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MOVING UP OR MOVING OUT?
ANTI-SWEATSHOP ACTIVISTS AND LABOR MARKET OUTCOMES

Ann Harrison
Jason Scorse

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ABSTRACT

During the 1990s, human rights and anti-sweatshop activists increased their efforts to improve working conditions and raise wages for workers in developing countries. These campaigns took many different forms: direct pressure to change legislation in developing countries, pressure on firms, newspaper campaigns, and grassroots organizing. This paper analyzes the impact of two different types of interventions on labor market outcomes in Indonesian manufacturing: (1) direct US government pressure, which contributed to a doubling of the minimum wage and (2) anti-sweatshop campaigns. The combined effects of the minimum wage legislation and the anti-sweatshop campaigns led to a 50 percent increase in real wages and a 100 percent increase in nominal wages for unskilled workers at targeted plants. We then examine whether higher wages led firms to cut employment or relocate elsewhere. Although the higher minimum wage reduced employment for unskilled workers, anti-sweatshop activism targeted at textiles, apparel, and footwear plants did not. Plants targeted by activists were more likely to close, but those losses were offset by employment gains at surviving plants. The message is a mixed one: activism significantly improved wages for unskilled workers in sweatshop industries, but probably encouraged some plants to leave Indonesia.

Ann Harrison
University of California, Berkeley
329 Giannini Hall
Berkeley, CA 94720
and NBER
harrison@are.berkeley.edu

Jason Scorse
Department of Agricultural and Resource Economics
Giannini Hall
UC Berkeley
Berkeley, CA 94720
jscorse@are.berkeley.edu

I. Introduction

Anti-sweatshop campaigns to improve working conditions for developing country workers increased dramatically during the 1990s. These campaigns took many different forms: direct pressure to change legislation in developing countries, pressure on firms, newspaper campaigns, and grassroots organizing. The emergence of a global anti-sweatshop movement, in conjunction with rapid increases in trade in goods and services, suggests that “globalization” may have two offsetting effects. While some firms may react to international competition by cutting wages and relocating to poor countries, new cross-national labor movements may prevent them from doing so. Indeed, Elliott (1998b) and Elliot and Freeman (2003) argue that the confrontational approach of pro-globalizers and anti-globalizing activists in the 1990s should be discarded.¹

This paper examines the impact of US government pressure and anti-sweatshop campaigns on labor market outcomes in Indonesia. Indonesia makes an ideal case study because large increases in export activity and inward foreign investment occurred at the same time that the US government and human rights organizations pressured the country to improve conditions for its workers. The pressure took two different forms. First, the United States government threatened to withdraw special tariff privileges for Indonesian exports if the government failed to address human rights issues. The Indonesian government responded to US pressure by making the minimum wage a central component of its labor market policies in the 1990s.² Minimum wages quadrupled in nominal terms and doubled in real terms.

1. Kimberly Elliott argues that many efforts to protect worker rights are not thinly veiled protectionist actions, but in fact are sincerely motivated. As proof, she analyzes the pattern of countries sanctioned under the U.S. GSP for not protecting worker rights. She concludes that globalization’s current pace cannot be sustained unless it is made clear that globalization benefits all the workers, not just a chosen few. She suggests that approaches need to be developed that allow globalization to proceed, but at the same time protect the rights of workers. See Elliott (1998a).

2. SMERU Research Institute (2001).

A second approach involved grassroots organizing, negative publicity, and consumer awareness campaigns. In the 1990s, international concern over globalization and labor standards increased dramatically. Between 1990 and 1996, the number of articles in major newspapers about sweatshop and child labor activities more than tripled. Major campaigns against large footwear companies such as Nike forced these firms to raise wage, improve working conditions for their workers, and sign codes of conduct.

To our knowledge, this is the first study to systematically measure the impact of the anti-sweatshop movement on labor market outcomes. We measure the impact of these campaigns using a difference-in-difference approach, comparing wages before and after the advent of the campaigns. Our results suggest that the doubling of the real minimum wage led to a 25 percent increase in real wages for unskilled workers between 1990 and 1996. Unskilled wages increased even more rapidly for workers employed by multinationals and exporters in sweatshop industries, defined as textiles, footwear, and apparel (TFA), than in other sectors. In particular, real unskilled wages increased by 10 to 20 percent more in TFA plants than in other export-oriented or foreign owned industries.

The combined effects of the minimum wage legislation and the anti-sweatshop campaigns led to as much as a 50 percent increase in real wages and a 100 percent increase in nominal wages for unskilled workers at targeted plants. We then examine whether higher wages led firms to cut employment or relocate elsewhere. Despite significant non-compliance, the minimum wage hike reduced employment for unskilled workers by as much as 10 percentage points over the period. Although the higher minimum wage reduced employment, anti-sweatshop activism targeted at textiles, apparel, and footwear plants did not. Plants targeted by activists were more likely to close, but those losses were offset by employment gains at surviving

plants. The fact that wages responded to activist pressure without leading to a significant fall in employment suggests that anti-sweatshop campaigns in Indonesia were successful in helping the lowest paid workers achieve sizeable income gains. Our message is a mixed one: activism significantly improved wages for unskilled workers in sweatshop industries, but probably led some plants to shut down operations in Indonesia.

To avoid endogeneity problems, we define foreign ownership, export status, and establishments producing textiles, footwear or apparel based on their status at the beginning of the sample period. The results are robust to a variety of alternative specifications. We include a number of controls that could be correlated with foreign ownership and export status, such as investments in technology, differences in productivity or changing profitability resulting from exchange rate fluctuations. We also control for output shocks that could be associated with rising wages in textiles and apparel production; none of our extensions affect the robustness of the results.

Although other research has shown that foreign enterprises in developing countries are more likely to pay higher wages, these previous studies do not directly address the impact of anti-sweatshop activism.³ Other related work includes Edmonds and Pavcnik (2001), who explore how rice prices affected the use of child labor in Vietnam. Edmonds and Pavcnik (2002) find that in rural areas, where most people are both rice producers and consumers, the income effect of higher rice prices has greatly outweighed the higher opportunity costs of not employing children in the work force, and therefore child labor has declined significantly.⁴ Previous work

3. Aitken, Lipsey, and Harrison (1997); Harrison and Scorse (2003).

⁴ However, in urban areas, where families are only rice consumers, the effects of the rice exports on price has led to increases in child labor since urban incomes have declined. Since Vietnam is predominantly rural, the overall effect has been a decline in child labor.

has also examined the rationale for labor standards, as well as on the determinants of ratification of ILO conventions.⁵

The structure of this paper is as follows. In Section II, we discuss the background for the minimum wage increases, present evidence on the development of anti-sweatshop campaigns, and set up a framework for estimation. We present results on wages in Section III. Section IV examines the impact of minimum wage legislation and anti-sweatshop activism on employment and plant exit, while Section V concludes.

II. Background and Framework for Estimation

We begin by describing the role played by the United States in influencing Indonesia's labor market policies. The United States put pressure on Indonesia in the late 1980s to improve labor market conditions, which led to large increases in the minimum wage. We then turn to a

⁵ Chau and Kanbur (2001) postulate that if ratification of these conventions were costless, or if the benefits greatly outweighed the costs, one would expect complete compliance across countries. Given that this is not the case, Chau and Kanbur investigate the determinants of signing. They find little evidence that variables predicted by standard economic theory—such as per capita gross domestic product (GDP), degree of openness to trade, or average education—are determining factors, but rather that countries with higher domestic standards have a higher probability of adoption.⁵ Maskus (1996) refutes the argument that a lack of international standards has led to significant erosion of low-skilled wages in developed countries, or is a significant determinant of trade performance and foreign direct investment throughout the developing world. Maskus also reports evidence regarding the impact of labor standards on wages in export processing zones. He claims that overall the zones pay higher wages and have better working conditions, but that in some countries the minimum wage is less likely to be enforced in export processing zones than in the rest of the country. Anecdotal evidence also suggests that efforts to organize workers in export processing zones have been routinely suppressed. Maskus points out that the altruistic reasons echoed in much of the developed world for promoting labor standards, even if sincere, are often used as a guise for trade protectionism and that natural variability in labor standards is an inevitable result of differing levels of economic, social, and cultural development. He also analyzes the extent to which trade instruments such as tariffs, import quotas, and sanctions could potentially be used to enforce international compliance with a minimum set of core labor standards, specifically with respect to developing countries. He finds that trade instruments are never first-best and that often they exacerbate the problems they are meant to solve (primarily because they often reduce the poorest workers' incomes). In addition, they can lead to other labor market distortions that decrease overall world welfare. He suggests a number of more targeted approaches to address contentious labor issues such as child labor, including labeling schemes as well as aid programs focused on education and poverty alleviation.

discussion of the anti-sweatshop movement. To the extent that anti-sweatshop activism also contributed to US government efforts to raise minimum wages in Indonesia, our approach provides a lower bound on the impact of the anti-sweatshop movement on wages. However, separating the impact of US government pressure from sweatshop activism is possible because the minimum wage increase affected all manufacturing enterprises, while anti-sweatshop activists concentrated on textiles, apparel, and footwear factories. This section then describes a theoretical framework and discusses the approach to estimation.

Background Beginning in the late 1980s, North American and European Union groups expressed concern about Indonesian exporters and the labor market conditions of their workers. Complaints targeted at Indonesian exports were filed by U.S. groups first in 1989 and again in May 1992, citing violation of worker rights under the Generalized System of Preferences (GSP). The 1992 investigation dragged on for over two years, generating considerable pressure on the Indonesia government to address the accusations of low wages, violations of existing labor standards, and suppression of unions. The GSP allows poor countries to benefit from low tariffs on their exports to the U.S. market, but excludes both footwear and textiles and apparel imports subject to the Multi-Fibre Agreement (MFA). The fact that a large share of Indonesian exports to the United States (nearly 25 percent in 1996) benefited from special privileges under the GSP was enough to generate considerable pressure.⁶ A prominent research institute, describing the potential loss of GSP status for Indonesia, noted that “the withdrawal of investment guarantees to U.S. companies that would ensue was a threat of potentially great(er) significance.”⁷

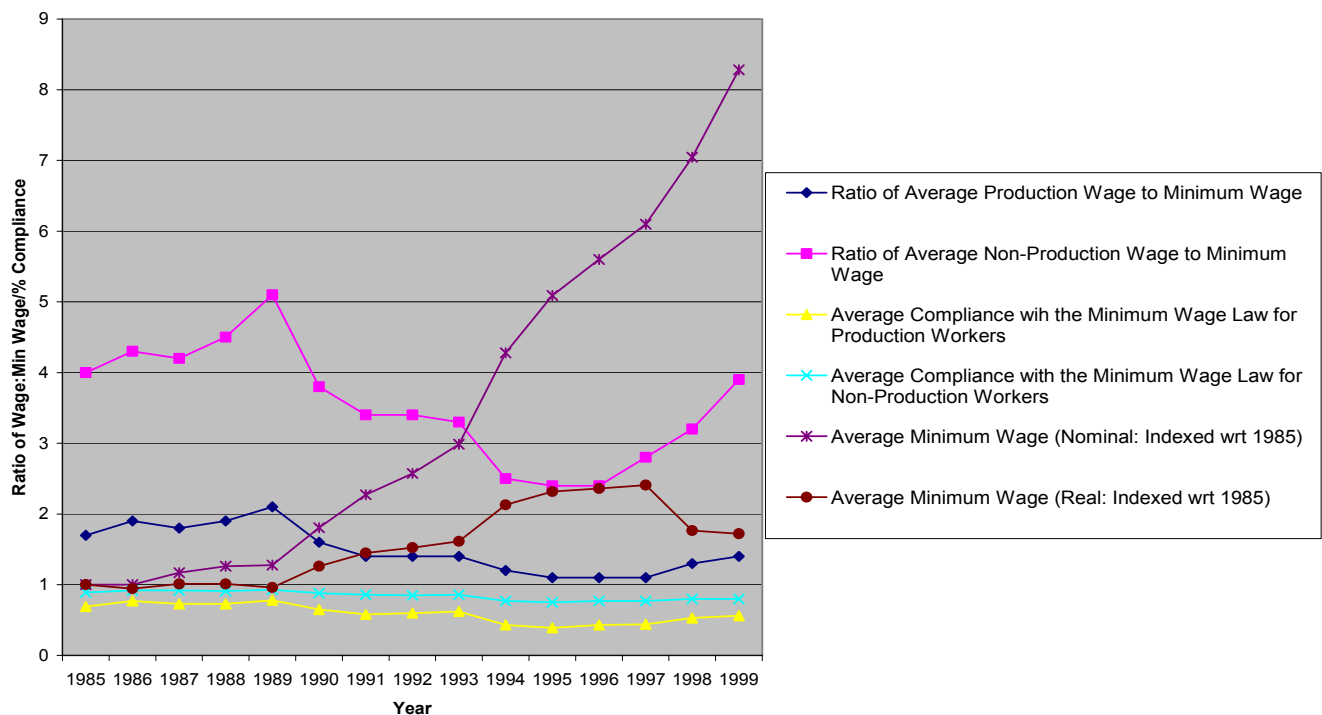
The Indonesian government responded by raising the minimum wage and encouraging greater compliance with the legislation, particularly among exporters. As indicated by Figure 1,

