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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.

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I. Introduction

Anti-sweatshop campaigns launched to improve working conditions in poor countries increased dramatically in the 1990s. These campaigns took many different forms: direct pressure to change legislation in developing countries, pressure on firms, newspaper campaigns, and grassroots organizing. Corporate giants with strong name-brand recognition such as Nike, Reebok, Adidas and the Gap all became the focus of extremely well-coordinated ad campaigns and consumer boycotts that spread throughout hundreds of college campuses. Surprisingly, however, there has been almost no research that analyzes how anti-sweatshop campaigns have affected the very workers they are designed to assist.

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 both the United States government and human rights organizations pressured the country to improve conditions for 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.[1] Minimum wages increased by eight hundred percent in nominal terms and more than doubled in real terms.

A second approach involved grassroots organizing, negative publicity, and consumer awareness campaigns for goods produced by footwear and apparel producers. In the 1990s, international concern over globalization and labor standards increased dramatically. Major campaigns against large footwear companies such as Nike forced these firms to raise wages, improve working conditions for their workers, and sign codes of conduct. One of the goals of this paper is to compare the effects of government-mandated wage improvements with the effects of the more unconventional tactic of anti-sweatshop activism.

1. SMERU Research Institute (2001).

To measure the impact of the anti-sweatshop movement on labor market outcomes, we use a difference-in-difference approach, comparing wages before and after the advent of the campaigns. The combined effects of the minimum wage legislation and the anti-sweatshop campaigns led to a more than 50 percent increase in real wages and a doubling of 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 12 percentage points over the period. Although the higher minimum wage reduced employment, anti-sweatshop activism targeted at textiles, apparel, and footwear plants did not. Some 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. These results suggest that activism had *less* costly consequences for employment in Indonesia than externally imposed US pressure, which contributed to the dramatic minimum wage increase.

Identification for minimum wage effects is based on district-level differences in the application of the statutory minimum wage across Indonesia. Identification for anti-sweatshop effects is achieved by comparing the behavior of firms operating in districts where there were subcontractors working for name brands (Nike, Rebok and Adidas) relative to firms in districts where subcontractors for those three companies did not have operations. The results are robust to a variety of alternative specifications. We include controls for other factors that could be correlated with wage and employment changes, such as foreign ownership and export status, 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.

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.[2] Other related work includes Edmonds and Pavcnik (2001), who explore how rice prices affected the use of child labor in Vietnam. Edmonds and Pavcnik 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.[3] Previous work has also examined the rationale for labor standards, as well as on the determinants of ratification of ILO conventions. [4]

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, discuss the identification strategy 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, profits, investment and plant exit, while Section V concludes.

II. Background, Identification Strategy, and Framework for Estimation

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

[3] 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.

[4] 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.[4] 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.

We begin by describing the role played by the United States in influencing Indonesia's labor market policies. We then turn to a 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 in a limited geographic area within Indonesia. This section then describes a theoretical framework and discusses the approach to estimation.

Pressure from the United States Between 1987 and 1995, American groups filed seven petitions with the U.S. Trade Representative (USTR) claiming that Indonesian labor rights laws were not being enforced by the Indonesian government and that Indonesia's preferential trade status under the Generalized System of Preferences (GSP) should be revoked (Caraway 2001). These petitions focused on seven major labor rights violations: obstruction of the right to organize, restrictions on civil servants, the right to strike, the intervention of security authorities in labor disputes, restrictions of workers' access to appeal, limited sanctions against employers, and unfair restrictions on the right to work.

Under the GSP system, participating countries face lower duties (or no duties at all) on their goods that are exported to the United States. Therefore, maintaining GSP status is economically important for recipient nations, and the threat of revoking it can apply significant pressure on governments to change their policies. One legal basis for revoking GSP status is evidence of human rights violations or violation of labor laws.

When President Clinton came into office in 1992 the USTR agreed to review Indonesia's GSP status. Although the Indonesian government flatly denied any violations of labor rights, for the next two years the Indonesian government took small steps to improve the conditions of workers by easing restrictions on unions and promising to enforce higher minimum wages. Although wages were not an

issue raised in the GSP petitions, the Indonesian government decided to make improvements on the wage front instead of more comprehensive labor rights reform that had been highlighted by the American labor rights groups. This also allowed the government to quell rising labor unrest since the major demand in the growing number of strikes during this time period (fueled by the reluctance of the Indonesian government to crack down while under greater international scrutiny) was compliance with the legally mandated minimum wage. Although the U.S. did not revoke Indonesia's GSP privileges and the USTR's review process waned after Clinton's 1994 visit to Indonesia, from 1990 through1996 the average daily minimum wage in Indonesia increased by more than 800 percent in nominal terms (see Figure 1), and the Indonesian government continued to issue promises to more strictly enforce minimum wage compliance.

As indicated by Figure 1, minimum wages more than doubled in real terms between 1985 and 1999 (See also Appendix Table 1). 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. 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 to nearly 1-to-1 in the late 1990s. Average production-worker wages were hovering just above the minimum wage before the 1997 financial crisis.

