

Compliance with the Minimum Wage: Can Government Make a Difference?

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Abstract

This paper examines patterns of compliance and noncompliance with federal minimum wage laws in the U.S. apparel industry and analyzes the impact of new methods of intervention designed to improve regulatory performance. Drawing on contractor-level data from a randomized survey of apparel contractors, the paper assesses the major correlates of compliance with minimum wage provisions of the Fair Labor Standards Act. It then evaluates the impact of agreements between manufacturers and the government used to monitor contractor behavior as a means of improving compliance outcomes. Non-compliance is significantly correlated with characteristics predicted by theory including employer size, skill content, and the elasticity of labor and product demand. Nonetheless, stringent forms of contractor monitoring are associated with significant reductions in the presence, incidence, and severity of violations of minimum wage standards.

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The economics of minimum wage has been an area of intense academic interest over the past decade (e.g. Card and Krueger 1995). Relative to this large and growing literature on the employment effects of minimum wage, comparatively little attention has been paid to the compliance behavior of employers subject to the minimum wage since the seminal article by Ashenfelter and Smith (1979). Yet there are strong reasons to believe that many employers will choose to violate minimum wage standards when evaluating the benefits and costs of compliance (Stigler 1970; Shavell and Polinsky 2000). In general, the incentives not to comply grow with the divergence between the wage that employers desire to pay their workforce and the mandated minimum wage. This divergence, in turn, is a function of features of the labor and product market facing the employer.

Workers in low wage industries are particularly likely to receive wages below the statutory level to which they are entitled. One such industry is apparel, which has long exemplified the problem of enforcing minimum labor standards and more generally the “sweatshop” problem. In 1893, The Committee on Manufactures of the House of Representatives released a report regarding their investigations of the sweating system of production. Among other findings, the Committee concluded that 80 percent of production originated in sweatshop production.¹ Several years later, President McKinley appointed a commission made up of members of Congress and private citizens to study

¹ See U.S. Congress, House of Representatives, Committee on Manufactures, “The Sweating System,” House Reports, 52nd Congress, 2nd Session, Vol. 1, no. 2309, 1893, pp. iv-viii.

the problem. Arising from their study running from 1898-1901, the commission documented extensive abuses including long hours, low pay, and unsanitary conditions.²

This article examines the broader issue of compliance with minimum wage laws by empirically examining microdata from the U.S. apparel industry today. We first review the literature on the economics of minimum wage compliance. We then analyze product and labor market conditions and regulatory interventions to predict employer behavior in the industry. Using a unique set of data from random inspection-based surveys of apparel contractors in Los Angeles, we examine correlates of employer compliance as well as other regulatory performance measures. We then analyze the impact of a novel regulatory strategy that creates agreements between the government and manufacturers requiring the latter to monitor labor standards among their contractors. We model the determinants of minimum wage performance in order to measure the impact of those agreements. The paper concludes with a discussion of the implications of these findings to the regulation of labor standards domestically and internationally and on other public policies.

II. Background

A. Economics of minimum wage compliance

A series of articles beginning with Ashenfelter and Smith (1979) analyze the economic calculus of compliance as it applies to minimum wage. In their article, Ashenfelter and Smith (who build on the more general analysis of regulatory compliance

² Reports of the Industrial Commission on Immigration and on Education. Washington, D.C.: Government Printing Office, 1901, vol. XV. A discussion of the history of regulating labor standards in the apparel industry can be found in Abernathy, Dunlop, Hammond, and Weil (1999), Chapters 2, 10, and 15.

of Stigler 1970) show that a profit maximizing firm selling output at price p and able to obtain workers L at a wage rate w and other factors of production at price r will decide whether to comply with the minimum wage by balancing the expected costs of complying with the law and paying the mandated wage (M) against the expected cost of non-compliance. The latter reflects the probability of being caught (λ) and incurring a penalty (D) against the chance of not being caught and paying wages below the mandated minimum wage (w). Ashenfelter and Smith show that an employer will choose non-compliance in the case that:

$$E(\Pi) - \Pi(M, r, p) = (1 - \lambda)[\Pi(w, r, p) - \Pi(M, r, p)] - \lambda D > 0 \quad (1)$$

In (1), the employer balances the expected profit from not complying ($E(\Pi)$) against the profit known with certainty if the firm chooses to comply with the standard ($\Pi(M, r, p)$). Equation (1) predicts that noncompliance will rise with the divergence between the mandated wage and the market wage and fall with either increased probability of detection or higher penalty levels.

Grenier (1982) modifies the Ashenfelter and Smith analysis by noting that under the Fair Labor Standards Act, the government does not levy penalties for first time violators, nor typically assess high penalties for repeat offenders. Instead, the Wage and Hour Division (the arm of the U.S. Department of Labor with authority for enforcing FLSA) requires offending employers to pay back wages to employees who have been underpaid during the period of time covered by the inspection (that is an amount equal to $M-w$). Grenier points out that since the typical “penalty” facing a firm is a fraction of the underpayment in wages, the penalty effect is far less than implied by the Ashenfelter and Smith model (which assumed a lump sum penalty of “ D ”). However, because the penalty

in this case will vary with the number of workers hired by the non-complying firm ($(M-w)*L$), the penalty is endogenous and the optimal compliance decision will reflect the trade-off in hiring more workers at the lower market wage and potentially facing a higher penalty if caught at the end of the period.

Chang and Erlich (1985) create a more general model that attempts to correct aspects of both of the earlier papers. For our purposes, the salient modification entails endogenizing the labor demand with respect to the prospective legal sanction facing the non-complying firm. Specifically, the authors make the penalty grow with the degree to which the actual total wages paid by the contractor are lower than the mandated wages for that workforce. This modification in the model (which brings it closer to the actual penalty policy pursued by WHD) leads them to show that a “minimum wage enforcement policy requiring the violating firm to pay only a fraction of the difference between the statutory minimum and the market wage per unit labor will not constitute an effective deterrent.” (p. 87). They also show that regardless of the penalty policy chosen (lump sum or proportional to back wage owed), the incentives for noncompliance grow as the market wage becomes lower than the statutory minimum.³

From an empirical point of view, the literature on minimum wage compliance implies that the incentives for non-compliance in general should grow with:

- Correlates that would lead the market wage to be substantially below the statutory wage ($M-w > 0$) such as low skill requirements for the required labor;

³ Although the deterrence effect of the minimum wage is muted from these effects implying that minimum wage effects on employment will be more moderate than implied by a downward sloping labor demand,

- Employer business characteristics that lower the probability of detection of noncompliance (λ), such as high levels of industry exit and entry; small average establishment size; and an ability to evade public scrutiny by operating in the underground economy;
- Increases in the elasticity of product demand, as measured by a company's ability to affect prices and differentiate products;
- Increases in the elasticity of labor demand, as measured by factors such as skill content, capital intensity, and other Marshallian factors of derived labor demand.

B. Apparel industry dynamics

Product and labor markets: Product and labor markets in the apparel industry have many of the features that would suggest high rates of noncompliance. In particular, the women's segment of the industry has been characterized by a more splintered production system where different enterprises carry out the design, cutting, and sewing and pressing / packaging of apparel products.⁴ For example, a "jobber" may sell a design to retailer, and then contract with a manufacturer for delivery of the product. The manufacturer, in turn, may purchase and cut the product, but then contract out sewing to one or more companies (which may, in turn further contract out sub-assembly).

Contractors compete to preassemble bundles of cut garment pieces in a market where there is little ability to differential services (i.e. sewing and associated assembly) except

Yaniv (2001) shows that reducing the number of workers employed arising from compliance decisions is complementary to the decision by employers to evade minimum wage by underpaying workers.