6. See Elliott (1998a) for a discussion of the U.S. GSP and its impact on labor standards.

7. SMERU Research Institute (2001).

minimum wages quadrupled in nominal terms and doubled in real terms. Large increases in the real value of the minimum wage occurred in 1989 and between 1992 and 1994, coinciding with US threats to withdraw GSP preferences to Indonesia. Firms struggled to comply with the rising minimum wage. Using household surveys, Rama (1996) estimates that the increasing minimum wage led to a 10 percent increase in average wages, a 2 percent fall in employment, and 5 average percent decline in investment. Using the manufacturing census plant-level data for Indonesia, we calculated average production and non-production worker wages relative to the statutory minimum from 1985 through 1999. As indicated by the trends in Figure 1, the ratio of production worker wages to the minimum wage fell from a factor of more than 2- to-1 in the

Figure 1: Average Wages with Respect to the Minimum Wage & Minimum Wage Compliance In Indonesia 1990-1999

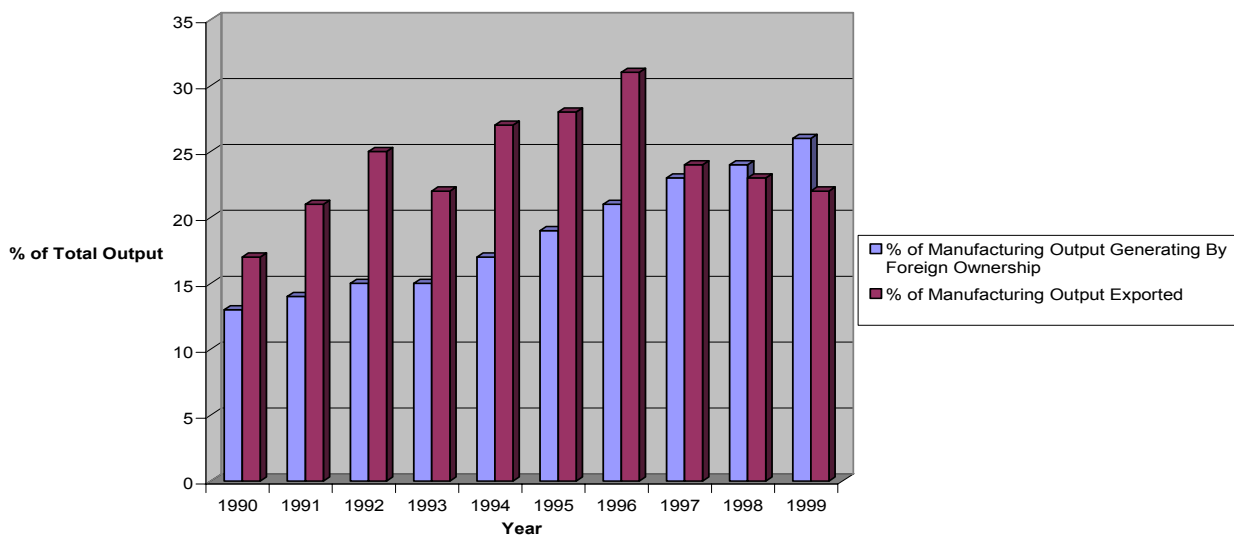


early 1990s to nearly 1-to-1 in the late 1990s. This indicates that average production-worker wages were hovering just above the minimum wage before the 1997 financial crisis. The

proportion of plants paying at least the minimum also declined significantly during this period. While three-quarters of all plants paid above minimum wages to production workers in the mid-1980s, by 1999 only about half of all plants paid average wages that exceeded the statutory regional minimum for production workers.

At the same time that the minimum wage's real value was soaring, Indonesia's entry into international markets also increased dramatically (see figure 2). The manufacturing census shows that the percentage of manufactured output that was exported doubled between 1990 and 1996, from 15 percent to 30 percent of final sales. In addition the presence of foreign investors also increased. The percentage of manufacturing output accounted for by foreign firms almost doubled in the 1990s, rising from 13 percent of output to more than 25 percent of total manufacturing output in 1999.

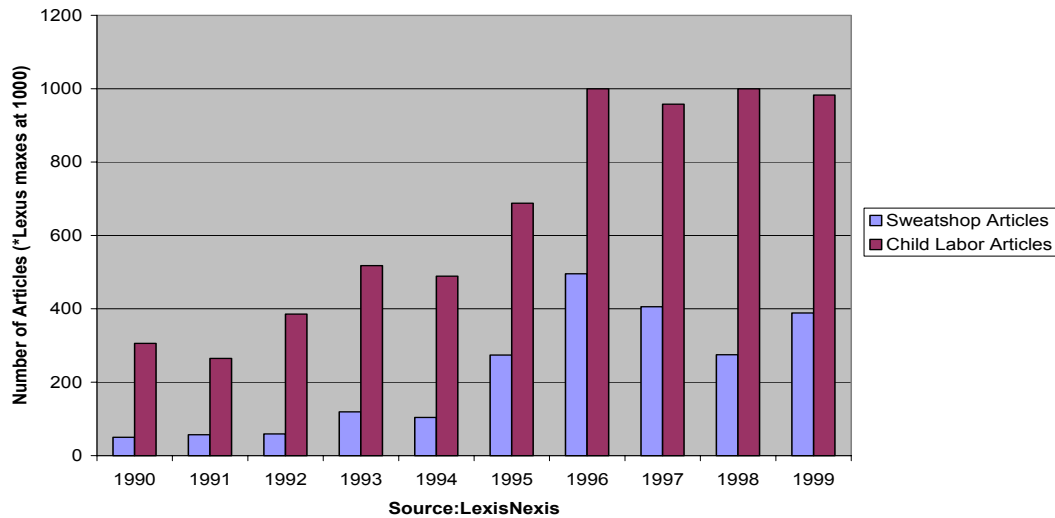
Figure 2: Percentage of Value of Manufacturing Output Generated By Foreign Ownership or Exported in Indonesia 1990-1999



It is clear from the high rates of non-compliance evident in Figure 1 that firms in Indonesia did not always comply with the new minimum wage legislation. Although compliance is typically high in developed countries, in developing countries such as Indonesia compliance with minimum wages can be as low as 40 percent. Consequently, the firm must decide whether or not to pay the minimum wage. The firm's choices are similar in the context of anti-sweatshop campaigns. Faced with the possibility of a negative ad campaign, the firm must weigh the costs of paying higher wages against the potential negative publicity that may result if they do not.

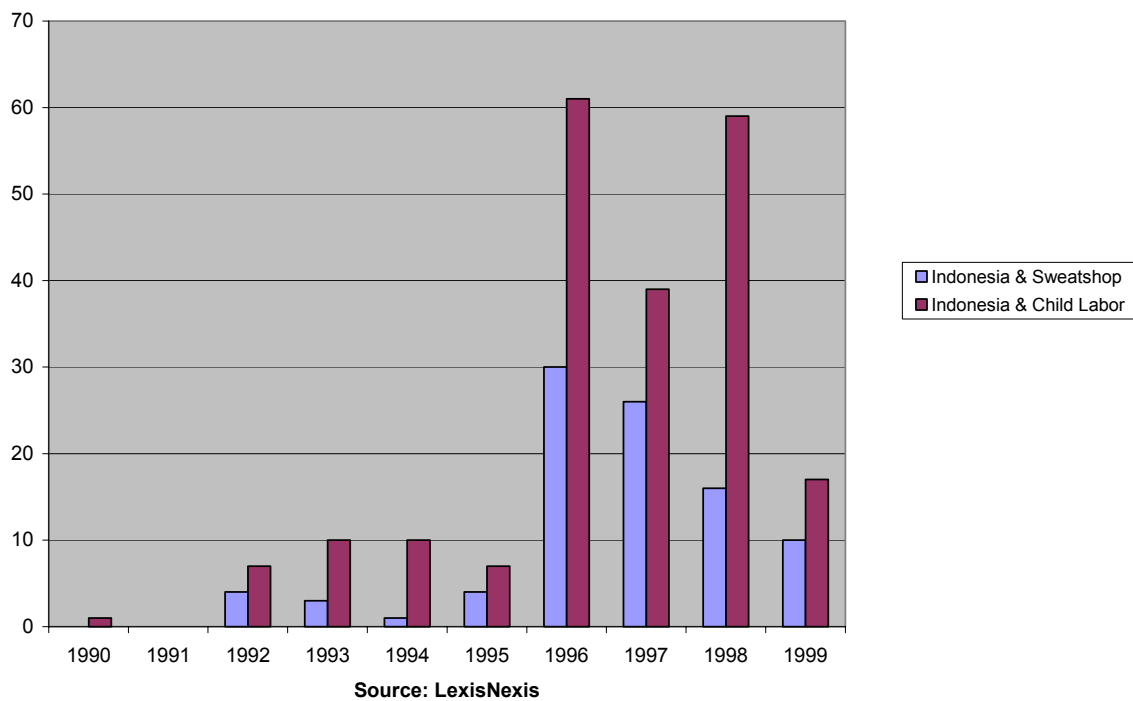
In the 1990s, pressure from international human rights activists led a number of enterprises to be more careful about compliance with domestic labor standards. One major motivating factor was to avoid the kind of negative publicity encountered by firms like Nike. One way to gauge the extent of this newfound interest is to count the number of articles about labor standards that appeared in major newspapers in the 1990s. As figure 3 demonstrates, the number of articles about sweatshop and child labor activities increased dramatically. There was a 300 percent increase in the number of articles regarding child labor, and the number of articles focusing on sweatshop activities increased by more than 400 percent.

Figure 3: Articles about "sweatshops" and "child labor" in Major Newspapers 1990-1999



If we restrict the analysis to articles about sweatshops in Indonesia alone, the trends are very similar. Figure 4 below shows that the number of articles which have highlighted sweatshop or child labor activities in Indonesia have also multiplied. These two sets of figures highlight the increasing concern regarding poor working conditions for workers, a concern that did not appear in public campaigns until the 1990s. Further evidence regarding development of anti-sweatshop activism can be found in Elliott and Freeman (2003). The authors systematically trace the development of these campaigns in the 1990s. In the appendix to their book, they show that the overwhelming majority of new organizations formed to address labor conditions in sweatshop industries were formed in the early 1990s.

Figure 4: Articles about Indonesia and Sweatshops/Child Labor in Major Newspapers 1990-1999



Framework for Estimation A proper framework for evaluating a firm's decision to raise wages either in the context of a rising minimum wage or increasing human rights activism would take into account both the costs and benefits of setting wages above the market-clearing level. One of the earliest papers which explicitly models a firm's decision whether to comply with a minimum wage is Ashenfelter and Smith (1979). Given a probability μ of being caught and a penalty F , then expected profits are given by $E(\pi) = (1-\mu)\pi(w,r,p) + \mu\pi(M,r,p) - \mu F$. Product prices are given by p and other factor prices by r . The minimum wage is M and w is the unconstrained wage. The employer will decide against compliance if $E(\pi(w,r,p)) - \pi(M,r,p) = (1-\mu)[\pi(w,r,p) - \pi(M,r,p)] - \mu F > 0$. In words, a profit-maximizing employer will choose not to comply with a minimum wage if the gains from disobeying the law outweigh the potential costs of non-compliance. Using a second

order Taylor expansion, we can show that firms will choose to comply with minimum wage legislation if

$$G/L - (M - w) + (1/2w)[M-w]^2e > 0 \quad (1)$$

G is a positive function of the probability of detection μ and a negative function of the penalty F , L is the number of employees in the firm, M is the minimum wage, and w is the average wage paid by the firm. The value e is the elasticity of demand for labor and is less than zero. Equation (1) suggests that firms would comply with minimum wage legislation if the expected penalty from violating the law, given by G/L , exceeds the additional compensation, given by the difference $M-w$, that needs to be paid to each employee when the firm complies with the minimum wage. As indicated by equation (1), firms are more likely to comply with minimum wage legislation if the probability of detection is high or the penalty is high, if the minimum wage M is low, or if the firm pays high wages. Since a large number of employees reduces the per employee cost of compliance in terms of the penalty F per worker, large firms are also less likely to comply, after controlling for the probability of detection and other factors.