The Anti-Sweatshop Movement The roots of the anti-sweatshop campaign in Indonesia can be traced to a 1989 study commissioned by the U.S. Agency for International Development. The study, carried out by the Asian American Free Labor Institute-Indonesia under the direction of Jeff Ballinger, discovered that of all the factories that produced goods for the export sector, plants that manufactured for Nike paid the lowest wages. In 1992 Ballinger's work appeared in Harper's Magazine in a short piece entitled, "The New Free-Trade Hell: Nike's profits jump on the backs of Asian workers," and in 1993 CBS featured Ballinger on a report about poor working conditions in Asian factories.

Organizations such as Global Exchange, Press for Change (founded by Ballinger), and the National Labor Committee used the momentum generated from the increasing mainstream media

attention on poor factory conditions in Nike plants to create an international campaign against sweatshop conditions in Nike factories. Coupled with their own very effective media strategies, including ads that satirized Nike symbols and slogans (e.g. the "swooshtika" in place of the Nike "swoosh" symbol), the anti-sweatshop activists waged a public relations war against Nike and other big clothing retailers. The movement in the U.S. and Europe was enlivened through electronic forums where young activists congregated, shared information at lightning speed, and plotted their course of action.

Nike established its own "Code of Conduct" in 1992 (Murphy and Matthew 2001) in order to comply with labor standards and establish living wages, but these practices were not fully implemented until 1995-1996. During this time, NGOs maintained persistent and steady appraisals of working conditions in and around Nike factories in order to hold the company to account for its poor treatment of workers. The campaign against Nike in Indonesia was essentially a media campaign, which operated (and continues to operate) through contacts with newspaper columnists (such as for the New York Times), magazine writers (for Harpers), TV shows, and other outlets which could be used to attract attention to the plight of Indonesian workers. US grass roots organizations were enlisted on a number of occasions to bring ex-factory workers from Nike factories in Indonesia to speak in the USA on well-advertised tours about conditions there. The primary focus on Nike, with less emphasis on Reebok and Adidas, can be explained by the fact that these three giants have accounted for over 50 percent of the global market share in sportswear apparel and footwear since the late 1990s. Nike, in particular, provided a perfect centerpiece for the anti-sweatshop campaigns since the Nike symbol was highly recognizable and the company had a popular athlete, Michael Jordon, as its spokesman.

The campaign against Nike's subcontractors in the 1990s focused almost exclusively on Indonesia. Why? Indonesia currently has the second largest number of subcontractors for Nike apparel and footwear in the world. Although China now leads the list in terms of number of subcontracting factories for Nike, Indonesia was the focus of the campaign against Nike in the 1990s for several reasons. First, much of the research which documented poor working conditions and low minimum wage compliance that fueled the campaigns had been completed by Jeff Ballinger while working for the AFL-

CIO there; there was no comparable work being done in China at that time. Second, there was significant anger directed against the foreign (primarily Korean) owners of these factories within Indonesia, which helped to fuel local concerns. The relatively more open political atmosphere (compared to China) also contributed to the ability of US groups to work with local NGOs in Indonesia. The use of the internet and email to collect information and publicize concerns cannot be underestimated.

To summarize, the "treatment" began with a series of studies on foreign and export-oriented subcontractors in Indonesia, and culminated with negative publicity regarding wages and working conditions through a variety of channels, including major newspapers, websites, speaking engagements, and television coverage. 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 2 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.

If we restrict the analysis to articles about sweatshops in Indonesia alone, the trends are very similar. In Figure 3 we computed the ratio of the number of articles on sweatshops or child labor relative to the number of articles on economic issues which appeared on Indonesia in major newspapers around the world. The trend identified in Figure 3 is quite clear: while there were no articles on these issues at the beginning of the decade, interest in sweatshop conditions rapidly increased, peaking in 1996. In 1997 there was an increasing shift in focus towards the financial crisis, which erupted at the end of 1997. Interest in child labor and sweatshop labor fell in 1997 and 1998—at least relative to other issues of economic interest--but has been increasing again in the last several years.

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. Their book makes clear that the overwhelming majority of new organizations created to address labor conditions in sweatshop industries were formed in the early 1990s. Why did interest in these issues

increase so rapidly in the mid-1990s?[5] In 1996-1997, there were a series of high profile exposes on Nike, Gap, Walmart, Disney and others. For instance, in the second quarter of 1996 the Kathie Lee Gifford sweatshop scandal was highlighted in the news. These exposes were picked up by student movements on campuses. Student groups staged protests and sit-ins and subsequently kept these issues in the news, and contributed to the creation of groups designed to respond to sweatshop problems. The convergence of high profile exposes, student activism, and the creation of new groups designed to address anti-sweatshop concerns fueled the increase in newspaper coverage. Post-1996, the shift in focus towards the Asian financial crisis contributed to a decline in interest in these issues. The student movement also weakened and moved on to other issues.

