in parentheses and P-value in bracket
Sample mean and standard deviations for BW/EEPIV are 195.77 and 594.90, respectively.

**<Table 8> Directed Investigation Sample Results**
**Dependent Variable:** Total Back-Wages Per Investigation

| | Tobit | | | IV | | |
|---|---|---|---|---|---|---|
| Variable \ Functional Form | (1) | (2) | (3) | (1) | (2) | (3) |
| **Franchise Ownership** | 8,929.047 | 9,239.093 | 8,423.719 | 18,964.697 | 21,510.146 | 22,687.876 |
| (Franchisee-Owned vs. Company-Owned) | (2694.436) | (2793.016) | (2778.261) | (4996.382) | (5473.596) | (6171.778) |
| | [0.001] | [0.001] | [0.003] | [0.000] | [0.000] | [0.000] |
| **Number of Past Inspections** | -928.574 | -766.115 | -770.037 | -1,005.116 | -831.398 | -882.230 |
| **for All Outlets** | (298.510) | (315.259) | (315.323) | (321.557) | (343.155) | (349.043) |
| (In a given five-digit zip code during one year) | [0.002] | [0.015] | [0.015] | [0.002] | [0.015] | [0.011] |
| **Number of Top 20 Outlets** | 224.735 | 255.316 | 268.429 | 268.849 | 297.281 | 336.933 |
| (In a given five-digit zip code) | (55.076) | (72.661) | (72.844) | (61.772) | (81.711) | (83.756) |
| | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| **Number of Same Brand's Outlets** | -531.105 | -579.804 | -927.083 | -685.252 | -796.904 | -1,080.252 |
| (In a given five-digit zip code) | (304.620) | (320.148) | (347.528) | (325.688) | (350.184) | (377.478) |
| | [0.082] | [0.070] | [0.008] | [0.035] | [0.023] | [0.004] |
| **Number of Employees for a given Outlet** | 12.373 | 19.722 | 61.650 | 25.957 | 31.574 | 87.034 |
| | (22.795) | (23.937) | (33.857) | (24.340) | (25.884) | (37.615) |
| | [0.587] | [0.410] | [0.069] | [0.286] | [0.223] | [0.021] |
| **Inclusion of the following Covariates:** | | | | | | |
| State Minimum Wage Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Region Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Demographic Variables | No | Yes | Yes | No | Yes | Yes |
| Brand Dummy | No | No | Yes | No | No | Yes |
| Three-Digit Zip Code Dummy | No | No | No | No | No | No |
| **Statistics** | | | | | | |
| Regressor Exogeneity (for only IV) | – | – | – | [0.011] | [0.005] | [0.006] |
| McKelvey & Zavoina's R2 / F-Value (IV) | 0.201 | 0.253 | 0.655 | 18.140 | 8.910 | 6.420 |
| N | 919 | 892 | 892 | 880 | 853 | 853 |

Notes: Standard error in parentheses and P-value in bracket

**<Table 9> Complaint Sample Results**
**Dependent Variable:** Total Back-Wages Per Investigation

| | Tobit | | | IV | | |
|---|---|---|---|---|---|---|
| Variable \ Functional Form | (1) | (2) | (3) | (1) | (2) | (3) |
| **Franchise Ownership** | 2,648.390 | 2,171.835 | 1,113.123 | 7,553.285 | 7,619.223 | 3,896.458 |
| (Franchisee-Owned vs. Company-Owned) | (1848.872) | (1775.467) | (1913.311) | (3751.391) | (3666.634) | (4465.496) |
| | [0.152] | [0.222] | [0.561] | [0.044] | [0.038] | [0.383] |
| **Number of Past Inspections** | 142.419 | 489.346 | 347.555 | -326.663 | -31.148 | -171.928 |
| **for All Outlets** | (499.077) | (483.972) | (477.575) | (596.316) | (572.300) | (557.279) |
| (In a given five-digit zip code during one year) | [0.775] | [0.312] | [0.467] | [0.584] | [0.957] | [0.758] |
| **Number of Top 20 Outlets** | 4.581 | -5.968 | 32.321 | 19.97 | 6.041 | 60.782 |
| (In a given five-digit zip code) | (62.254) | (74.228) | (73.999) | (63.960) | (75.498) | (74.656) |
| | [0.941] | [0.936] | [0.662] | [0.755] | [0.936] | [0.416] |
| **Number of Same Brand's Outlets** | -165.479 | -46.400 | -562.958 | -260.047 | -173.693 | -722.915 |
| (In a given five-digit zip code) | (468.155) | (443.289) | (484.952) | (481.660) | (454.987) | (487.379) |
| | [0.724] | [0.917] | [0.246] | [0.589] | [0.703] | [0.138] |
| **Number of Employees for a given Outlet** | -63.389 | -58.920 | 67.887 | -59.688 | -54.577 | 62.838 |
| | (27.218) | (25.687) | (35.717) | (27.925) | (26.351) | (36.188) |
| | [0.020] | [0.022] | [0.058] | [0.033] | [0.038] | [0.082] |
| **Inclusion of the following Covariates:** | | | | | | |
| State Minimum Wage Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Region Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes |
| Demographic Variables | No | Yes | Yes | No | Yes | Yes |
| Brand Dummy | No | No | Yes | No | No | Yes |
| Three-Digit Zip Code Dummy | No | No | No | No | No | No |
| **Statistics** | | | | | | |
| Regressor Exogeneity (for only IV) | – | – | – | [0.112] | [0.077] | [0.471] |
| McKelvey & Zavoina's R2 / F-Value (IV) | 0.031 | 0.080 | 0.161 | 17.980 | 8.370 | 8.130 |
| N | 782 | 762 | 762 | 754 | 736 | 736 |