A linearized version of Equation (1) suggests the following general empirical specification for an establishment i in region r and time t :

$$X_{irt} = \alpha_1 + \alpha_2 M_{rt} + \alpha_3 w_{rt} + \alpha_4 G(\mu, F)_i + \alpha_5 L_{it} + \alpha_6 Z_{irt} + \omega_r + e_{it} \quad (2)$$

Equation (2) could be estimated in a number of different ways. For example, X could be defined as an indicator variable equal to 0 if the establishment fails to comply with the minimum wage, and equal to 1 if the firm complies. This could be estimated using a probit specification or a linear probability model. Another possibility—which allows us to capture the whole wage distribution—is to define the outcome variable X as the change in wages or percentage change in wages between period $t-1$ and period t .

Estimating (2) requires information on minimum wages M , the wage w that would have been paid in the absence of minimum wage regulations, employment L , and measures of the probability of detection (μ) and penalties associated with non-compliance (F). According to equation (1), compliance should increase with w and should fall as M rises. The framework also suggests that compliance or wage growth is likely to rise as the probability of detection and penalties for noncompliance increase. The set-up also suggests that compliance should vary inversely with number of employees, L . We would also need to control for differences in types of workers; we will index labor quality by a vector Z . Minimum wages in Indonesia vary across districts (indexed by r) and over time (indexed by t); these are available from the government. Since w is the wage which would have prevailed in the absence of minimum wage legislation, w is normally not observed. However, in the Indonesian case, around half of all firms do not comply with the minimum wage. Consequently, we could define w as the average wage in region r at time t across all firms that do not comply with the minimum wage. However, w is probably a (downward-biased) measure of the true w , since presumably firms which face a higher gap between w and M are those most likely to violate the law.

For Indonesia, there is no existing evidence on the probability of detection. It also appears that for domestic firms in the 1980s, the penalty F for non-compliance was probably close to

zero.⁸ However, as human rights activism and anti-sweatshop organizations have proliferated, the probability of detection and the penalty F for paying low wages or failing to adhere to the minimum wage may have increased, particularly for firms with high visibility such as large multinationals or well established exporters. Why should greater international competition affect compliance with labor standards? In an imperfectly competitive framework, it is easy to show that maximizing firm profits with respect to employment leads to a first order condition where wages are a positive function of final goods prices. If domestic markets are no longer protected from foreign competition, international prices (which may be lower than domestic prices) could put downward pressure on wages (w in equations (1) and (2)) and consequently lead to lower wage growth. If there is imperfect competition, footloose foreign firms may be more likely to appropriate rents relative to domestic enterprises.

On the other hand, it is equally possible that exporters and multinational firms are *more* likely to comply with domestic labor standards. Exporters and multinationals are likely to face both a higher probability of detection μ and a higher penalty F . The higher probability of detection results from the additional scrutiny placed on these firms in the 1990s, while the higher penalty is indicative of the greater costs to multinationals of acquiring a poor image regarding compliance with labor standards. To capture the impact of anti-sweatshop campaigns on wage setting behavior, we propose making $G(F, \mu)$ a function of export status and foreign ownership, defined at the beginning of the sample period. Consequently, we define export status ***EXP*** and foreign ownership ***FOR*** as dummy variables equal to one if the establishment exported some of its output or had some foreign ownership in 1990 and continued to do so over the entire period. Since activism focused primarily on sweatshop industries, we will add variables to allow

⁸ In Indonesia in the mid-1990s, the dollar amount of the fine from non-compliance was fifty dollars, not a large amount for most enterprises. See Rama (1996).

outcomes to vary depending on whether the establishment was producing textiles, footwear or apparel (*TFA*) at the beginning of the sample period:

$$X_{irt} = \alpha_1 + \alpha_2 M_{rt} + \alpha_3 w_{rt} + \beta_1 EXP_{it0} + \beta_2 FOR_{it0} + \beta_3 TFA_{it0} + \beta_4 (EXP * TFA)_{it0} + \beta_5 (FOR * TFA)_{it0} + \alpha_4 L_{it} + \alpha_5 Z_{irt} + \omega_r + e_{it} \quad (3)$$

The vector *Z* includes a number of factors which could be correlated with *FOR* and *EXP*, and are likely to affect *X*. This includes worker characteristics and other firm characteristics such as capital intensity. As indicated in Figure 1, compliance is a much more serious problem for production workers. Consequently, the results of estimating (3) will be reported primarily for production workers. Some years in the survey include additional information on employee education and experience. When available, these will also be included. Estimation will also take into account the possibility of region-specific effects captured in (3) by ω_r .

To give the reader an idea of the importance of textiles, apparel, and footwear in the manufacturing sector in Indonesia in the 1990s, Figure 5 shows the share of TFA in overall production (unskilled worker) employment. The percentage of all unskilled workers in manufacturing employment in TFA plants rose from 25 to 35 percent during the period. The percentage of unskilled workers employed by foreign TFA plants rose from 2 percent to over 5 percent, while the percentage of unskilled workers employed by exporting plants increased from 5 percent to nearly 20 percent of all unskilled employment in manufacturing. This graph highlights the major importance of textiles, apparel, and footwear plants in employing unskilled workers during this period.



III. Wages and Anti-Sweatshop Activism in Indonesia

Data Summary

The data for this analysis comes from the annual manufacturing survey of Indonesia collected and compiled by the Indonesian government's statistical agency BPS (Badan Pusat Statistik). The completion of this survey is mandatory under Indonesian law for firms with more than 20 employees and therefore the data captures almost the entire population of Indonesian manufacturing firms, which ranged from approximately 13,000 in 1990 to over 18,000 in 1999. The survey includes over 400 questions in any given year, the large majority of which remain constant although in certain periods additional questions are included and others removed. Over

the ten year period there is an average of 4.5 observations per firm, reflecting the fact that some firms go out of business while others enter.

Given that Indonesia has minimum wage laws there would appear to be an incentive for firms to exaggerate wages in order to feign compliance. However, whether due to ignorance of these laws or a lack of enforcement a very large percentage of firms reported wages significantly below the minimum for a number of years. These estimates of compliance are consistent with other studies which examine compliance with the minimum wage in Indonesia, including a study by the Indonesian SMERU Research Institute (2001) and Alatas and Cameron (2003). These studies, based on both worker surveys and the Indonesian Labor Force Survey (Sakernas), indicate that “a sizeable portion of the sample is receiving less than the minimum wage” (Alatas and Cameron (1993), p. 16). The SMERU Research Institute (2001) analyzed compliance rates with the minimum wage in Indonesia using a sample of 40 firms which reported worker-specific wages within each firm, as well as the national labor force survey. They found compliance rates of about 60 percent, comparable to those reported in Figure 1. Alatas and Cameron (1993) report the kernel density estimates of the monthly wage distribution for West Java and Jakarta. Their results, based on the individual-level surveys, also imply rates of non-compliance as high as 50 percent. These high levels of non-compliance are likely to be accurate, since individual households have no incentive to misreport their earnings for the labor force surveys. Using plant-level data for Morocco, Harrison and Currie (1997) also find self-reported non-compliance rates of up to 50% in Morocco, presumably due to a lack of enforcement or little fear of penalties as well. These other studies, many of them also on Indonesia, suggest the high rates of non-compliance with the minimum wage reported in Figure 1 are likely to be accurate.

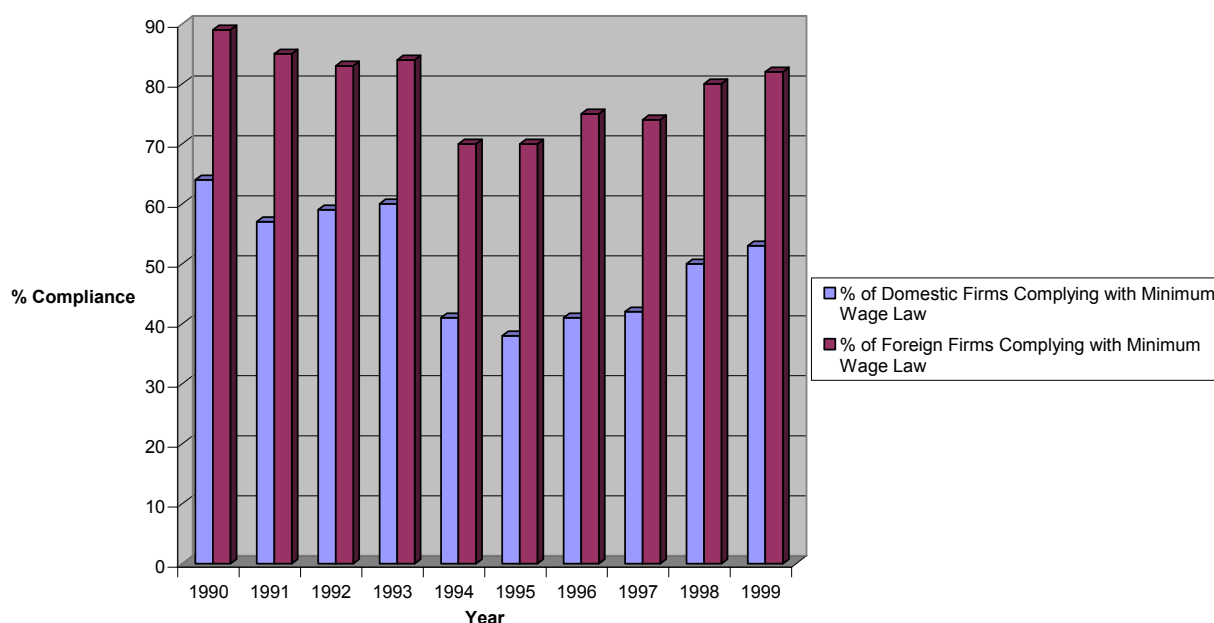
We begin by reporting mean wages in the manufacturing sector in 1990 and 1996 (Table 1). We focus on this period because information on export orientation was not collected before 1990, and the financial crisis which erupted in 1997 makes any evaluations post-1996 problematic. In addition, information on worker characteristics is only available during the mid-1990s. Since the minimum wage is supposed to apply only to base wages, we define the plant's average wage as basic compensation (salary) divided by the number of workers in that skill category. For the remainder of the analysis, we focus almost exclusively on production worker wages as a measure of unskilled wages. As indicated earlier, we have chosen not to focus on skilled worker wages, which were on average two and a half to four times higher than the legislated minimum wage during the 1990s (see Figure 1).

The first column of Table 1 reports the average production worker wage in 1990 and in 1996, and the difference between 1990 and 1996. The third row reports the difference for all plants, while the fourth row reports the difference in wages between 1990 and 1996 only for plants which were present in both years. All wages are reported in thousands of 1996 Indonesian rupiahs. Based on an exchange rate of about 2,000 rupiahs to the dollar in 1996, average production worker wages in domestic enterprises increased from about 550 US dollars to 750 US dollars between 1990 and 1996. Column (2) reports wages for foreign owned enterprises, while column (3) reports wages for exporters. As discussed earlier, foreign and exporting status is defined based on information at the beginning of the sample period. In 1990, firms with foreign equity paid three times the wages of domestic enterprises, averaging 1500 US dollars per worker. By 1996, the gap had narrowed: foreign firms paid only twice as much as domestic enterprises. Exporters also paid higher wages than firms producing solely for the domestic market: about 50 percent more in both 1990 and 1996. These significant differences in pay levels between

domestic enterprises, foreign firms, and exporters suggest very different levels of compliance with minimum wages, even at the onset of our study.