⁴ In the U.S., men's clothing--from the 1920s onward—is primarily produced in factory-type settings, with manufacturers designing, cutting, sewing, pressing, and packaging products.

for some operations requiring higher levels of skill content. The structure of relations from the retailer down to contractors and subcontractors is depicted in Figure 1.

In general, as one goes to “lower” levels of apparel production (that is from design and cutting by manufacturer or jobbers at the top of Figure 1, to sewing by contractors or subcontractor at the bottom) the level of competition intensifies and profit margin per garment diminishes. Sewing contractors—often themselves recent immigrants to the U.S.—compete in a market with large numbers of small companies (on average 25-35 workers in the women’s industry), low barriers to entry, and limited opportunities for product differentiation. This creates classic conditions for intense price-based competition. Because labor costs represent the vast majority of total costs for a sewing contractor, the pressure to strike deals with jobbers and manufacturers that are not economically sustainable if the contractor complied with wage and hour laws is high.

Labor market conditions also tend to push wages towards the legal minimum or below. In the women’s segment, many entry level sewers can reach the standard rate for sewing in a matter of months, making it relatively easy to substitute workers in the event of turnover (Abernathy et. al. 1999). The apparel industry and sewing has always been attractive to immigrants given its low skill barriers (e.g. Slovaks, Germans, and Jews at turn of century; Hispanic, Chinese and Asian workers today).⁵ The consequent elastic supply of workers and the relatively low skill level demands for them keep wage levels low and the incentive to work long hours--even in inhospitable work environments--high. The illegal status of many workers, language barriers, and cultural norms further undercut the bargaining power of these workers (Kwong 1997).

C. The economics of compliance for apparel

Given the market dynamics described above, non-compliance is predominately a problem among the large number of contractors and subcontractors that assemble women's apparel products (see Figure 1). Regulatory attention has historically been focused at that level of the industry.⁶

Table 1 presents characteristics of FLSA enforcement in the apparel industry since 1996 that can be used to assess the economics of compliance for the typical contractor.⁷ The WHD conducted a total of 3,226 investigations in the garment industry between the final two quarters of 1996 and the fourth quarter of 2000, or about 200 inspections in a typical 3-month period. Although this represents an increase in enforcement effort relative to the prior decade, this inspection activity translates into an annual probability that a given contract shop will receive an inspection (λ) below 0.10.⁸ Penalties under FLSA are the civil penalties levied by WHD inspectors based on the scale and severity of non-compliance detected as well as the past history of the contractor. The civil penalties incurred by a typical contractor (D) were \$1,086 per contractor (Table 1, column 4).

⁵ See Commons (1901) in Part III of the Industrial Commission report entitled "Immigration and Its Economic Effects."

⁶ Minimum wages (as well as regulation of overtime compensation beyond 40 hours in a work week and child labor) are set out in the Fair Labor Standards Act (FLSA) of 1938. Enforcement of FLSA is carried out by investigators of the Wage and Hour Division (WHD), located in 400 offices around the country. See Samuels (2000) for a discussion of the history and politics surrounding passage of the FLSA.

⁷ Cases referred to litigation or still "open" for other reasons and cases where the back wages are less than \$1000 are not included. Table 1 therefore somewhat understates WHD efforts.

⁸ This is based on the following calculation: There were roughly 10,000 establishments in the segments of the apparel industry that are the focus of WHD regulation (primarily the women's and to some extent the children's industry). Given that there were an average of about 800 investigations conducted annually by WHD investigators, the annual probability of inspection is about .08. Focusing on one particular city yields similar estimates: there were a total of 260 investigations in New York City in 1998. Given that there were about 2600 apparel establishments, the probability of inspection in that year was .10.

The basic remedy under FLSA is payment of back wages to compensate workers for underpayment (pay below minimum wage or overtime payments for work beyond 40 hours in the work week). Back wages can be used as an estimate of the cost of compliance because they represent the difference between actual and mandated compensation paid by a contractor. Although Table 1 provides information on back wages recovered during the period 1996-2000, these are taken from a set of contractors that have been the target of enforcement action, and therefore do not represent a random sample of the industry. Using data taken from the randomly selected set of first-time violators used for the empirical portion of this paper (see below), we estimate that a contractor with 35 employees owed approximately \$11,850 in back wages annually.⁹

Using these figures, we can do a simple simulation for an employer facing the compliance decision for two time periods. In each period, the employer faces the chance of being inspected for the first time of $\lambda_{t1}=0.1$. If a contractor is inspected in the first period and is found in violation of minimum wage, we assume that the chance of an inspection in the second period doubles ($\lambda_{t2}=0.2$). The first time a contractor is caught out of compliance, they are required to pay the back wages to underpaid workers, but no penalty. If caught a second time (and assuming the same average underpayment), the contractor is required to pay back pay plus the average expected civil penalty ($D=\$1100$).

A contractor, given the inspection probabilities, penalty structure, and backpay liability described above therefore faces a very high incentive to underpay workers in both period 1 and period 2. In fact, the incentives for noncompliance are large enough

⁹ This estimate is calculated by taking the average back wage owed per worker per week for the subsample of contractors who had not been inspected prior to the time of the randomized survey by the Wage and Hour Division. This estimate is then annualized and applied for a shop employing 35 workers.

that an employer will choose compliance even if found in violation of minimum wage requirements in the first period and facing a higher inspection probability and civil penalty in the subsequent period.¹⁰

The economics of compliance can also be shown by using the decision framework laid out in Ashenfelter and Smith and the data in Table 1.¹¹ Given the tradeoff between compliance and noncompliance portrayed in (1), Ashenfelter and Smith show that an employer will choose to not pay minimum wage if:

$$L(M - w) - (L/w)[.5(M - w)^2\eta] > [\lambda/(1 - \lambda)]D \quad (2)$$

Based on the figures above, the values for the above equation can be roughly estimated for a “typical” apparel contractor with 35 workers as:

- Average annual underpayment per worker ((M-w)) = \$338
- Median civil penalty (D) of \$1,100
- Average annual likelihood of inspection (λ) of .1
- Assuming a relatively high labor demand elasticity (η) of -1.5¹²

Given this, the left side of equation (2) is \$11,455 and the right side equals \$122, implying that an apparel employer facing this choice should clearly choose not to comply. This estimate is for a single period and uses a number of observed levels (e.g. back wages owed after the fact) for unobservable factors. Nonetheless, the estimate

¹⁰ In addition, there is a very high degree of turnover among contractors. This lowers the incentive for compliance in a given period even further.

¹¹ Chang and Ehrlich (1985) point out that the Ashenfelter and Smith model assumes a quadratic profit function and therefore linear demand curve, limiting its application to large differences between mandated and market wages. However, it is useful to illustrate the significant incentives for non-compliance implied by the top-line numbers from apparel.

employs conservative assumptions, implying that the underlying incentives for non-compliance are even larger.

III. Data and Descriptive Statistics

A. Data source

The data for this study arise from surveys of randomly selected apparel contractors in the Southern California (Los Angeles) garment industry. The survey was conducted by the U.S. Department of Labor Wage and Hour Division (WHD) using a randomly selected set of establishments in the Southern California apparel market. The universe for the 2000 random survey was comprised of all apparel industry firms appearing on the California manufacturing registration list for that year.¹³ Using this comprehensive list of apparel manufacturers and contractors as the sampling universe, the WHD randomly selected establishments representing contractors operating in 2000.

Contractors selected from the list received an “inspection-based survey” by WHD investigators that included a review of all payroll records for the prior 12 week period. The payroll review is similar to that conducted by WHD in regular inspection activities. In addition, the investigators collect information on other aspects of the contractors business, including employer size, years of operation, business structure (e.g. corporation

¹² Ashenfelter and Smith use this elasticity in applying their model to low wage employers facing the noncompliance decision (p.336).