Notes: Standard error in parentheses and P-value in bracket

**<Table 10> The Results with additional conciliation observations**
**Dependent Variable:** Total Back-Wages Per Investigation

| | Tobit | | | | IV | | | |
|---|---|---|---|---|---|---|---|---|
| Variable \ Functional Form | (1) | (2) | (3) | (4) | (1) | (2) | (3) | (4) |
| **Franchise Ownership** | 886.286 | 928.037 | 616.388 | 869.643 | 2,329.121 | 2,525.425 | 2,158.147 | 1,931.927 |
| (Franchisee-Owned vs. Company-Owned) | (431.552) | (425.261) | (459.134) | (458.666) | (854.378) | (855.399) | (1104.109) | (1143.917) |
| | [0.040] | [0.029] | [0.180] | [0.058] | [0.006] | [0.003] | [0.051] | [0.091] |
| **Number of Past Inspections** | -593.511 | -479.595 | -508.127 | -226.807 | -670.096 | -550.406 | -582.358 | -292.480 |
| **for All Outlets** | (131.004) | (129.252) | (127.677) | (138.382) | (138.676) | (136.314) | (134.558) | (142.718) |
| (In a given five-digit zip code during one year) | [0.000] | [0.000] | [0.000] | [0.101] | [0.000] | [0.000] | [0.000] | [0.040] |
| **Number of Top 20 Outlets** | 65.341 | 42.376 | 57.152 | 0.688 | 69.379 | 43.122 | 58.997 | 5.456 |
| (In a given five-digit zip code) | (17.559) | (21.547) | (21.631) | (23.953) | (17.886) | (21.773) | (21.881) | (24.072) |
| | [0.000] | [0.049] | [0.008] | [0.977] | [0.000] | [0.048] | [0.007] | [0.821] |
| **Number of Same Brand's Outlets** | -142.006 | -168.455 | -377.671 | -174.442 | -174.905 | -203.117 | -402.453 | -166.851 |
| (In a given five-digit zip code) | (116.390) | (113.904) | (122.942) | (132.226) | (118.250) | (115.448) | (123.625) | (133.148) |
| | [0.223] | [0.139] | [0.002] | [0.187] | [0.139] | [0.079] | [0.001] | [0.210] |
| **Number of Employees for a given Outlet** | -12.108 | -13.287 | 8.354 | 19.821 | -11.289 | -12.428 | 8.013 | 19.619 |
| | (8.315) | (8.186) | (9.913) | (10.026) | (8.438) | (8.301) | (10.021) | (10.074) |
| | [0.145] | [0.105] | [0.399] | [0.048] | [0.181] | [0.134] | [0.424] | [0.051] |
| **Inclusion of the following Covariates:** | | | | | | | | |
| State Minimum Wage Dummy | Yes | Yes | Yes | Absorbed | Yes | Yes | Yes | Absorbed |
| Region Dummy | Yes | Yes | Yes | Absorbed | Yes | Yes | Yes | Absorbed |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Demographic Variables | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Brand Dummy | No | No | Yes | Yes | No | No | Yes | Yes |
| Three-Digit Zip Code Dummy | No | No | No | Yes | No | No | No | Yes |
| **Statistics** | | | | | | | | |
| Regressor Exogeneity (for only IV) | – | – | – | – | [0.054] | [0.033] | [0.126] | [0.287] |
| McKelvey & Zavoina's R2 / F-Value (IV) | 0.075 | 0.095 | 0.122 | 0.194 | 70.610 | 34.440 | 27.160 | 3.320 |
| N | 3,152 | 3,073 | 3,073 | 3,073 | 3,050 | 2,976 | 2,976 | 2,976 |

Notes: Standard error in parentheses and P-value in bracket