Figure 6 confirms that compliance rates with minimum wage laws for firms with and without foreign ownership were indeed quite different during this period. Firms are defined as complying if their average unskilled wage is above or equal to the minimum wage, which increased from about an annualized rate of around 400 dollars in 1990 to nearly 800 US dollars in 1996 (both figures in 1996 dollars). The figure shows a remarkable difference in compliance rates across both sets of enterprises. Not surprisingly, compliance rates for foreign firms during the mid-1990s were nearly double those for domestic enterprises. While

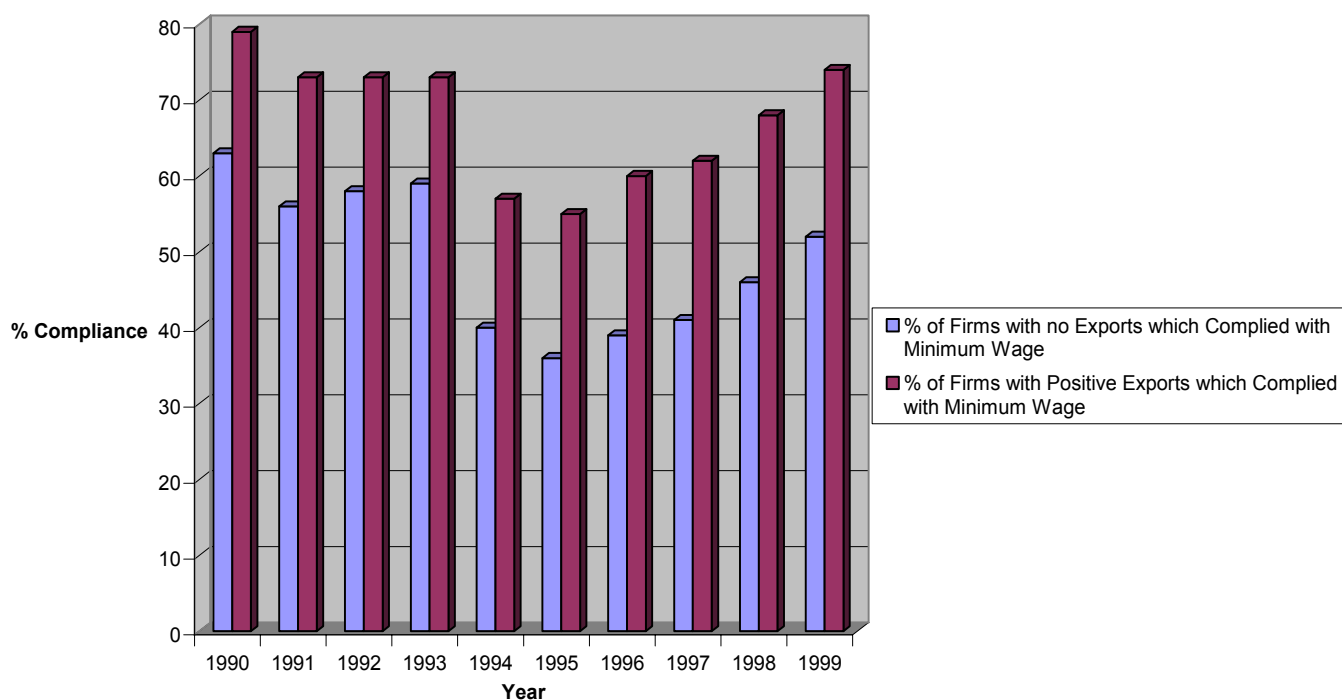
Figure 6: Firm Compliance with Minimum Wage Laws for Production Workers Based on Domestic or Foreign Ownership in Indonesia 1990-1999



less than 40 percent of domestically owned enterprises paid production workers average wages which exceeded the minimum wage in 1995, 70 percent of foreign firms did so. At the

beginning of the decade, almost 90 percent of all foreign enterprises paid average wages which equaled or exceeded the statutory minimum. While compliance rates fell in the mid-1990s, by 1999 over 80 percent of foreign enterprises paid wages which exceeded or equaled the statutory minimum for production workers. Figure 7 compares the extent of minimum wage compliance across domestic plants that exported a percentage of their sales abroad versus those oriented towards the domestic market. Over the entire time period the percentage of domestic exporters which complied with the minimum wage laws for production workers was consistently fifteen to twenty points higher than for domestic plants which only produced for the domestic market.

Figure 7: Firm Compliance with Minimum Wage Laws for Production Workers Based on Export Status in Indonesia 1990-1999



Figures 6 and 7 confirm what is evident in Table 1: multinationals and exporters generally pay higher wages, leading to higher rates of compliance with minimum wages. Although comparing rates of compliance with minimum wage legislation is interesting, it does not address the question of whether changes in minimum wages or anti-sweatshop activism led to wage *growth* during this period. Rows 3 and 4 of Table 1 examine the change in wages between 1990 and 1996 while in rows 5 and 6 we report the results in logs. Across all enterprises, wages grew more quickly for domestic than for exporting or foreign enterprises. While real wages for domestic enterprises increased by over thirty percent, real wages for foreign or exporting enterprises grew less. Columns (4) through (6) present the “difference-in-differences”, which is the difference in the change in wages across domestic, foreign and exporting plants. The difference in difference between domestic and foreign or exporting enterprises is generally negative and statistically significant, indicating faster wage growth for domestically owned, non-exporting enterprises.

However, the story is completely different for firms producing textiles, footwear or apparel (TFA). Table 1B decomposes the sample into TFA and non-TFA establishments. The first three columns report average wages for domestic, foreign and exporting TFA plants, while the last three columns report those same averages for non-TFA plants. Across domestic TFA and non-TFA plants, wages are remarkably similar; although wages are slightly lower in TFA plants, the difference is not statistically significant in 1990. These results are reassuring because they suggest that the composition of workers across TFA and non-TFA plants was not much different. However, both foreign and exporting enterprises paid their unskilled workers significantly less in TFA plants than in other sectors. In 1990, workers in foreign TFA plants were paid half as much as workers at other foreign plants; exporters in TFA plants paid their workers 30 percent less.

These large differences may have been one factor that contributed to the focus of anti-sweatshop activists on workers in textiles, apparel, and footwear plants.

By 1996, the gap between TFA and non-TFA plants had narrowed considerably, particularly among exporters. In 1996, the difference in wages between TFA and non-TFA plants amounted to only 23 dollars per employee per year; the difference—computed in column (9)—is not statistically significant. The gap between foreign and non-foreign wages also narrowed, but by less: foreign firms continued to pay about 1,500,000 Rupiahs or 750 dollars more per worker in total salary in 1996 (see row 2, column (8)). Although domestic TFA and non-TFA plants continued to pay similar wages, domestic TFA plants received smaller wage increases than workers in other sectors. This suggests that the wage benefits from anti-sweatshop activism were limited to workers in export-oriented or foreign-owned plants.

Rows (3) and (4) report the wage growth from 1990 to 1996 in levels; rows (5) and (6) report the wage growth in logs. The difference-in-difference, ie the difference in wage growth across TFA and non-TFA plants, is reported in columns (7), (8) and (9). The results show that wage increases for textile and apparel workers were significantly higher in exporting and foreign-owned establishments. Again, the only exception is for workers in domestic plants selling only to the domestic market: in these plants, wages for TFA workers increased by 7 percentage points less than for unskilled workers in other sectors.

The results in Table 1 suggest very different patterns of wage growth for textile, apparel, and footwear plants in the 1990s. While unskilled workers in other exporting and foreign owned plants generally received smaller wage increases than the rest of the manufacturing labor force in the 1990s, the opposite was true for workers in textiles and apparel factories. One likely reason is that exporters and multinational firms outside of textiles and apparel factories already paid

higher wages and consequently did not have to increase wages as much to remain in compliance with minimum wage legislation. However, in TFA plants, unskilled wages grew 30 to 40 percent in real terms between 1990 and 1996.

None of the means in Table 1 control for plant characteristics, which could possibly explain differential wage growth. For example, wage growth could differ due to plant characteristics such as changes in size, capital intensity, productivity growth, profitability, and other factors. Wages could also differ due to differences in educational levels of workers. Table 2 presents the results of estimating equation (3). The dependent variable is the change in the log wage between 1990 and 1996. The minimum wage gap is defined as the log of the minimum wage in 1996 less the log of the plant's initial wage for unskilled workers in 1990. If that difference is negative, the gap is set equal to zero.

The first row includes only the ownership dummies defined as in Table 1, as well as the minimum wage gap. We only include plants that were present in all years of the sample. The results in the first row are consistent with the difference-in-differences presented in Table 1: while wages in most foreign-owned or exporting plants did not increase faster than in other plants, TFA employers were the exception. Controlling for the impact of minimum wage changes, the results suggest that wages in foreign and exporting TFA plants grew 9 to 14 percent faster than in other plants.

The coefficient on the minimum wage gap, .518, suggests that a 1 percent increase in the gap led to a .518 percent increase in the real unskilled wage. Since the average gap between the minimum wage in 1996 and the unskilled wage in 1990 was 50 percent, this implies that the minimum wage increase was associated with a 25 percent real wage increase for unskilled workers between 1990 and 1996. The coefficient on the minimum wage gap is robust to the

addition of a number of plant and region controls, as the results in column (6) indicate. It is possible to add region controls because the minimum wage is set at a level more disaggregated than that of the region: at the district level.

Rows (2) through (9) in Table 2 add a number of controls to the basic specification. In the second row we add the alternative wage, which in the framework is defined as the wage the plant would pay if it did not adhere to the minimum wage. We compute it as the average wage paid by non-complying plants. It is calculated separately for foreign, exporting, and domestic enterprises, and also varies by region. The third row adds a number of additional controls for plant and worker characteristics, including log changes in real material inputs, the real value of the reported capital stock, and size L (defined as the total number of employees). We also add details on educational attainment for employees at the individual plant. In the years 1995 through 1997, the survey included questions regarding the educational attainment of the plant's labor force. The addition of plant characteristics and controls for educational attainment increases the magnitude and significance of the coefficients on $DFI*TFA$ or $EXP*TFA$. In the third row, the coefficients suggest that real wages in TFA foreign and exporting plants increased 12 to 17 percentage points more than in other enterprises.

The next three rows add total factor productivity, technology expenditures, and output growth. There are several alternative explanations for the increase in wages for exporters: First, plants may have self-selected into exporting on the basis of higher productivity; previous studies suggest that the more productive enterprises are most likely to export. Consequently, we redo the analysis, controlling for plant-level productivity growth, using total factor productivity growth (TFPG) as our measure of productivity. Second, exporting and foreign owned enterprises might have experienced a positive demand shock relative to other enterprises. The

addition of productivity growth and output growth controls for this possibility. Third, wages in foreign TFA plants might have increased due to investments in new technology; adding technology expenditures in row (6) controls for this possibility. The results are robust to the inclusion of all these controls.

The last two rows of Table 2 test whether (1) non-production worker wages responded in the same way and (2) whether firms cut non-wage benefits to offset the higher wages induced by minimum wage changes and activist pressure. We would expect small effects of activism on non-production worker wages, which as we saw in Figure 1 were generally three to four times higher than the minimum wage. The results in row (8) of Table 2 confirm that activist pressure resulted in increases in unskilled worker wages but not in skilled worker wages. This suggests that the observed increase in wages is not associated with a sector-specific positive output shock, which would affect wages for both skilled and unskilled workers. Finally, the last row of Table 2 shows that firms did not compensate for higher wages by cutting non-wage benefits. The dependent variable includes all non-wage compensation paid to production workers. The results show no impact of ownership on these factors.

Table 3 presents additional robustness tests. We repeat most of the specifications reported in Tables 2 using annual changes in wages, the minimum wage gap, and the other controls. We report the results for four sets of plants: (1) all enterprises with available data (2) the balanced sample, which includes enterprises with data from 1990 through 1996 (3) entrants, defined as plants appearing after the start date and (4) exiters, defined as plants leaving the sample before the end date. The first-difference results are consistent with the long differences reported in Table 2. Real wage growth for TFA exporters is on average 4 percentage points higher per year than for other enterprises. This is true for both new entrants as well as surviving

plants. The only exception is exiting plants. Plants that exit the sample are less likely to respond to both minimum wage pressures and to anti-sweatshop activism.

In rows (4) through (8), we extend the sample back to 1988. This extension is imperfect since there is no data on export status before 1990. To address the lack of information on export status prior to 1990 we assumed that firms in 1988 had the same status as in 1990. The results are consistent with the 1990-1996 sample, but we expand the sample by nearly 20,000 observations. The higher annual growth rate of wages for TFA exporters translates to a higher growth of real wages of about 20 to 25 percent over a six year period.