¹³ The California registration list for apparel consists of “...all persons or firms engaged in the business of apparel manufacturing...” where apparel manufacturing is defined as “...sewing, cutting, making, processing, repairing, finishing, assembling, or otherwise preparing any garment or any article of wearing apparel or accessories designed or intended to be worn by any individual...”

or partnership), and types of products assembled. Information on the number of manufacturers that the contractor worked for over the past 6 months and whether or not those manufacturers had monitoring programs (described below) are also collected (Wage and Hour Division, 2001).¹⁴

Because of the high rate of turnover of contractors (almost 50 percent of the sample were in firms that had been in business for less than 2 years), a separate subsample was created to represent contractors that had been previously inspected and found in violation of the Act. A list of all contractors that had been found in FLSA violation in the prior 2 years was assembled and a random sample of these contractors was selected for similar investigation-based surveys, resulting in a total of 30 contractors. Because of the high turnover level in the industry, the group of prior violators is over-sampled as a result of this procedure.¹⁵

B. Descriptive statistics

Tables 2a and 2b provide descriptive statistics for the sample as a whole and split out by those contractors that had never received prior inspections and those with prior violations. Table 2a provides information regarding compliance among the contractors. Table 2b presents information on other contractor characteristics, including employer size, length of business operation, a measure of the ability of the contractor to affect the price of services, and the types of products assembled.

¹⁴ Using randomly selected “inspection based surveys” to gauge compliance in Southern California is part of a larger initiative of WHD to measure performance, instituted by the department in response to the Government Performance and Results Act (GPRA) that requires federal agencies to develop measures that provide Congress, the public, and the executive branch with information on agency progress towards stated objectives (also required by GPRA).

¹⁵ Only one contractor randomly selected from the California manufacturing list also was randomly selected from the prior violator selection procedure.

In terms of overall compliance, 45.6% of contractors surveyed were in compliance with minimum wage provisions of the FLSA, with an average of 8 employees per contractor were underpaid in some way. A typical contractor owed about \$3700 in back wages for the time period under study. These estimates can be standardized given that contractors in the sample differ in size and that there is some variation in the period of time of payroll review. One standardized measure used throughout this study is the average number of workers that were underpaid per 100 production workers employed. A second standardized measure is the average back wage owed per week per employee. These estimates are provided in the final two rows of Table 2a. With respect to these standardized measures of compliance, the differences in levels are not statistically significant differences between contractors that had no prior violations and those with prior violations.

The typical contractor in the sample is small (37 production workers), relatively new (almost half have been in business less than 25 months), managed directly by the owner, and engaged in producing slightly more than one type of product. In most respects, the characteristics of contractors inspected for the first time look similar to those with a prior violation of wage and hour laws, although prior violators have more employees than those that had not been inspected in prior periods.

C. Compliance measures

The measure of performance typically employed in regulatory evaluations is employer compliance with promulgated standards. In the case of minimum wage, a contractor is considered as being out of compliance if one or more employees is found to have been underpaid during the investigation period. The obvious problem with this

approach is that it does not delineate between employers who underpaid a small fraction of their workforce from those who underpaid a large proportion. Further, the above definition of employer compliance does not distinguish between cases where employees bear a large burden because of non-compliance (that is experience gross underpayment in wages) from cases where the infractions are minor.

The economics of minimum wage compliance and the impact of government interventions may differ dramatically according to what measure one employs. For example, it is possible that government interventions may have limited impact on the overall likelihood of violations (measured as one or more violations of the act) even though it might substantially lower the number of violations per contractor, or the average severity of those violations. Accordingly, we use three measures of compliance. In the following, we measure contractor compliance behavior in terms of overall likelihood of compliance (traditional measure of compliance); the *incidence* of violation (measured as the number of violation per 100 workers employed); and the *severity* of violation (measured as the back wage owed per week per worker). Table 3 provides all three measures of compliance, and compares them across contractors with different characteristics.

The overall extent of minimum wage violations is significant across all three measures: employers have more than a 50% likelihood of being in violation of the minimum wage provision; more than 27 of every 100 workers has experienced some degree of underpayment, and the seriousness of violations is equivalent to underpaying every worker on the employer by about \$5.00 per week (in an industry where average hourly earnings were approximately \$8.00 in 2000).

Table 3 also provides evidence consistent with the predictions of the minimum wage literature surveyed above. For example, theory would predict that firms that pay higher wage rates or have less elastic demand for labor--either because of the skill content of the work or of its labor force--would be less likely to violate minimum wage. One proxy for skill content is the product produced by a firm: T-shirts have very little direct labor (typically less than 4 minutes of sewing) and require low levels of skill (i.e. short periods of time for sewers to achieve desired levels of productivity). In contrast, dresses and jeans have higher labor content and typically require higher degrees of sewing skill (with the time required to hitting desired productivity standards from six to eight months). Consistent with this skill content, compliance performance (as measured in all three dimensions) is lowest for T-shirts in all three dimensions than for jeans and dresses.

Similarly, theory would predict that the more elastic the demand for the product (sewing services), the more likely that firms will violate minimum wage standards. One proxy for price elasticity is pricing power—here measured as the self-reported ability of the contractor to renegotiate price if the delivery time for a product is changed by the manufacturer. Contractors who report an ability to change prices have a far lower likelihood to be in violation of minimum wage (.384 vs. .824), a far lower incidence of violations (31.1 vs. 7.2) and significantly less severity than contractors lacking this ability (6.02 vs. .56). The relation of contractor size and age are also generally consistent with that predicted by theory: larger contractors and those that have been in business for longer periods of time have a lower likelihood of being out of compliance with minimum

wage and have correspondingly lower incidence and severity levels than small contractors and those that have been in business for a relatively short period of time.

IV. The impact of contractor monitoring on compliance

A. Lean retailing and new methods of regulatory enforcement

Product market forces have been modified in recent years by a new dynamic in the channel of relations between retailers-apparel manufacturers-and textile producers. A new model of retailing--“lean retailing”--takes advantage of information technology to use real time information to reduce exposure to fickle consumer tastes (Abernathy, Dunlop, Hammond, and Weil 1999). Apparel suppliers, in turn, must operate with far greater levels of responsiveness and accept a great deal more risk than in the past.

“Lean retailing” takes advantage of information technologies, automation, industry standards, and management innovations to align more closely orders from suppliers with real-time sales data. This system reduces the need for retailers to stockpile large inventories of a growing range of products, thereby reducing their risks of stock-outs, markdowns, and inventory carrying costs. The companies that have adopted lean retailing principles now dominate major retail segments (Abernathy *et. al.*1999).

In contrast to the infrequent, large bulk shipments between apparel manufacturers and retailers under traditional retailing, lean retailers require frequent shipments made on the basis of ongoing replenishment orders placed by the retailer. These orders are made based on real-time sales information collected at the retailer's registers via bar code

scanning. SKU-level sales data are then aggregated centrally and used to generate orders to suppliers, usually on a weekly basis for each store.

Retailers operating with the systems described above require frequent replenishment and demand that shipments meet standards concerning delivery times, order completeness, and accuracy. Lean retailing therefore changes the problem faced by an apparel supplier: Suppliers must replenish products within a selling season, with retailers now requiring replenishment of orders in as little as 3 days. This makes lean retailers vulnerable to disruptions to the weekly replenishment of retail orders by apparel suppliers a major problem—one that can lead to penalties, cancellation of orders, and even loss of retail customers for those suppliers. Given that retailers drive the dynamics of the apparel markets depicted in Figure 1, the increasing importance of time translates into a potential tool of regulatory enforcement as will be discussed below.