In rows (9) through (12), we redefine the minimum wage gap as equal to the district-level log change in the minimum wage between 1990 and 1996. The advantage of this specification is that it removes the lagged wage from the right-hand side, which could lead to possible simultaneity biases since the dependent variable is defined as the change in the log wage. The disadvantage of this specification, however, is that we cannot account for the fact that plants with wages further from the legislated minimum wage are more likely to increase wages in order to comply with the new legislation. The results are entirely consistent with the other specifications, showing large effects of the minimum wage increase on wages and showing that TFA exporting plants enterprises experienced wage increases relative to non-TFA plants.

Rows (13) through (20) report the same extensions as the last two rows in Table 2, using annual data. Again, there is no evidence that other benefits were cut in order to meet the higher labor standards for unskilled workers. Nor is there any evidence that these effects extended to skilled workers, which we identify as non-production workers in the sample. Both the minimum wage changes and the anti-sweatshop campaigns had no significant impact on the wages of skilled workers. The results for non-production workers provides evidence against the

claim that TFA sectors simply experienced a positive output or price shock; if this were true, we would expect the benefits to also extend to skilled workers.

In rows (20) through (28) we divide the sample into large and small enterprises, where large enterprises are those defined as having more than 25 workers at the beginning of the sample period. Small plants—those with 25 or fewer employees--could be considered part of the informal sector and are generally less likely to adhere to minimum wage legislation or other labor standards. The results confirm that smaller plants were less affected by the minimum wage increase than larger plants: the coefficient on the minimum wage gap is about 1/3 smaller for small plants. In addition, it appears that the benefits of anti-sweatshop activism were concentrated on large plants. While large TFA exporters show wage gains of five percent per year in real terms between 1990 and 1996—leading to a 25 percent gain over the period—workers in small plants experienced no such gains.

The results in Tables 1 through 3 suggest that wages increased systematically more for exporting TFA plants than for other similar plants. In addition to the 25 percent increase in real wages induced by the minimum wage changes, real wages rose an additional twenty to twenty five percent more between 1990 and 1996 for TFA exporters. This suggests that combined effects of the minimum wage legislation and the anti-sweatshop campaigns led to up to a 50 percent increase in real wages and a 100 percent increase in nominal wages for unskilled workers in targeted exporting plants (see Appendix Table 1.A for real versus nominal values). Below, we explore whether these wage gains resulted in employment losses or led plants to shut down operations in Indonesia.

IV. Employment and Exit in Indonesia

Employment The orthodox approach to minimum wages suggests that an increase in mandated wages should lead to a fall in employment, as employers are driven up their labor demand curve. Prior to the 1990s, standard textbook treatments of minimum wages reported that imposing a wage floor would lead to adverse consequences for employment. However, a series of influential studies (1994, 1995) published by David Card and Alan Krueger in the 1990s has reopened the debate on the employment effects of minimum wages. In their book, Myth and Measurement: The New Economics of the Minimum Wage, Card and Krueger argue that the imposition of a minimum wage need not have negative employment consequences if there are imperfections in the labor market. These imperfections include the following possibilities: (1) the existence of monopsony employers (2) search costs for employers and (3) efficiency wages. If any of these three imperfections characterize the local labor market, an increase in the minimum wage (or an increase in compliance with the existing minimum wage) could lead to an increase or no change in employment. Card and Krueger document their claim with a series of papers which examine exogenous increases in minimum wages across US states.

This unorthodox finding, which has caused an enormous debate among labor economists, has interesting implications for labor market policies in developing countries. If policy makers can raise wages by increasing the statutory minimum or encouraging compliance with the existing minimum without increasing unemployment, then minimum wage policies could become a powerful tool for combating poverty. This was precisely the thinking behind a 1995 World Bank Report which strongly recommended the introduction of a national minimum wage to reduce poverty in Trinidad and Tobago.

One consequence of this debate in the United States has been to encourage a number of new studies on the impact of minimum wages on employment in developing countries. Strobl

and Walsh (2000) examine the impact of a national minimum wage introduced in Trinidad and Tobago in 1998, Bell (1997) examines the impact of minimum wages in Columbia and Mexico, and Maloney and Nunez (2000) examine the impact of minimum wages in eight Latin American countries. Three studies--Rama (1999), SMERU (2001), and Alatas and Cameron (2003)--examine the impact of the rising minimum wage on employment in Indonesia.

The results are mixed. For example, Bell (1997) finds that minimum wages in Columbia led to employment declines, while the minimum wage in Mexico had no impact on employment. Strobl and Walsh (2000) find inconclusive effects for Trinidad and Tobago, in part because the minimum wage was not enforced. All these studies, using primarily labor force data but also plant-level data, uncover widespread evidence of lack of compliance. In Honduras, for example, which has a very high minimum wage relative to average wages, the minimum wage appears to have had no impact on the wage distribution.

The most recent study, by Alatas and Cameron (2003), uses the most sophisticated approach in its effort to identify the impact of the rising minimum wage on employment in Indonesia. Using a difference-in-difference approach, the authors seek to examine whether employment in the textile and apparel sector fell as a result of the minimum wage. Following Card and Krueger (1994) they exploit the large geographic variation in the rate of increase in the mandated minimum wage and compare changes in employment on either side of the Jakarta-West Java border. Comparing similar types of enterprises, they examine the employment impact of the minimum wage using the same census data as we use in this study, but they focus exclusively on firms in the clothing, textiles, leather and footwear industries. They find no employment impact for large firms—foreign or domestic.

In Table 4, we again use the difference-in-differences (DID) approach adopted by Card and Krueger (1995) to examine the impact of minimum wages on employment in Indonesia. We focus on the changes in employment between 1990 and 1996, which was the period of the large rise in both the magnitude and compliance with the minimum wage. The first column reports the number of production workers in 1990 and in 1996, and the difference between 1990 and 1996. The third row reports the difference for all plants, while the fourth row reports the difference in employment between 1990 and 1996 only for plants with data on employment in both years. Across domestic enterprises, the mean number of employees fell slightly, from an average of 69 employees per plant to an average of 67 employees per plant. Columns (2) and (3) show that employment growth for unskilled workers was concentrated in foreign-owned and exporting enterprises. Between 1990 and 1996, average unskilled employment increased from 360 workers to 507 workers per plant for foreign enterprises. For exporters, plants which remained in the sample the whole period gained 200 employees on average, while those that entered later or exited the sample lost employees. For the balanced sample, reported in rows (4) and (6), employment gains were significantly higher among the foreign owned and exporting enterprises. Across all enterprises (reported in rows 3 and 5), domestic plants lost employment while foreign plants gained employment.

The bottom half of Table 4 reports those same differences for TFA and non-TFA plants. As in the earlier DID calculations, columns (7) through (9) report the “difference-in-differences”, which is the difference in the change in employment across TFA and non-TFA firms between 1990 and 1996. As indicated in the bottom half of Table 4, the difference-in-differences is positive, suggesting that compared to the change in employment across other types of enterprises between 1990 and 1996, the change in employment for exporting or foreign TFA plants was

larger. Focusing on rows (3) and (4) and columns (8) and (9), we see that exporting and foreign TFA plants increased employment by 300 to 400 workers more than other plants. The results in Table 4 suggest that increased vigilance vis-à-vis textiles and apparel enterprises did not appear to hurt their employment, at least relative to growth in employment of other types of enterprises.

Table 5 repeats the analysis in a regression context. With or without controls, the results are consistent across specifications. There is no evidence that the differential wage increases among TFA multinationals and exporters led to employment declines. The coefficients on $FOR*TFA$ and $EXP*TFA$ are consistently positive, although they are not statistically significant. Consistent with Table 4, the coefficient on FOR alone is significant and positive in rows (1) and (2), before we add proxies for positive productivity and output shocks. There is no evidence that higher wage growth negatively affected employment in foreign enterprises, exporting enterprises, or textiles and apparel producers. In fact, it is clear from the tables that employment growth was significantly higher for exporters and foreign enterprises, as well as for textiles and apparel plants. These results are consistent with Alatas and Cameron (2003).

However, the results in Table 5 show a robust and negative impact of the minimum wage increase on employment growth. Without adding controls, the coefficient on the minimum wage gap is $-.041$, which suggests that a 100 percentage point increase in the minimum wage gap would be accompanied by a 4 percentage point decline in employment. In rows (8) and (9), where we define the minimum wage gap alternatively as a zero-one variable and as the percentage increase in the district-level minimum wage, we also show large negative effects of the minimum wage increase on employment, ranging from 9 to 12 percent. Plants paying wages in 1990 below the 1996 minimum wage lost on average 9 percent of their employees, after controlling for other determinants of employment growth. These are large effects that need to be

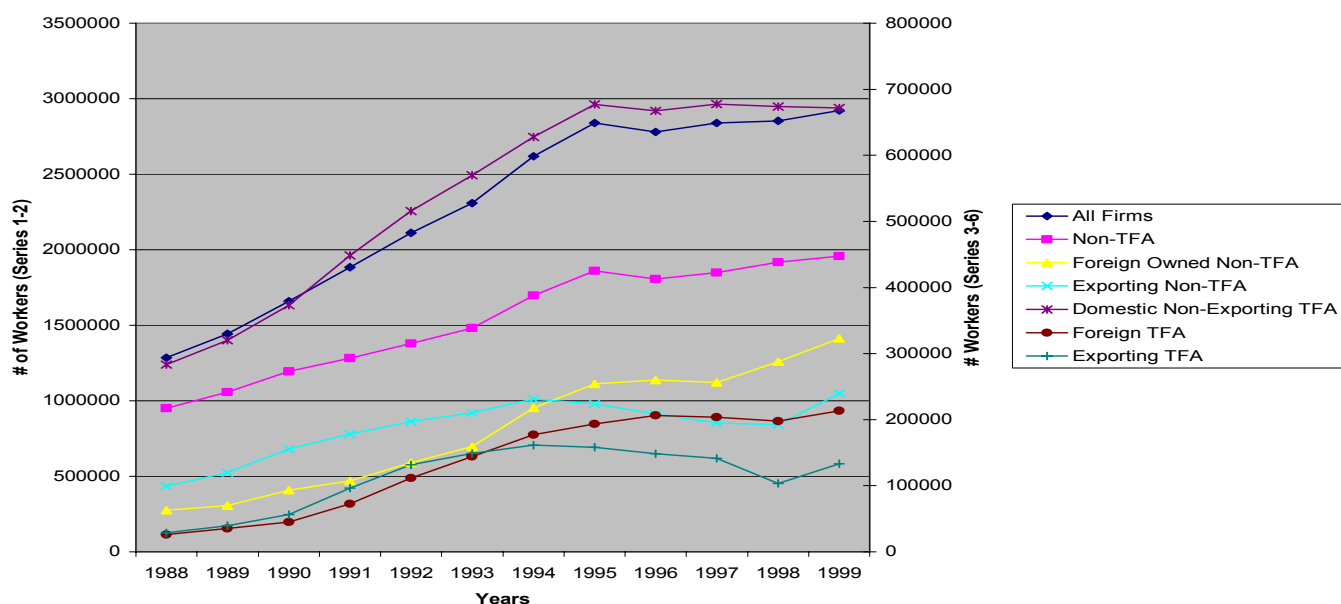
seriously considered in any campaign to increase the mandated minimum wage or to increase compliance with the minimum wage. Indonesia, however, is an unusual case: most countries do not experience 100 percent real increases in the value of the minimum wage over a five year period.

As a final check, we redo the analysis of employment using annual data instead of the long differenced panel. The results are reported in the last 4 rows of Table 5. We again report the results using all firms as well as the balanced sample, entrants, and exiters. As before, there are no significant effects of anti-sweatshop activism on employment changes from year to year. The negative and significant impact of the minimum wage on employment is consistent with the long difference results, suggesting a fall in employment of almost one percentage point per year due to minimum wage increases alone.

Our results support the claim that although minimum wage increases generated employment losses across all of manufacturing, activism targeted at surviving textiles, apparel, and footwear did not. Trends in aggregate employment for TFA and non-TFA firms confirm this. In Figure 8, we show total unskilled employment in Indonesia during the sample period. Employment growth for the textiles, apparel, and footwear sector clearly mirrors the rest of the manufacturing sector; in fact, employment growth was more robust during 1990 through 1996. These aggregate

trends are consistent with the regression results reported in Table 5.

Figure 8: Total Production Worker Employment 1988-1999



Exit Finally, in Table 6 we explore whether the pressures imposed by anti-sweatshop activists have induced more firms to close down operations and exit the sector. We estimate the probability of exit in period $t+1$ as a function of plant and worker characteristics in period t , using annual data from 1990 through 1996, as well as for the whole sample, from 1988 through 1999. If the pressures imposed by either higher minimum wages or anti-sweatshop activities are leading firms to shut down and relocate elsewhere, the benefits of higher wages could be offset by a higher probability of job loss. We begin with the whole sample, with results from a probit estimation reported in row 1 of Table 6. If we restrict ourselves to the whole sample, there is no evidence that exporting or foreign firms in TFA sectors are more likely to shut down. However, exporting plants are significantly more likely to shut down. Higher minimum wages have also increased the probability of exit by 2 percentage points.

In a recent paper, Bernard and Sjöholm (2004) point out that not taking into account the size of a plant is misleading, because small plants are much more likely to exit than large plants. In

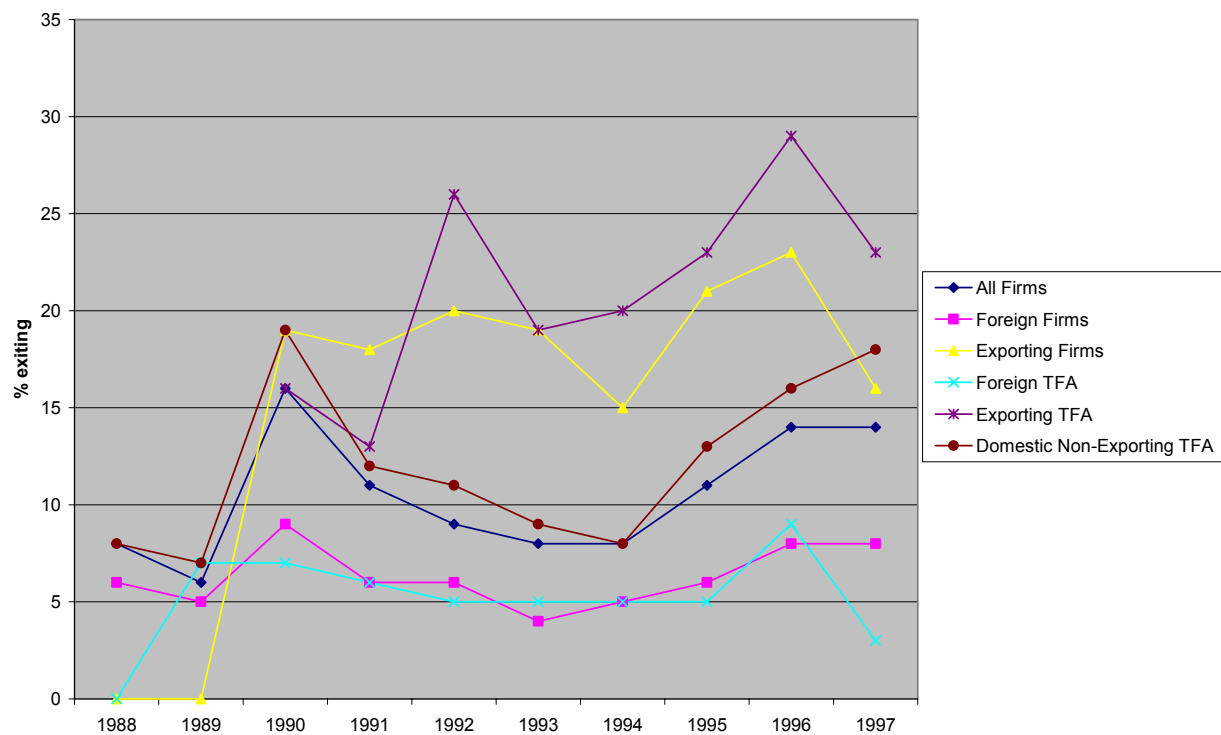
particular, they point out that in the Indonesian data, plants with less than 20 workers were eliminated from the sample after 1989, which could lead us to conclude that exporters and foreign plants are less likely to exit because they are significantly larger than other plants. To address this possibility, in the second row we only include plants with at least 100 workers. Although most of the coefficients are unaffected, the coefficient on exporting TFA firms does increase in magnitude and becomes statistically significant, indicating that these firms have a 2 percent higher probability of exiting the sample. Minimum wages have about the same impact, raising exit probabilities significantly.

If we expand the sample to include data from 1988 to 1999, we continue to find the following: although foreign owned plants are less likely to exit the sample, exporters are significantly more likely to exit. Interestingly, our results contradict Bernard and Sjöholm (2004), who find that foreign plants in Indonesia are more footloose than other plants. Our results suggest the opposite: foreign plants are *less* footloose. This could be because the number of foreign enterprises in Indonesia in the 1980s—Bernard and Sjöholm examine data which ends in 1989—was small and consequently a few plants could lead to large rates of entry and exit. Our data focuses on the 1990s, when there were more foreign plants in Indonesia.

In general, large exporters are 5 percentage points more likely to exit than other large firms. TFA exporters are even more likely to exit, with an increased probability of exit equal to 4 to 5 percentage points, similar to the impact of the higher minimum wage. Since on average about 10 percent of the sample exits each year, this implies that exporting and engaging in textiles, apparel, and footwear production doubles that probability. (see Figure 10 for a visual representation). However, it is important to note that these larger exit probabilities are limited to plants with more than 100 employees. Since there is clearly a non-random probability of exit

associated with both exporting and large TFA firms, future research should correct existing estimates for possible selection bias.

Figure 9: Percentage of Firms Exiting in Years 1988-1999



One possibility is that TFA plants simply are more volatile, exhibiting higher rates of entry as well. Appendix figure A.1 shows that this is not the case. During the 1990s, not only were TFA plants more likely to exit, but entry rates also dropped as well. As indicated in figure A.1, higher rates of entry by TFA plants in the late 1980s than other plants were followed by a fall in entry rates, which by the end of the 1990s were comparable to non-TFA plants. If entry fell and exit rates rose for TFA plants, how can we account for the fact that total employment in TFA plants did not fall? In other words, how can we explain that TFA unskilled employment as

a percentage of total manufacturing employment increased at the same time that exit became proportionately higher? The reason, as shown in Table 4, is that remaining TFA plants-- particularly exporters and foreign-owned plants—increased unskilled employment by as much as fifty percent. Employment increases within surviving plants compensated for higher exit by some TFA enterprises.

Finally, in Table 7 we test whether higher wages for exporting TFA plants are due to higher compliance with the minimum wage. The results presented in Table 7A suggest that all of the differences in wage growth between TFA exporters and others is due to higher compliance with the minimum wage. To show this, we add an interaction between the minimum wage and ownership. This allows for differential effects of minimum wage changes on wage growth. This is likely if, as we documented earlier in the paper, compliance differs dramatically across ownership classes. In both the long differences and the annual wage changes, we show that all of the higher wage growth for TFA exporters is due to higher compliance with the minimum wage. In fact, the long differences show that while on average a 1 percent increase in the minimum wage gap led to a .5 percent increase in wages, for exporting TFA enterprises the minimum wage increase led to a one-for-one increase in the plant wage.

In Table 7B we explore to what extent the higher exit probabilities for exporting TFA plants can be traced to higher compliance with the minimum wage. There is no evidence that TFA exporters were more likely to exit because they paid their unskilled workers higher wages. Using three different measures of wage growth, we are unable to find any relationship between exit and higher wages. Although the higher wages paid by TFA exporters are clearly linked to higher compliance with the minimum wage laws, there is no evidence that these higher compliance rates are associated with the higher observed exit probabilities.

V. Conclusion

During the 1990s, human rights and anti-sweatshop activists increased their efforts to improve working conditions and raise wages for workers in developing countries. These campaigns took many different forms: direct pressure to change legislation in developing countries, pressure on firms, newspaper campaigns, and grassroots organizing. This paper analyzes the impact of two different types of interventions on labor market outcomes in Indonesian manufacturing: (1) direct US government pressure and (2) anti-sweatshop campaigns. The results suggest that direct pressure from the US government in the form of threatening to withdraw GSP privileges, which contributed to a doubling of the minimum wage, resulted in a 25 percent increase in real wages for unskilled workers between 1990 and 1996. We examine the impact of anti-sweatshop campaigns using a difference-in-difference approach. Unskilled real wages increased by an additional 10 to 20 percent for exporters and multinational plants in sweatshop industries, defined as textiles, footwear, and apparel (TFA), than in other similar plants.

The combined effects of the minimum wage legislation and the anti-sweatshop campaigns led to a 50 percent increase in real wages and a 100 percent increase in nominal wages for unskilled workers at targeted exporting plants. One question which naturally arises is how this could possibly be achieved without adverse consequences for employment. If firms are operating in a competitive environment, then mandated cost increases should naturally lead them to reduce their workforce or shut down and relocate elsewhere. However, it is important to keep in mind that for a well-known brand name such as Nike, labor costs from developing country

factories in 1998 only accounted for about 4 percent of the total cost of a ninety dollar shoe.⁹ To the extent that there existed imperfect competition or inelastic demand, firms could have accepted higher labor costs without reducing employment or relocating factories elsewhere.

This study then examines whether these higher wages led firms to cut employment or shut down operations. Our results suggest that the minimum wage increases led to employment losses of as much as 10 percentage points for unskilled workers across all sectors in manufacturing. Textiles, apparel, and footwear exporters were also significantly more likely to leave Indonesia after 1990. Surprisingly, however, anti-sweatshop activism did not have significant adverse effects on employment. How can we explain that TFA unskilled employment increased at the same time that many firms were relocating elsewhere? The reason is that remaining TFA plants--particularly exporters and foreign-owned plants—increased unskilled employment by as much as fifty percent. We also find that foreign plants both inside and outside of sweatshop industries were less likely to close down, contradicting recent evidence which suggests that they are more footloose than other firms. The message is a mixed one: activism significantly improved wages for the lowest paid workers in Indonesian manufacturing, but may also have encouraged exporters to relocate elsewhere.

⁹ Here is the link to an interview that is no longer contained on Nike's webpage: <http://cbae.nmsu.edu/~dboje/NIKfaqcompensation.html> The interview is from 1998, and we checked into it's original URL source. We found the URL was valid, but Nike redesigned its website, and what's found from this link has been removed.

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**Table 1A: Average Production Worker Wages per Establishment in 1990 and 1996
In Thousands of 1996 Indonesian Rupiahs (Standard Errors in ())**

	Ownership Status			Difference		
	Domestic (a)	Always Foreign (b)	Always Exporting (c)	(2) – (1)	(3)-(1)	(2)-(3)
	(1)	(2)	(3)	(4)	(5)	(6)
1. Mean Wage in 1990, All Available Observations	1123.3 (11.1)	3270.3 (157.3)	1831.8 (85.0)	2146.9 (62.7)	708.5 (47.7)	1438.4 (164.2)
2. Mean Wage in 1996, All Available Observations	1532.5 (12.3)	3495.1 (113.3)	2115.0 (48.0)	1962.7 (54.3)	582.5 (36.5)	1380.1 (104.9)
3. Change in Mean Wage, 1990-1996	409.2 (17.1)	224.9 (203.0)	283.2 (96.2)	-184 (62.7)	-126 (47.7)	-58 (164.3)
4. Change in Mean Wage, Balanced Sample (d)	370.2 (22.8)	776.1 (273.3)	302.9 (111.5)	405.9 (81.1)	-67.3 (54.3)	473.2 (194.1)
5. Mean Change in Log Wage, 1990-1996	.36 (.01)	.11 (.05)	.18 (.03)	-.25 (.04)	-.18 (.03)	-.07 (.05)
6. Mean Change in Log Wage, Balanced Sample (d)	.30 (.02)	.24 (.06)	.20 (.04)	-.06 (.04)	-.1 (.03)	.04 (.05)

Table 1B: Production Worker Wages: Separating Out Textiles, Footwear, and Apparel (TFA)