Beginning in 1996, the WHD shifted its enforcement focus in response to these new relations in the apparel channel. Rather than regulating labor standards one contractor at a time, the WHD employed time sensitivity of lean retailers as a means of exerting regulatory pressure by invoking a long ignored provision of the FLSA, Section 15(a). Under Section 15(a) (the “hot cargo provision), WHD can embargo goods that have been manufactured in violation of the Act. Although this provision had limited impact in the traditional retail-apparel relationships where long delays in shipments and large retail inventories were an expected part of business, invocation of the hot goods provision today potentially raises the costs to retailers and their manufacturers of lost shipments and lost contracts given the short lead times of retailers. This potentially creates channel-level penalties arising from FLSA violations that quickly exceed those

arising from lost back wages and civil penalties. In effect, the ability to stop the flow of goods dramatically raises the penalty faced by contractors in creating private penalties—the market based costs of failing to deliver orders in a timely manner—that increase the *de facto* indifference point in equation (2).¹⁶

Under the traditional regulatory calculus, the primary objective of contractor-focused enforcement effort is recovering the back pay of workers. However, in addition to ensuring that back wage claims are resolved, the WHD policy uses the threat of embargoing goods to persuade manufacturers to augment the regulatory activities of the WHD. It does so by making the release of embargoed goods contingent on *the manufacturer's* agreement to create a compliance program for all of its contract and subcontract shop. This entails the manufacturer agreeing to sign two types of agreement: an agreement between the manufacturer (or jobber) and the Department of Labor; and an agreement that the manufacturer signs with its contractors (Ziff and Trattner 1999; Weil 2002).

The agreement between the Department of Labor and the manufacturer (a “Compliance Program Agreement”) stipulates the basic components of a monitoring system that will be operated by the manufacturer.¹⁷ The provisions of this agreement include explicit top management commitment to upholding the FLSA; screening of new contractors concerning prior history of FLSA compliance; establishment of a monitoring

¹⁶ As described in a Labor Department publication for manufacturers and retailers: “The Department of Labor will not lift its objections to goods being shipped or sold until the contractor’s employees have received the back wages owed them *and suitable assurances of future compliance are received*. Thus, it’s in your best interest to ensure that your contractors comply with the FLSA. (U.S. Department of Labor 1998).

¹⁷ These agreements, however, are entered in voluntarily by the manufacturer and their terms are therefore negotiated out between the government and the manufacturer / jobber. The terms described here are taken

system (described below); back wage guarantee and formal remediation process; and informing and training contractors regarding their responsibilities under the law.

The second set of agreements—established as a part of the overall Compliance Program Agreement—are between the manufacturer and all of its contractors. These agreements set out the specific FLSA requirements, clearly define the terms and methods of assessing wages and overtime (the subject of some ambiguity given that much of the industry uses piece rate payment); establish specific procedures for tracking payroll records, time cards, and the use of time clocks, and lay out other administrative procedures related the contractor’s compensation policies.

The agreements at both the manufacturer- and contractor-level stipulate a method of formal monitoring undertaken by the manufacturer (or its designated third-party). The model language specifies unannounced monitoring visits “...at least once every 90 days.” In the course of the visits, monitors may review contractors’ payroll records and timecards; undertake piece counts (important for translating piece rate payments into hourly earnings); interview employees in private; advise contractors of compliance problems; and undertake training for contractors and / or their employees (U.S. DOL, 1998; 1999).¹⁸

from the Department of Labor’s model agreement language specified in formal policy documents (see Wage and Hour Division, 1998).

¹⁸ Agreements may also provide for a more advanced set of monitoring arrangements and work practice agreements including use of electronic time clocks and agreement not to subcontract work without prior approval of the manufacturer.

B. Incidence of monitoring arrangements

The incidence of different types of monitoring arrangements across contractors in the sample is shown in Table 4. The upper part of the table, column (1) reflects the presence of seven different monitoring features by one or more of the manufacturers that the contractor has done work for in the past 6 months. For example, 60% of all contractors surveyed did work for at least one manufacturer that undertook a review of the contractor's payroll arising from the manufacturer's agreement with WHD, and 59% of contractors were subject to unannounced inspection visits by at least one of its manufacturing customers. The upper portion of Table 4 (column (2)) also provides the incidence of cases where a contractor was covered by one of the seven features of monitoring for *all* manufacturers for which it did work. For example, in 34% of cases a contractor was subject to unannounced inspections visits by all of the manufacturers for which it worked.

Table 4 also provides the distribution of monitoring features across the sample. About 27% of the sample did not have any form of monitoring with any of their manufacturing customers while, at the other end of the spectrum, 33% of the sample had all 7 features with at least one of its manufacturing customers.

Although there are many permutations of the different monitoring activities, certain combinations of activities are associated with higher levels of monitoring activities than others. In particular, the combination of manufacturer (or their designated third party) review of contractor payroll and the ability of the manufacturer to conduct unannounced visits provide manufacturers with both the means of assessing the presence of possible minimum wage violations (payroll review) and a way of gaining a more

realistic assessment of that activity (unannounced visit).¹⁹ We deem this a “high-powered” for monitoring. About 50% of the sample reports having these features in place with one or more of their manufacturers (although not necessarily both for a given contractor).

C. Effects of monitoring arrangements

If manufacturers agree to establish monitoring to avoid embargoes of goods by WHD, one would predict that contractors working for a manufacturer with a monitoring system would have better compliance performance than contractors working for a manufacturer that does not have such monitoring arrangements, all else equal. However, this predicted monitoring effect should be considered carefully. Because the agreement to monitor contractors is made between the manufacturer and the WHD, monitoring coverage is not directly determined by the contractor. A typical contractor in the sample works for between 2 and 3 manufactures at any point in time (with the maximum number in the sample being 10 manufacturers). As a result, contractors will be working with a variety of manufacturers, some requiring monitoring and some not. This means that the measured effect of monitoring on compliance cannot be regarded as simply an artifact of self-selection by contractors.

At the same time, one cannot regard the presence of monitoring as exogenous to the contractor. One would expect manufacturers that seek to thwart future embargoes of its goods by entering into contractor monitoring agreements with the government will

¹⁹ We arrive at this particular combination of monitoring activities as the focus of subsequent empirical analysis through a factor analysis of the seven attributes as predictors of compliance behavior. These results are available from the author. The importance of the two attributes is also supported by discussions with WHD investigators.

engage in two types of behaviors: an effort to select contractors that have a higher probability of paying their workers the minimum wage; and an effort to change the behavior of contractors so that they become more compliant with minimum wage provisions. As a result, although part of the effect of monitoring at the contractor level could arise from changes in behavior of contractors who have been paired through the luck of the draw with a manufacturer that happens to have such an agreement (and therefore consistent with the monitoring effect as exogenous). But another part of the effect is that manufacturers have sought out contractors that have a higher probability of complying with the law *ex ante*. In the latter case, monitoring—although not chosen by the contractor—is endogenous in that the selection criteria used by the manufacturer (reduce the chance of embargoes of goods) is correlated with compliance.

Together, the two effects will lead to a predicted positive impact of monitoring on compliance outcomes. Because of the cross-sectional nature of the data, it is impossible to directly observe whether the measured effect arises from behavior changed induced via monitoring versus sorting behavior. However, it should be noted that in the case of measuring the impact of monitoring on compliance, both effects move those firms under agreement to use increasingly contractors that comply with minimum wage standards. In this way, both effects of monitoring can be attributed to the intervention (and the desired outcome). Thus, although the effects cannot be easily unraveled, both are equally relevant to the question of whether manufacturer monitoring improves contractor behavior.²⁰

²⁰ Contrast this with the problem of endogeneity in a policy area like training programs. Here, the intervention is expressly intended to change the human capital endowment of the worker receiving the training through the intervention. The problem in assessment is that more highly motivated individuals

Along with clarifying the pathways through which manufacturer monitoring affects contractor behavior, we also need to model the effects of different levels or stringency of monitoring. That is, at what point does monitoring by a subset of manufacturers actually have an impact on contractor behavior? The lower portion of Table 4 presents the incidence of monitoring at different levels of stringency. We define “weak monitoring”—the most inclusive definition of monitoring--as a case where a contractor is subject to one or more monitoring activities by one or more manufacturers (74% of the sample fits this definition). Moderate monitoring stringency (“Medium 1”) is where a contractor has manufacturers that undertake both payroll review and unannounced inspections, although those activities are not necessarily undertaken by the same manufacturer (49% of the sample fall under this categorization). A still more stringent form of monitoring (“Medium 2”) occurs where the *same* manufacturer undertakes both payroll review and unannounced inspections, indicating that this higher-powered form of monitoring occur in a coordinated fashion by one or more manufacturer (47% of the cases). Finally, the most stringent form of monitoring (“High”) is defined as the subset of cases where *every* manufacturer served by the contractor undertakes payroll review and unannounced visits.