	Textiles, Apparel, and Footwear Establishments			Other Establishments			Difference		
	Domestic (a)	Always Foreign (b)	Always Exporting (c)	Domestic (a)	Always Foreign (b)	Always Exporting (c)	(1)-(4)	(2)-(5)	(3)-(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Mean Wage in 1990, All Observations	1078.2 (15.5)	1775.1 (112.1)	1462.4 (122.8)	1134.2 (13.2)	3560.8 (182.1)	1934.6 (102.7)	56.0 (27.9)	-1805.6 (419.1)	-472.2 (205.2)
2. Mean Wage in 1996, All Observations	1441.2 (19.6)	2268.8 (79.2)	2079.2 (100.0)	1552.4 (14.4)	3798.6 (137.8)	2125.2 (54.6)	-111.1 (32.1)	-1529.7 (280.0)	-46.0 (115.6)
3. Change in Mean Wage, 1990-1996	363.0 (25.7)	513.7 (151.2)	616.8 (187.1)	418.1 (20.2)	237.8 (241.1)	190.6 (111.2)	-54.9 (36.7)	275.9 (497.6)	426.2 (188.5)
4. Change in Mean Wage, Balanced Sample (d)	349.4 (33.4)	740.1 (196.3)	474.2 (170.0)	374.7 (26.6)	814.9 (318.8)	259.4 (135.2)	-25.3 (47.4)	-74.8 (497.6)	214.8 (188.5)
5. Mean Change in Log Wage, 1990-1996	.30 (.03)	.29 (.09)	.40 (.05)	.37 (.01)	.08 (.05)	.13 (.04)	-.07 (.02)	.21 (.11)	.27 (.07)
6. Mean Change in Log Wage, Balanced Sample	.30 (.03)	.36 (.10)	.35 (.06)	.28 (.02)	.22 (.07)	.16 (.05)	.02 (.02)	.14 (.10)	.19 (.10)

(a) A plant that is neither foreign owned nor exports the entire period. (b) Includes some foreign equity over the entire period.
(c) Exports some share of output over the entire period. (d) Defined as establishments present in both 1990 and 1996.
(e) Average of annual changes in establishments present in both 1990 and 1996

Table 2
Regressing Production Worker Wage Differences for 1990-1996 on the Minimum Wage
Gap, Plant Characteristics, and Other Controls
(Standard Errors in ())

Dependent Variable: Log Wage in 1996 – Log Wage in 1990

	Always Foreign (a)	Always Exporting (b)	Domestic TFA (c)	FOR* TFA	Export* TFA	Minimum Wage Gap (d)	N/ R-Square
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Ownership Dummies Only	.105 (.05)	-.030 (.04)	-.031 (.03)	.088 (.05)	.141 (.07)	.518 (.09)	6165/.20
2. Including (1) through (7) and Alternative Wage	.105 (.06)	-.030 (.04)	-.031 (.03)	.087 (.05)	.141 (.07)	.518 (.09)	6165/.19
3. Adding Plant and Worker Characteristics	.037 (.07)	-.039 (.04)	-.019 (.02)	.123 (.05)	.165 (.06)	.512 (.06)	6165/.28
4. Adding Region Controls	.037 (.07)	-.006 (.04)	-.021 (.03)	.109 (.05)	.141 (.06)	.523 (.07)	6165/.29
5. Adding TFPG Growth	.046 (.07)	-.012 (.05)	-.025 (.03)	.093 (.04)	.146 (.06)	.529 (.07)	5920/.30
6. Adding Technology expenditures	-.021 (.07)	-.024 (.05)	-.017 (.03)	.104 (.05)	.159 (.06)	.536 (.08)	5920/.29
7. Adding Output Growth for 1990- 1996.	.021 (.07)	-.027 (.05)	-.018 (.03)	.097 (.05)	.161 (.06)	.536 (.08)	5920/.29
8. Dependent Variable is Non- Production Worker Wages	.057 (.09)	-.089 (.045)	-.016 (.030)	.107 (.156)	.006 (.072)	.231 (.059)	5100/.07
9. Dependent Variable Is Non-wage Benefits for Production Workers	-.015 (.043)	.099 (.104)	.039 (.041)	-.015 (.151)	.006 (.129)	.133 (.031)	5144/.06

(a) Includes some foreign equity over the entire period.

(b) Exports some share of output over the entire period.

(c) An establishment in the textiles, footwear, and apparel (TFA) sector that is neither foreign owned nor exports for the entire period.

(d) Defined as the log of the minimum wage in the final period less the log of the nominal production worker wage in the first period.

Table 3
Regressing Production Worker Wage Differences on Different Determinants:
First Differences and other Extensions
(Standard Errors in ())

Dependent Variable: Log Wage in Period t – Log Wage in Period t-1

	Always Foreign (a)	Always Exporting (b)	TFA (Domestic) (c)	FOR* TFA	Export* TFA	Minimum Wage Gap (d)	N/ R-Square
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
1. All Establishments, 1990-1996 (e)	.012 (.007)	.008 (.008)	.011 (.012)	.004 (.019)	.039 (.016)	.219 (.053)	68875/.1332
2. Balanced Panel, 1990-1996 (e)	-.0004 (.012)	-.003 (.008)	.008 (.009)	.039 (.012)	.041 (.010)	.269 (.051)	33302/.1316
3. Entrants, 1990-1996 (e)	.041 (.006)	.018 (.014)	-.007 (.018)	-.032 (.020)	.055 (.014)	.311 (.052)	22236/.1726
4. Exiters, 1990-1996 (e)	.048 (.047)	.022 (.025)	.039 (.005)	.003 (.089)	-.001 (.103)	.091 (.044)	9055/.1591
5. All Establishments, 1988-1996 (e)	.010 (.006)	.015 (.007)	.009 (.010)	.012 (.020)	.036 (.015)	.227 (.052)	81840/.1320
6. Balanced Panel, 1988-1996 (e)	-.003 (.011)	.019 (.007)	.010 (.009)	.011 (.007)	.037 (.019)	.282 (.046)	36426/.1324
7. Entrants, 1988-1996 (e)	.026 (.008)	.012 (.011)	-.007 (.017)	.003 (.015)	.047 (.011)	.299 (.056)	28720/.1638
8. Exiters, 1988-1996 (e)	.026 (.017)	.033 (.035)	.020 (.005)	.037 (.030)	.050 (.039)	.105 (.038)	10337/.1395
9. Minimum Wage Gap = Logmin(t) – Logmin(t-1), all Establishments(e)	.001 (.004)	-.002 (.007)	.003 (.007)	.003 (.017)	.029 (.016)	.081 (.033)	68875/.08
10. Minimum Wage Gap = Logmin(t) – Logmin(t-1) Balanced Panel (e)	-.017 (.007)	-.017 (.010)	-.002 (.006)	.024 (.012)	.028 (.013)	.041 (.034)	33302/.06
11. Minimum Wage Gap = Logmin(t) - Logmin(t-1) Entrants (e)	.020 (.009)	.007 (.011)	.002 (.008)	-.019 (.017)	.043 (.012)	.162 (.042)	22236/.09
12. Minimum Wage Gap= Logmin(t) – Logmin(t-1), Exiters (e)	.039 (.049)	.001 (.028)	.024 (.005)	-.007 (.094)	.007 (.104)	.107 (.036)	9055/.15

Table 3, Continued

	Always Foreign (a)	Always Exporting (b)	TFA (Domestic) (c)	FOR* TFA (4)	Export* TFA (5)	Minimum Wage Gap (d)	N/ R-Square (8)
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
13. Non-prod wages: All Establishments, 1990-1996 (e)	.004 (.007)	-.012 (.008)	.014 (.005)	-.002 (.013)	.039 (.016)	.109 (.019)	58563/.0281
14. Non-prod wages: Balanced Panel, 1990-1996 (e)	.007 (.017)	-.022 (.007)	.008 (.005)	.050 (.027)	.016 (.013)	.106 (.023)	29156/.0219
15. Non-prod wages: Entrants, 1990-1996 (e)	.006 (.011)	-.002 (.012)	.014 (.014)	-.024 (.008)	.053 (.029)	.147 (.023)	18573/.0389
16. Non-prod wages: Exiters, 1990-1996 (e)	.0228 (.053)	.050 (.043)	.015 (.015)	-.138 (.088)	-.057 (.041)	.044 (.011)	7479/.0318
17. Prod worker benefits 1990-1996: Establishments(e)	.018 (.012)	.004 (.015)	-.011 (.010)	.008 (.019)	.0138 (.032)	.043 (.025)	61059/.0282
18. Prod worker benefits 1990-1996: Balanced Panel (e)	.013 (.012)	.0003 (.017)	-.005 (.013)	-.008 (.031)	.015 (.033)	.039 (.024)	30122/.0239
19. Prod worker benefits 1990-1996: Entrants (e)	.004 (.014)	.004 (.019)	-.008 (.018)	.047 (.028)	-.013 (.053)	.078 (.027)	19370/.0346
20. Prod worker benefits 1990-1996: Exiters (e)	.071 (.057)	-.015 (.047)	-.021 (.016)	-.075 (.099)	-.032 (.122)	.002 (.028)	7979/.0389
21. Big firms: All Establishments, 1990-1996 (e)	.015 (.008)	.004 (.009)	.009 (.013)	.006 (.020)	.042 (.017)	.250 (.063)	51762/.1226
22. Big firms: Balanced Panel, 1990-1996 (e)	.002 (.012)	-.006 (.009)	.002 (.010)	.036 (.012)	.046 (.010)	.310 (.065)	24779/.1249
23. Big firms: Entrants, 1990-1996(e)	.041 (.008)	.011 (.015)	-.009 (.016)	-.032 (.021)	.055 (.017)	.357 (.049)	17170/.1663
24. Big firms: Exiters, 1990-1996(e)	.042 (.047)	-.036 (.029)	.050 (.013)	.016 (.083)	-.005 (.110)	.127 (.051)	6317/.1523
25. Small firms: All Establishments, 1990-1996 (e)	.040 (.089)	.021 (.041)	-.002 (.012)	..	-.019 (.056)	.178 (.034)	12179/.2315
26. Small firms: Balanced Panel, 1990-1996 (e)	.118 (.116)	-.046 (.059)	.017 (.011)	..	.036 (.095)	.221 (.036)	3410/.2848
27. Small firms: Entrants, 1990-1996(e)	.152 (.097)	.051 (.059)	-.029 (.020)	..	-.015 (.062)	.231 (.044)	4705/.2373
28. Small firms: Exiters, 1990-1996(e)	..	-.055 (.080)	.128 (.022)	..	-.21 (.081)	.135 (.034)	2079/.2485

(a) Includes some foreign equity over the entire period. (b) Exports some share of output over the entire period.

(c) An establishment in the textiles, footwear, and apparel (TFA) sector that is neither foreign owned nor exports for the entire period. (d) Defined as the minimum wage in period t less the nominal production worker wage in period t – 1. (e) Includes all sets

of controls, including TFP, output growth, region controls, plant and worker characteristics, and investment in technology.