The effect of monitoring can be thought of as increasing the level D in equation (2) because contractors who violate the law and are detected risk losing future business of

tend to elect training, so that a cross-sectional estimate of training may reflect a combination of program effect and sorting. Because the intention of training programs is to raise wages through enhancing human capital endowments, the problem of endogeneity (and the need to find empirical strategies to separate these effects) requires redressing the problem in empirical evaluation.

the manufacturer that has monitoring in place.²¹ As a result, more stringent forms of monitoring imply that the expected penalty to the contractor increases, either because of the presence of high-powered monitoring features (monitoring cases “Medium 1 and 2”) or the application of these features across all manufacturing customers (“High”). We therefore predict that more strenuous monitoring results in higher levels of minimum wage compliance, all else equal.

Table 5 compares minimum wage performance--measured as compliance likelihood, the incidence of minimum wage violations, and the severity of violations—for different types of monitoring. For each of the stringency levels, it compares the level of performance for those contractors with monitoring at the defined level of stringency with all other contractors. For each set of stringency measures, the table presents the difference and statistical significant of measured compliance.

Monitoring—from weak to strong--has its predicted impacts on minimum wage performance in almost every case. For example, contractors working for at least one manufacturer with at least one or more monitoring feature of any variety (“weak” monitoring) have significantly higher likelihood of compliance (.154 vs. .542) and lower incidence of violations (a difference of 16.55 per 100 workers) than those without any monitoring. Although the amount of average back wages owed to each worker each week is significantly lower in monitored than non-monitored contractors, the difference is not significantly discernable.

Table 5 also demonstrates the expected relation between the stringency of monitoring and minimum wage performance—i.e. that more stringent monitoring is

²¹ This is because the manufacturer risks future embargoes of its goods to retailers as a result of continued

associated with better minimum wage performance. For example, as monitoring become more stringent, the different in incidence between monitored and non-monitored cases increases from a mean difference of 16.6 violations per 100 workers for weak forms of monitoring, to 21.0 violations per 100 workers for medium forms rising to a difference of 31.3 violations per 100 workers for the most stringent forms of monitoring.

V. Modeling Compliance and Performance Determinants

A. Statistical model of compliance

Given the economics of minimum wage compliance and the expected impact of monitoring, the overall likelihood, incidence, and severity of minimum wage compliance observed at contractor i can be modeled as:

$$MWPERF_i = f(Labor_i, Product_i, Monitoring_i, X_i) \quad (3)$$

Where:

MWPERF: Minimum wage performance of contractor i (likelihood, incidence, and severity)

Labor: Elasticity of labor demand and average wage level of the contractor, as characterized by the average skill level drawn upon by a contractor;

Product: Elasticity of product demand (i.e. sewing services) for the contractor, as characterized by its ability to affect the price of services it provides to manufacturers;

Monitor: Presence and stringency of monitoring by manufacturers

violation of minimum wage by covered contractors.

X : Vector of other employer characteristics that are correlated with minimum wage performance, including size, age of the business, and prior inspections by WHD (which have the effect of raising the level of potential penalties from the government because contractors are subject to civil penalties for repeat violations).

The effects of labor and product market characteristics have been discussed above. We capture contractor features associated with labor demand elasticity by including a variable for the type of product produced by the contractor. We use three dummies to represent specific low (T-shirts) and high skill content goods (jeans and dresses), relative to an omitted category of goods that have “average” skill content. For product market, we use the response to survey questions regarding the ability of the contractor to change price in the event that a manufacturer moves up the delivery date of a product.²² We estimate separate equations for each of the four monitoring variables to capture the impact of different levels of stringency. Finally, we include variables for contractor size, age (measured as a dummy for those contractors that have been in business for more than 2 years), and a dummy for prior citations by the WHD for violations of the FLSA.

Table 6 provides Spearman rank correlations for the variables used in the following empirical estimates of compliance performance. The signs of the variables for the core compliance correlates are mostly in the expected directions. For example, T-shirts that have low skill content (and therefore higher labor demand elasticity) are

²² Contractors are coded as having an ability to influence price if they answered “yes” to the following: “If manufacturers change the due date (move it up), do you renegotiate the contract cost with the manufacturer

positively correlated with the likelihood of non-compliance (COMPLY) as well as the incidence (MWEMP) and severity (MWBAKPAY) of minimum wage violations. The ability of contractors to change the price if manufacturers move up production deadlines (MKTPWR) is as predicted negatively correlated with all the measures of minimum wage performance. Better minimum wage performance is associated with larger (lnSize) and older (Bizage) contractors, and those that have been cited in the past (Violator) and therefore potentially face higher civil penalties if found in violation once again. However, the correlations for these characteristics are significant only in a few instances. Finally, the correlations indicate that the presence of various forms of monitoring are negatively associated with the likelihood of non-compliance as well as with the incidence and severity of violations, and these correlations are almost all statistically significant.

B. Likelihood of non-compliance

In order to gauge the impact of monitoring on the likelihood of overall compliance (measured as the presence of no violations of minimum wage) we estimate a logit regression for each of the four types of monitoring, holding constant the other variables discussed above.²³ The logit results of these regressions are presented in Table 7.

In all four regressions, the presence of monitoring is associated with a statistically significant reduction in the probability that contractors will be in violation of minimum

to adjust for any added expenses” and indicated that they renegotiate such costs “sometimes,” “50/50,” “frequently,” “always.”

²³ Models of minimum wage performance for the remainder of the paper were estimated for the complete set of independent variables discussed above. However, because the variables for dress, jeans, and prior violations consistently were not statistically significant and did not change the measured effects of monitoring variables, we report regression equations that did not include these variables. The results for all regression equations including these variables are available from the author.

wage standards. The logit coefficient for “weak” monitoring in equation (1) imply that the presence of monitoring reduces the likelihood of noncompliance by 0.35, from a predicted level of non-compliance of 0.82 if there is no monitoring to 0.47 if there is one or more monitoring features in place at least at one manufacturer, all other factors held constant at their means. The estimated change in probability is about the same for the two “medium” forms of monitoring (an estimated reduction in predicted probability of between 0.28 and 0.33 for the two definitions of monitoring, relative to the absence of monitoring). Finally, the impact of the most stringent definition of monitoring implied by the estimates is very large, where high-powered monitoring by all manufacturers reduces the predicted level of non-compliance by 0.44, all other factors held constant at their means. This represents a substantial reduction given that the overall level of non-compliance is 0.54.

The variables controlling for product and labor market characteristics included in the model also have their expected effects on compliance and are statistically significant and imply relatively large impacts on contractor behavior. In particular, a contractor’s ability to renegotiate price (Mktpwr) substantially reduces the likelihood of non-compliance in all four equations by an estimate 0.44 (all else equal). In contrast producing a product with low-skill content (T-Shirt) raises the predicted level of non-compliance by 0.25 relative to producing medium- or higher-skill content goods.