Table 4: Average Production Worker Employment per Establishment in 1990 and 1996
Ownership Status

	Ownership Status			Difference		
	Domestic (a)	Always Foreign (b)	Always Exporting (c)	(2) – (1)	(3)-(1)	(2)-(3)
1. Mean Employment in 1990, All Available Observations	68.71 (1.68)	3 60.42 (27.06)	400.48 (21.75)	292.92 (9.90)	331.77 (8.59)	-39.56 (34.93)
2. Mean Employment in 1996, All Available Observations	66.68 (1.57)	506.92 (28.64)	400.63 (18.22)	440.24 (9.76)	333.95 (8.21)	106.29 (32.74)
3. Change in Mean Employment, 1990-1996	-2.02 (2.32)	146.00 (21.81)	0.15 (33.83)	148.02 (9.9)	2.17 (8.6)	145.85 (34.9)
4. Change in Mean Employment, Balanced Sample (d)	12.65 (4.33)	204.30 (64.90)	193.01 (50.73)	191.7 (12.1)	180.4 (10.7)	11.3 (43.4)
5. Change in Mean Log Employment, All Observations	-.03 (.01)	.24 (.07)	-.24 (.06)	.27 (.04)	-.21 (.04)	.48 (.08)
6. Change in Mean Log Employment, Balanced Sample	.09 (.02)	.36 (.11)	.24 (.08)	.27 (.03)	.15 (.03)	.12 (.05)

	Textiles, Apparel, and Footwear Establishments			Other Establishments			Difference		
	Domestic (a)	Always Foreign (b)	Always Exporting (c)	Domestic (a)	Always Foreign (b)	Always Exporting (c)	(1)-(4)	(2)-(5)	(3)-(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Mean Employment in 1990, All Available Observations	94.82 (5.53)	737.75 (97.87)	403.64 (45.99)	62.39 (1.60)	288.67 (24.43)	399.60 (24.71)	43.42 (4.24)	449.08 (70.26)	4.04 (52.75)
2. Mean Employment in 1996, All Available Observations	90.00 (4.74)	1126.97 (109.79)	765.97 (66.37)	61.60 (1.60)	353.50 (19.73)	297.14 (12.73)	28.40 (4.08)	773.47 (67.44)	468.82 (42.65)
3. Change in Mean Employment, 1990-1996	-4.82 (7.3)	389.22 (197.70)	362.33 (118.17)	-0.79 (2.31)	64.83 (33.99)	-102.46 (26.18)	-4.03 (4.23)	324.39 (70.5)	464.79 (52.9)
4. Change in Mean Employment, Balanced Sample (d)	14.69 (15.51)	561.99 (237.76)	432.67 (143.82)	12.17 (4.09)	119.68 (54.88)	117.98 (49.59)	2.48 (5.3)	442.3 (91.5)	314.69 (60.0)
5. Change in Mean Log Employment, All Observations	.03 (.03)	.23 (.20)	.22 (.10)	-.02 (.01)	.19 (.08)	-.37 (.06)	.05 (.02)	.04 (.11)	.59 (.07)
6. Change in Mean Log Employment, Balanced Sample	.08 (.05)	.54 (.17)	.45 (.19)	.09 (.02)	.30 (.11)	.18 (.09)	-.01 (.02)	.24 (.16)	.12 (.12)

(a) A plant that is neither foreign owned nor exports the entire period.(b) Includes some foreign equity over the entire period.

(c) Exports some share of output over the entire period. (d) Defined as establishments present in both 1990 and 1996.

(e) Average of annual changes in establishments present in both 1990 and 1996

Table 5
Regressing Production Worker Employment on Determinants (Standard Errors in ())
Dependent Variable: Log Employment in 1996 – Log Employment in 1990 for rows (1)-(9)
and First Differences for rows (10)-(13)

	Always Foreign (a)	Always Exporting (b)	TFA (Domestic) (c)	FOR* TFA	Export* TFA	Minimum Wage Gap (d)	N/ R-Square
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
1. Balanced Panel for 1990-1996, No Controls	.176 (.05)	.054 (.03)	-.045 (.02)	.104 (.08)	.100 (.17)	-.041 (.01)	6165/.01
2. Adding Plant and Worker Characteristics and region dummies	.097 (.02)	.089 (.03)	-.018 (.03)	.047 (.06)	.078 (.08)	-.089 (.03)	6165/.24
3. Adding TFPG and Growth in Profit Margins	.081 (.02)	.088 (.03)	-.014 (.02)	.071 (.06)	.075 (.09)	-.076 (.03)	5920/.25
4. Adding Technology expenditures and output growth	.065 (.03)	.055 (.03)	-.016 (.02)	.013 (.05)	.082 (.07)	-.064 (.03)	5920/.34
5. Small Plants, 1990-1996	-.149 (.07)	-.131 (.15)	.027 (.03)	..	-.016 (.13)	-.003 (.03)	1080/.30
6. Large Plants, 1990-1996	.051 (.03)	.047 (.03)	-.021 (.02)	.009 (.05)	.095 (.06)	-.089 (.02)	4840/.36
7. Balanced Panel for 1988-1996, all controls including output growth	-.182 (.06)	.115 (.03)	.012 (.04)	.012 (.07)	.030 (.05)	-.128 (.03)	4636/.35
8. Minimum Wage Gap Defined as Dummy Variable	.046 (.03)	.053 (.03)	-.009 (.03)	.019 (.05)	.097 (.06)	-.091 (.02)	5920/.34
9. Minimum Wage Gap= Log Minimum Wage in 1996– Log Min Wage in 1990.	.048 (.03)	.054 (.03)	-.007 (.03)	.016 (.05)	.097 (.07)	-.123 (.01)	5920/.34
10. First Difference Employment Changes, All Establishments, 1990-1996	.003 (.002)	-.001 (.001)	.002 (.0001)	.004 (.002)	-.002 (.003)	-.006 (.003)	68875/.7550
11. Employment Changes, Balanced Panel, 1990-96	.003 (.003)	-.001 (.002)	.002 (.001)	-.0004 (.003)	-.002 (.003)	-.009 (.004)	33302/.7307
12. First Difference Employment Changes, Entrants, 1990-96	.002 (.003)	-.0003 (.003)	-.003 (.002)	.008 (.003)	-.004 (.005)	-.008 (.002)	22236/.7641
13. Employment Changes, Exiters, 1990-96	.011 (.008)	.030 (.013)	.007 (.002)	-.016 (.008)	-.030 (.015)	-.003 (.002)	9055/.7839

(a) Includes some foreign equity over the entire period.(b) Exports some share of output over the entire period.

(c) An establishment in the TFA sector that is neither foreign owned nor exports for the entire period. (d) Defined as the log of the minimum wage in the final period less the log of the nominal production worker wage in the first period

Table 6: Determinants of Exit: Probit Regressions
(Standard Errors in Parentheses)

	Always Foreign (a)	Always Exporting (b)	TFA (Domestic) (c)	FOR* TFA (4)	Export* TFA (5)	Minimum Wage Gap (d)	N/ R-Square (8)
	(1)	(2)	(3)	(4)	(5)	(6)	(8)
1. Whole Sample for 1988-1996, (All controls)	-.014 (.003)	.055 (.011)	.010 (.003)	-.009 (.015)	.022 (.014)	.027 (.003)	82204/.05
2. Large Firms Only Firm Size > 100 for 1988-1996, (All controls)	-.002 (.003)	.041 (.005)	.005 (.004)	-.007 (.009)	.022 (.008)	.025 (.003)	28418/.08
3. Small Firms Only Firm Size <=100 For 1988-1996 (All controls)	-.016 (.005)	.123 (.015)	.017 (.003)	.009 (.066)	-.001 (.021)	.029 (.004)	53752/.05
4. Whole Sample for 1988-1996, (All controls except education)	-.044 (.004)	.080 (.021)	.018 (.008)	-.017 (.020)	.032 (.021)	.041 (.004)	92908/.03
5. Large Firms Only Firm Size > 100 for 1988-1996, (All controls except education)	-.016 (.004)	.063 (.014)	.009 (.005)	-.018 (.012)	.046 (.012)	.037 (.005)	30592/.04
6. Small Firms Only For 1988-1996 (All controls except education)	-.045 (.005)	.183 (.023)	.032 (.006)	.029 (.078)	-.018 (.034)	.040 (.006)	62281/.03
7. Whole Sample for 1988-1999, (All controls)	-.018 (.003)	.036 (.009)	.015 (.004)	-.017 (.015)	.033 (.018)	.028 (.003)	104811/.06
8. Large Firms Only for 1988-1999, (All controls)	-.004 (.003)	.033 (.007)	.008 (.003)	-.011 (.010)	.030 (.009)	.023 (.004)	35382/.06
9. Small Firms Only For 1988-1999 (All controls)	-.020 (.005)	.088 (.014)	.025 (.004)	.012 (.038)	.005 (.029)	.029 (.004)	69378/.06
10. Whole Sample for 1988-1999, (All controls except education)	-.042 (.004)	.060 (.019)	.020 (.007)	-.024 (.018)	.034 (.023)	.036 (.005)	115554/.03
11. Large Firms Only Firm Size > 100 for 1988-1999, (All controls except education)	-.014 (.005)	.050 (.013)	.010 (.004)	-.022 (.011)	.047 (.013)	.031 (.004)	37570/.03
12. Small Firms Only Firm Size <=100 For 1988-1999 (All controls except education)	-.043 (.003)	.149 (.023)	.034 (.005)	.025 (.04)	-.018 (.036)	.034 (.007)	77933/.03

Notes: Reported coefficients are the change in the probability of exit, evaluated at the sample mean. All specifications include controls in previous tables.

Table 7a: Are Higher Wages Due to Greater Compliance with Minimum Wage Legislation by Exporting and Foreign TFA Plants?

(Standard Errors in Parentheses)

	Always Foreign (a)	Always Exporting (b)	TFA (Domestic) (c)	FOR* TFA (4)	Export* TFA (5)	Minimum Wage Gap (d)	Gap * TFA * Dom	Gap * FOR * TFA	Gap * Export * TFA	N/ R-Square (8)
	(1)	(2)	(3)	(4)	(5)	(6)				
1. Long Differences, Balanced Panel 1990-1996 (All controls)	.013 (.068)	-.029 (.046)	-.146 (.045)	.026 (.049)	-.047 (.063)	.511 (.078)	.223 (.109)	.196 (.113)	.524 (.084)	5921/.29
2 First Differences., All Plants, 1990-1996 (All controls)	.014 (.008)	.008 (.008)	.084 (.074)	-.023 (.006)	-.006 (.026)	.208 (.055)	.083 (.074)	.213 (.137)	.300 (.081)	68,875/.13
3. First Differences, Balanced Panel, 1990-1996(All controls)	-.001 (.012)	-.004 (.009)	-.012 (.012)	-.002 (.014)	-.005 (.021)	.259 (.051)	.075 (.060)	.815 (.074)	.388 (.110)	33,302/.13

Notes: Reported coefficients are the change in the probability of exit, evaluated at the sample mean. All specifications include controls in previous tables.

Table 7b: Is Greater Exit due to Higher Wages and Greater Compliance with Minimum Wage Legislation by Exporting and Foreign TFA Plants?

(Standard Errors in Parentheses)
Probit Regressions

	Always Foreign (a)	Always Exporting (b)	TFA Domestic (c)	FOR* TFA (4)	Export * TFA (5)	Minimum Wage Gap (d)	Production Worker Wage Growth	TFA Exporter Complies with Minimum Wage	TFA Exporter Complies with Minimum Wage and $W_{t-1} < \text{Minwage}_t$	N
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. All plants, 1988-1999, All Controls	-.017 (.003)	.037 (.009)	.015 (.004)	-.017 (.016)	.034 (.018)	.032 (.003)	-.020 (.002)	--	--	104,811
2. Large Plants, 1988-199, All Controls	-.004 (.003)	.033 (.006)	.008 (.003)	-.011 (.010)	.031 (.009)	.028 (.004)	-.011 (.003)	--	--	35,382
3. All plants, 1988-1999, All Controls	-.019 (.003)	.038 (.009)	.018 (.004)	-.012 (.018)	.059 (.022)	.027 (.002)	--	-.0004 (.00005)	--	99,903
4. All plants, 1988-1999, All Controls	-.018 (.003)	.036 (.009)	.015 (.003)	-.017 (.016)	.033 (.017)	.028 (.003)	--	--	-.003 (.014)	104,811

Appendix Table and Figure A1: Mean Minimum Wage and Select Wages for Indonesia 1990-1999

All real values are base 1996
 MW=minimum wage
 Prod=production worker
 TFA=textile, apparel, or footwear sector
 All Indonesian currency is in 1,000 rupiah

Year	CPI ₉₆	MW _{Nom}	MW ₉₆	MW _{\$US}	(ru/\$)	<u>a. Non-TFA Wages</u>		<u>b. TFA Wages (Production Workers Only)</u>		
						Prod	Non-Prod	Dom / No X	Exporters	Foreign
1988	0.527	351	667	388	1717	1242	2935	1025	1325	2072
1989	0.561	355	634	355	1787	1272	3137	1053	1461	2125
1990	0.604	503	833	443	1882	1288	3154	1078	1462	1755
1991	0.661	633	957	484	1982	1352	3351	1120	1417	1685
1992	0.711	717	1008	492	2051	1479	3567	1239	1604	1931
1993	0.780	832	1066	509	2095	1537	3769	1278	1732	1846
1994	0.846	1193	1409	652	2160	1610	3775	1310	1888	2015
1995	0.926	1418	1531	684	2239	1665	3921	1346	1971	2063
1996	1.000	1560	1560	644	2348	1752	4017	1441	2079	2269
1997	1.067	1699	1592	539	2953	1858	4870	1515	2723	2499
1998	1.680	1963	1167	118	9875	1589	4010	1287	1808	2347
1999	2.027	2308	1138	146	7809	1645	4926	1220	2037	2528

All wages are annual means

Percentage of Firms Entering In Years 1989-1997