C. Incidence and severity of violations: OLS and Tobit Results

As discussed above, one limitation of using non-compliance as a measure of contractor behavior is that it tells little about the incidence or severity of minimum wage violations. That is, an employer will be classified as not complying with the law whether a small or large fraction of employees are underpaid or whether a typical worker has been grossly underpaid versus receiving very slight underpayments.

To deal with this problem, we estimate the impact of monitoring and other factors on both the incidence and severity of minimum wage violations. Table 8 provides OLS results for the two types of minimum wage performance outcomes for the four forms of monitoring. The estimated effects of monitoring holding constant other factors are bolded.

Columns (1) to (4) in Table 8 indicate that monitoring lowers the incidence of minimum wage violations substantially, although only the estimates for the two more stringent forms of monitoring (Medium2 and High) are statistically significant. For those cases, monitoring substantially lowers the incidence of violations by 16 per 100 workers (Medium 2) and 26 per 100 workers for those contractors who do all of their work for manufacturers with high-powered monitoring systems in place. Thus, as predicted, minimum wage performance also increases with the stringency of monitoring.

Columns (5) to (8) provide the estimated effects of the various forms of monitoring on severity, measured as average back wage owed per worker per week. The negative sign and size of the OLS monitoring coefficients imply substantial reductions in underpayment scaled by workers, although only the coefficient for “High” monitoring are statistically significant. In the case of high monitoring, the coefficient implies that the

cross-the-board presence of monitoring by manufacturers lowers the average underpayment received by every worker in the contractor establishment by \$5.40 per week.²⁴

One problem of OLS estimates of minimum wage outcomes arises because of the substantial number of contractors have not committed any violations of the minimum wage. As a result, the dependent variables (MWEMP and MWBAKPAY) are left-censored and therefore subject to bias in estimates of the various independent variables. Table 9 corrects for this problem by estimating a series of Tobit regressions for the two types of minimum wage outcomes and four forms of monitoring.²⁵

The Tobit results for monitoring indicate the significant effect that left censoring has on the estimated coefficients. Once we have corrected for left censoring, the estimated effects of monitoring on incidence and severity are quite large and for the most part statistically significant. For example, the estimated size of the monitoring effect is 19.6 per 100 workers for “weak” monitoring, going all the way up to an estimate effect of reducing the incidence by 55 violations per 100 workers. Similarly, the size of the monitoring effect on back pay is also substantial and significant for most definitions of monitoring.

The results imply that the association between monitoring and overall compliance (Table 7) arises from the substantial changes in the underlying conditions in contractor shops. The use of a Tobit procedures also leads to larger and more statistically

²⁴ Although this may not seem substantial, it should be recalled that this measure is scaled by the entire work force even though minimum wage underpayments are concentrated among a subset of workers in the shop.

²⁵ There is also a potential problem of right censoring for the incidence measure. However, very few of the observations approach the maximum of the dependent variable (i.e. 100 violations per 100 workers). As a

significant estimated effects of product market (Mktpwr) and labor market (T-Shirt) on the two types of minimum wage performance outcomes. The estimated effect of the ability of a contractor to renegotiate price of goods is particularly striking.

D. Sorting out the effects of monitoring

As discussed above, the empirical results in Tables 7-9 must be interpreted with some caution. Although the results demonstrate a statistically significant association between monitoring and minimum wage performance, we cannot separate the extent to which those effects arise from changes that monitoring has on contractor behavior (i.e. that they moved from non-compliance to compliance as a result of monitoring) from manufacturer decisions to find contractors that *ex ante* are more likely to be in compliance with standards. Since we are unable to observe “pre / post” monitoring behavior among the contractors in the sample given its cross-sectional character, separating the effects is difficult.

As argued above, since both behaviors move the median contractor towards better performance, they can both be said to arise from the presence of monitoring arrangements created by the WHD regulatory strategy. However, it may still be of policy utility to determine whether the effects of monitoring found in Tables 7-9 arise from a market-level sorting process where manufacturers with monitoring increasingly find and partner with a preexisting set of “good actors” versus being the result of changes in the median behavior of a set of formerly noncompliant firms. If WHD successfully increases the number of manufacturers under agreement over time, the sorting story implies that the

result, Tobit measures incorporating controls for both right and left censoring do not differ from those presented in Table 9.

good actors will find themselves with a larger and larger percentage of work in the industry (thereby leading to growth in median firm size and increases in industry concentration among contractors). On the other hand, if the predominant effect of monitoring is changing behavior of existing firms, one can imagine that the overall distribution of contractors would change little. Unfortunately, the fact that both effects are operating simultaneously precludes using a simple comparison of contractor size over time as a means of decoupling the effects.

In terms of modeling performance determinants, if contractor monitoring arises from manufacturers seeking contractors they believe to be better minimum wage performers, the monitor variable is not independent of the error term in the estimation equations underlying Table 8 and 9. In order to deal with this, we must find a variable that is correlated with monitoring but not correlated with compliance. One candidate that can be found in Table 6 in regard to the determinants of “High” monitoring is the number of manufacturers worked for by the particular contractor (NUMANUF). NUMANUF is highly and significantly correlated with “High” monitoring (correlation of -0.36) and uncorrelated with any of the measures of minimum wage performance.²⁶ This significant correlation is explicable by the following observation. Assume that monitoring is randomly distributed across manufacturers in the sample. The probability of a contractor pairing with *only* manufacturers that have high-powered monitoring agreements (payroll and unannounced inspections) by the government falls as a

²⁶ Although other forms of monitoring are also not correlated with performance outcomes, they are also uncorrelated with the number of manufacturers. We therefore restrict the analysis to modeling High manufacturing using an instrumental variable approach.

contractor works for more and more manufacturers (holding constant factors such as size and age of the contractor).

Given this, we estimate a two-stage least square (2SLS) regression. In the first stage, we estimate the determinants of High monitoring, where the probability of being covered by high monitoring for contractor i is:

$$High_i = f(Size_i, Bizage_i, Mktpr_i, Tshirt_i, Numanuf_i) \quad (4)$$

The results of Probit estimates of equation (4) are presented in column (1) of Table 10. As expected, NUMANUF has a negative and statistically significant effect on the probability of high monitoring. The estimates also indicate that larger and older contractors are also more likely to be monitored, also as expected. Based on the coefficients presented in column (1), we create an estimated monitoring probability for each of the observations in the sample and use this as the instrument for monitoring. Columns (2) through (5) in Table 10 provide OLS and Tobit estimates of the instrument for High monitoring along with other independent variables.

Comparing the results in Table 10 with those in Table 8 (OLS) and 9 (Tobit) indicate that the measured effect of monitoring on the incidence and severity of minimum wage violations is approximately of the same magnitude as that estimated where 2SLS is not employed. The estimated OLS coefficient using the direct High monitoring variable was -25.6 versus -21.4 using the 2SLS approach and the Tobit estimate of the high monitoring for was -55.1 in versus -53.1 using 2SLS. Using OLS to estimate minimum wage severity, high manufacturing was associated an average reduction in back wages owed per worker per week of $\$5.40$ (Table 8) versus $\$8.32$ using 2SLS. Using Tobit

estimates, the coefficient for high monitoring is -\$15.11 (Table 9) versus -\$20.31 once an instrumental variable approach is incorporated.

To the extent that the 2SLS procedure holds constant the effects of matching by manufacturers, the similar values for high monitoring in the two sets of equations suggests that an important part of the total measured effect of monitoring is the change in contractor behavior elicited by the presence of monitoring. That is, once we have predicted a probability that a given contractor will be the subject of monitoring because of its underlying characteristics, the likelihood of monitoring still has about the same effect in improving performance with labor standards requirements. Although one cannot make any causal claims from this cross-sectional evidence, it offers further evidence of a robust monitoring effect.

VI. Conclusion

The literature on the economics of minimum wage going back to Ashenfelter and Smith (1979) predict that employers in certain industries will face significant incentives to violate those laws. In addition, subsequent literature (e.g. Grenier 1982; Chang and Erlich 1985; Yaniv 2001) predicts that the traditional structure of government enforcement creates insufficient regulatory incentives to overcome these behaviors because of the low expected penalties for violation and the correspondingly small probability of being detected out of compliance.

This paper provides strong empirical evidence to support the predictions of the minimum wage literature on the incentives for non-compliance in an industry like apparel that has conditions tailor-made for wide-scale non-compliance. And although the results of the study are consistent with the notion that traditional tools of regulation will not

provide sufficient incentives to improve labor standards, we find very strong evidence that new forms of regulation that draw on supply chain dynamics can have a substantial impact at improving labor standards outcomes. Government, it seems, can make a difference.

Note that the use of supply chain pressure to create monitoring systems still leads to changes in contractor behavior by altering the basic regulatory calculus facing those contractors. In particular it introduces substantial *private* penalties that easily swamp in magnitude the civil penalties available to the government as well as appreciably increase the implicit probability of inspection (λ) facing contractors. Returning to the model of the economics of compliance implied by equation (2), if monitoring moves the median contractor from a state of non-compliance to compliance, and if one assumes the same levels of labor demand elasticity, back wages, and size, we can estimate the implicit private penalties required to change median behavior. For the median contractor described above to move to compliance, the implied penalties (D) would need to rise to over \$100,000 if the probability of inspection remained the same ($\lambda=.1$).²⁷

Using supply chain dynamics as a regulatory lever has a number of implications beyond its direct use by the WHD in the domestic apparel market. Supply chains link the U.S. retail market with international sources of apparel production, thereby providing potential analogs for those considering international labor standards regulation (Freeman 1994; Fung, O'Rourke, and Sabel 2001). Retail restructuring and the growing

²⁷ Alternatively, the impact of private monitoring can be thought of as equivalent to an increase in the likelihood of being detected as well as the expected penalty. In this respect, the changes necessary to induce behavior change would be equivalent to combinations of increased inspection probabilities and higher penalty levels, such as doubling the probability of inspection and raising penalties to about \$46,000; tripling the probability of inspections and increasing the penalties to \$23,000, etc.

compression of time in supply chain relations characterizes a growing set of industries, from food to computers to home building supplies. At the same time (and in some cases related to the diffusion of information technologies) many companies are spinning off parts of their production process and ceding them to networks of contractors and subcontractors. This trend is well known in the manufacturing sector, for example the spinning off of suppliers formerly owned by the major car companies. Creation of multiple layers of subcontracting relationships has also become common in service sectors, from the health care industry to the provision of janitorial services in commercial building.

Understanding developments in industry supply chains in this way may provide new opportunities to use private incentives to achieve public ends. Establishing where these dynamics are occurring across different industries and harnessing them to serve public policy objectives therefore may prove a fertile means for achieving public purposes in a wide variety of regulatory arenas.

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**Figure 1:
Structure of retailer-manufacturer-contractor relations**

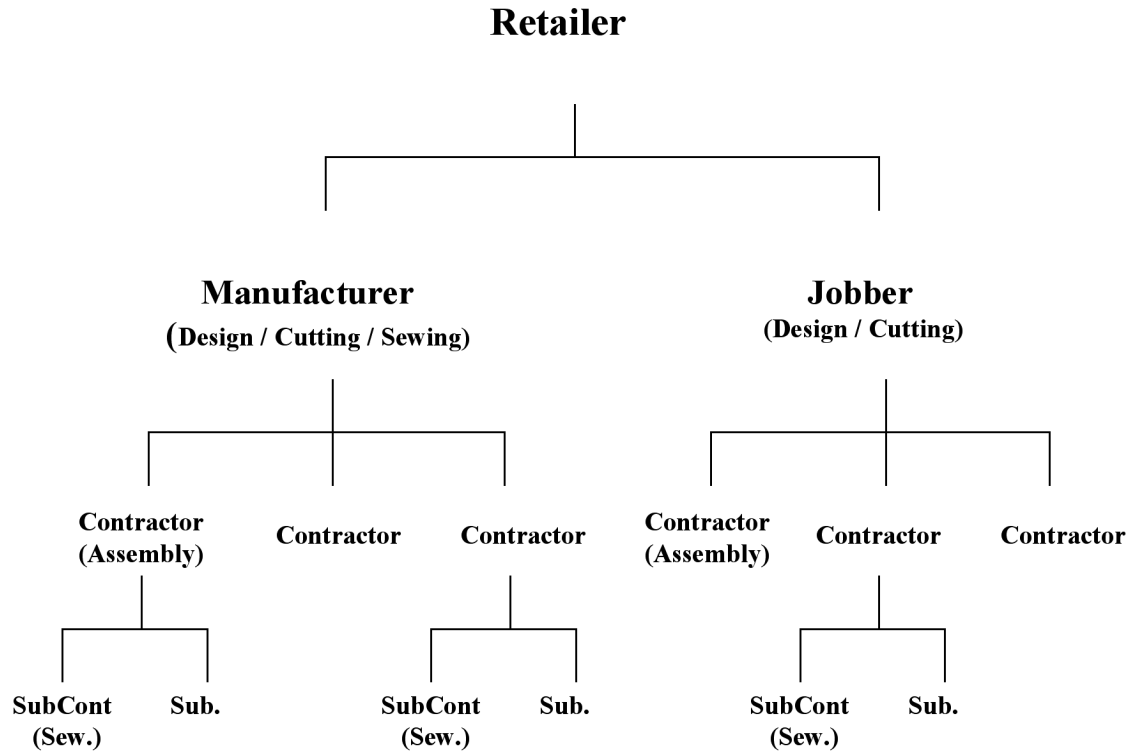


Table 1
Enforcement of FLSA in the U.S. Apparel Industry: 1996-2000 (Quarterly)

<i>Quarter</i>	No. of Investigations	Back wage per employee ^a	Civil fine per violator ^b	Back wage per violator ^c	% investigations w/ violations ^d
1996-Q3	223	\$ 281	-	\$ 5,338	58.7%
1996-Q4	194	\$ 356	\$ 919	\$ 6,663	60.8%
1997-Q1	293	\$ 376	\$ 1,597	\$ 6,727	42.0%
1997-Q2	212	\$ 356	\$ 511	\$ 4,772	48.1%
1997-Q3	268	\$ 495	\$ 2,434	\$11,296	39.9%
1997-Q4	212	\$ 330	\$ 1,135	\$ 6,175	46.7%
1998-Q1	221	\$ 268	\$ 619	\$ 4,132	36.2%
1998-Q2	201	\$ 432	\$ 1,094	\$ 6,623	49.3%
1998-Q3	232	\$ 347	\$ 819	\$ 5,590	54.3%
1998-Q4	154	\$ 345	\$ 1,960	\$ 6,191	63.6%
1999-Q1	175	\$ 493	\$ 2,462	\$ 11,567	31.4%
1999-Q2	82	\$ 280	\$ 2,352	\$ 4,942	37.8%
1999-Q3	205	\$ 380	\$ 758	\$ 8,232	53.2%
1999-Q4	115	\$ 475	\$ 1,136	\$ 9,625	65.2%
2000-Q1	94	\$ 462	\$ 495	\$ 10,278	41.5%
2000-Q2	100	\$ 687	\$ 1,079	\$ 39,025	46.0%
2000-Q3	120	\$ 1,028	\$ 942	\$ 24,769	53.3%
2000-Q4	125	\$ 662	\$ 3,750	\$ 11,454	58.4%
Mean	179.2	\$ 447	\$ 1,337	\$ 10,189	48.8%
Median	197.5	\$ 378	\$ 1,086	\$ 6,695	48.7%
S.D.	61.8	\$ 187	\$ 927	\$ 8,611	9.9%

^a Calculated as the total value of back wage settlements divided by the total number of workers receiving back wages. Back wage settlements with workers during quarter include payment for minimum wage and overtime wage violations documented by the Wage and Hour division in the course of investigations.

^b Calculated as total value of civil penalties divided by the number of employers with violations of labor standards. Civil penalties represent fines to employers above and beyond back wage settlements assessed (but not necessarily collected) during quarter.

^c Calculated as total value of back wage settlements divided by the number of employers with violations of labor standards during quarter.

^d Calculated as the total number of investigations with one or more violations of FLSA divided by the total number of investigations during quarter.

Source: Calculated from data from U.S. Department of Labor, Wage and Hour Division, Garment Enforcement Reports (issued quarterly).

Table 2a
Descriptive Statistics, Los Angeles 2000

	(1)	(2)	(3)	(4)
	Mean	First time	Previous violation	Difference
Compliance characteristics				
Employer compliance with minimum wage	0.46	0.46	0.44	0.02
Number of employees with minimum wage violations	8.1 (15.5)	6.50 (11.5)	11.1 (20.9)	-4.6 (3.22)
Minimum wage back wages findings (\$ / contractor)	3695.8 (11102.6)	1999.1 (4597.3)	6853.7 (17424.6)	-4854.6** (2257.95)
Number of employees with minimum wage violations per 100 workers	27.2 (34.8)	27.4 (34.1)	26.8 (36.5)	0.6 (6.67)
Minimum wage back wages/week/employee (\$)	5.1 (10.6)	6.5 (12.2)	2.5 (6.4)	4 (2.17)

Standard errors are in parentheses. An asterisk denotes significance at the 10 percent level and a double asterisk for 5 percent.

Table 2b
Descriptive Statistics, Los Angeles 2000

	(1)	(2)	(3)	(4)
	Mean	First time	Previous violation	Difference
Contractor characteristics				
Number of manufacturers worked for by contractor	2.29 (1.7)	2.2 (1.8)	2.5 (1.6)	-0.3 (0.33)
Size of contractor (number of employees)	37.3 (33.5)	32 (31.3)	46.9 (35.6)	-14.9** (6.77)
<i>Length of operation of business</i>				
0-6 months	0.118			
7-12 months	0.118			
13-18 months	0.167			
19-24 months	0.059			
25 or more months	0.539			
If manufacturer changes due date for delivery, can contractor renegotiate price?	0.165			
<i>Product assembled by contractor</i>				
Jeans	0.136			
T-shirt	0.301			
Slacks/fleece/sweaters	0.709			
Dresses	0.379			
Suit / jacket	0.136			
Miscellaneous	0.078			
<i>Number of products produced</i>				
One	0.476			
Two	0.311			
Three	0.194			
Four or more	0.019			
Owner operates other establishments (check)	0.039 (0.19)	0.03 (0.17)	0.055 (0.23)	-0.025 (0.039)
Owner is involved in daily workplace management	0.874 (0.33)	0.866 (0.34)	0.888 (0.32)	-0.022 (0.067)
N	103			

Standard errors are in parentheses. An asterisk denotes significance at the 10 percent level and a double asterisk for 5 percent.

Table 3
Compliance performance by contractor characteristics, Los Angeles 2000

	<i>Percent of employers in compliance</i>	<i>Minimum wage violations per 100 employees</i>	<i>Back wages owed per worker per week (\$)</i>
Overall compliance	0.456	27.2 (34.8)	5.12 (10.64)
Quartile 1: size<=14	0.393	39.0 (38.8)	7.57 (13.32)
Quartile 2: 26>=size>=15	0.417	21.7 (29.1)	3.24 (8.60)
Quartile 3: 49>=size>=27	0.423	24.5 (32.9)	5.72 (11.51)
Quartile 4: size>=50	0.600	22.0 (35.7)	3.56 (7.69)
Contractor's business is < 2 years old	0.340	34.9 (36.5)	7.60 (13.21)
Contractor's business is > 2 years old	0.554	20.8 (32.2)	3.03 (7.36)
Contractor is unable to renegotiate wages if delivery time changed	0.384	31.1 (35.3)	6.02 (11.42)
Contractor is able to renegotiate wages if delivery time changed	0.824	7.2 (24.3)	0.56 (1.59)
Contractor produces products other than T shirts	0.514	25.3 (34.2)	5.02 (10.54)
Contractor produces T shirts	0.323	31.5 (36.3)	5.36 (11.03)
Contractor produces products other than dresses	0.484	27.7 (36.4)	5.53 (11.65)
Contractor produces dresses	0.410	26.4 (32.4)	4.45 (8.85)
Contractor produces products other than jeans	0.438	27.7 (34.4)	5.22 (10.81)
Contractor produces jeans	0.571	24.2 (38.4)	4.48 (9.85)
N	103		

Table 4
Monitoring Activity

	(1)	(2)
<i>Monitoring Activity</i>	Mean	Monitoring activity for all manufacturers
<i>Monitoring activity employed by manufacturer</i>		
Manufacturers Review Payroll	0.602	.375
Manufacturers Review Time Cards	0.633	.396
Manufacturers Conduct Employee Interviews	0.561	.354
Manufacturer Requires Contractor to Provide Minimum Wage Information	0.561	.354
Manufacturer Discloses Problems with MW to Contractor	0.439	.250
Manufacturer Recommends Corrective Action to Contractor	0.429	.250
Manufacturer May Conduct Unannounced Visits	0.592	.344
<i>Number of Monitoring Features</i>		
0	0.265	--
1	0.082	--
2	0.041	--
3	0.041	--
4	0.061	--
5	0.102	--
6	0.082	--
7	0.327	--
<i>Type of Monitoring</i>		
Weak Monitoring: One or more monitoring activities by one or more manufacturers	0.735	--
Medium1: Payroll Review and Unannounced Inspections, but Not Necessarily by Same Manufacturer	0.490	
Medium 2: Payroll Review and Unannounced Inspections By One or More Manufacturers	0.474	
High: Payroll Review and Unannounced Inspections By All Manufacturers	0.299	--
N ¹	98	--

¹Five observations omitted because the randomly selected establishment was a manufacturer. The empirical analysis draws on the remaining 98 observations.

Table 5
Compliance Performance by Type of Monitoring

	(1)	(2)	(3)	(4)	(5)
<i>Type of Monitoring by Manufacturer of Contractor</i>	<i>Percent of employers in compliance</i>	<i>Minimum wage violations per 100 employees</i>	<i>Difference between means</i>	<i>Backwages owed per worker per week (\$)</i>	<i>Difference between means</i>
Overall Compliance	0.456	27.19 (34.78)		5.12 (10.64)	
Weak=0	0.154	40.67 (30.50)	16.55**	7.76 (10.19)	3.24
Weak=1	0.542	24.12 (35.87)	2.09	4.52 (11.01)	1.31
Medium1=0	0.280	37.54 (34.65)	18.44**	7.68 (12.34)	4.7**
Medium1=1	0.604	19.10 (33.49)	2.68	2.98 (8.52)	2.19
Medium2=0	0.275	38.77 (35.40)	21.01**	7.63 (12.22)	4.63**
Medium2=1	0.609	17.76 (31.87)	3.06	3.00 (8.69)	2.13
All 7=0	0.349	34.81 (35.11)	19.3**	6.51 (11.47)	3.47
All 7=1	0.625	15.51 (31.98)	2.62	3.04 (9.17)	1.49
High=0	0.294	38.15 (36.91)	31.26**	7.49 (12.43)	6.87**
High=1	0.759	6.89 (16.78)	4.36	0.62 (1.58)	2.96
N	98	98		98	

See Table 3 and text for definitions of different types of monitoring employed by manufacturers. An asterisk after the correlation coefficient denotes significance at the 10 percent level and a double asterisk for 5 percent.