Identification Issues The identification strategy for this paper must address two problems: first, how to identify the independent impact of changes in the minimum wage; and second, how to measure the role of anti-sweatshop activism. The identification strategy for minimum wage effects exploits the fact that minimum wage increases in Indonesia were not uniform across districts. Figure 4 shows the trends in minimum wages for districts with the highest and lowest increases in minimum wages between 1985 and 1999. It is clear from the graphs that statutory minimum wages were almost flat in the second half of the 1980s, and that increases did not occur until 1989-1990, when the US government began to pressure Indonesia to improve working conditions. The figures also show that the rate of nominal increase in minimum wages varied dramatically across regions; while the minimum wage increased by almost 400 percent in district facing the lowest increase, it increased by over 1000 percent in the district facing the biggest (percentage) statutory increase. In many cases, these different trajectories for statutory wage increases occurred in neighboring districts. These divergent patterns in the statutory minimum wage did not begin until 1989 or 1990, allowing us to compare pre and post-wage increases to identify the specific impact of the minimum wage legislation.

To control for the fact that price levels may have evolved differently across different parts of Indonesia, we control for overall regional minimum wage changes and only exploit differences within the

[5] This section has benefited greatly from discussions with Kimberly Elliott, Dara O'Rourke, and Sandra Spolaski.

same region in the evolution of the minimum wage. For example, we exploit differences in the evolution of the statutory minimum wage across districts within East Java or West Java, but do not use differences between the two provinces for identification.

Our identification strategy for anti-sweatshop activism exploits the fact that activists concentrated on subcontractors for the 3 most highly visible footwear and apparel companies: Nike, Adidas, and Reebok. This means that activism was geographically concentrated in areas where these companies (or their subcontractors) operated. Nike, Adidas, and Reebok have made available on the internet all the locations of their subcontractors in Indonesia. This makes it possible to identify the specific districts in which companies targeted by activists operated in the 1990s. Consequently, our identification strategy for activism is to compare the evolution of wages and employment in textiles, footwear, and apparel factories in regions with Nike, Adidas, and Reebok operations, relative to other regions. Unfortunately, confidentiality restrictions do not permit us to identify the actual contractors in our census data. However, by comparing different factories within the same sector, we are able to control for demand or supply shocks which could affect all operations within the same industry.

To give us a preliminary indication of whether the treatment group was affected by anti-sweatshop activism, Figure 5 examines the evolution of wages for all plants with foreign ownership or export activity in the textiles, footwear, and apparel sector. The figure shows the distribution of wages for these kinds of enterprises in districts without anti-sweatshop activity and those with anti-sweatshop activity. The benefits of examining the distribution of wages across all enterprises is that we can better identify the impact on plants in the lower wage deciles.

In 1990, prior to the onset of activism, TFA plants with foreign ownership or export activity in the treated districts paid somewhat less than in other districts. The distribution of log wages was quite broad, reflecting in part the fact that there was no binding wage floor, the government's minimum wages were not particularly high, and enforcement was lax. However, by 1996, the picture had changed considerably. The wage distribution for unskilled workers is now much narrower, reflecting a squeeze on

the top and bottom parts of the wage distribution due to the minimum wage increases between 1990 and 1996.

Equally remarkable is the shift in the wage distribution for the treatment group relative to textiles and apparel firms in other districts. While plants in the treatment group were paying less than other similar plants in 1990, by 1996 the peak had shifted to the right of the control group, indicating that these firms were now paying more. Of equal interest is the shift in the lower tails of the distribution for the treatment group, relative to the control. The lower tail of the wage distribution on the left-hand side of the graph has shrunk significantly for the treatment group relative to other textiles and apparel firms with exports or foreign participation. These significant shifts in the distribution of wages are consistent with (but do not prove) increasing importance of minimum wage legislation and anti-sweatshop activity.

Framework for Estimation Figure 1 shows that as the statutory minimum wage increased, the proportion of plants paying at least the minimum declined significantly. While three-quarters of all plants paid average wages above the statutory minimum wage in their district to production workers in the mid-1980s, by 1999 only about half of all plants paid average wages that exceeded the statutory regional minimum. It is clear from Figure 1 that firms in Indonesia did not always comply with the new minimum wage legislation. Although compliance with minimum wages is typically high in developed countries today, 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.

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 if the firm fails to comply with minimum wage legislation 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 the expected value of ignoring the law exceeds the cost of complying: $E(\pi(w,r,p)) - \pi(M,r,p) = (1-\mu)[\pi(w,r,p) - \pi(M,r,p)] - \mu F > 0$. 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

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

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) which allows for region-specific effects (***r)*** suggests the following general empirical specification for an establishment i in region r and time t:

$$X_{irt} = a_1 + a_2 M_{rt} + a_3 w_{rt} + \alpha_4 G(u,F)_{it} + \alpha_5 L_{it} + \alpha_6 Z_{irt} + r_r + e_{it} \qquad (2)$$

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***, measures of the probability of detection (***u***) and penalties associated with non-compliance (***F***). 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. 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. In addition, ***w*** is also likely to be endogenous with respect to M. Consequently, we allow ***w*** to be captured by observables M, region, and industry dummies. Adding a measure of w based on wages for firms which fail to comply with the minimum wage as a proxy does not in any case affect the results reported in this paper.

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.[6] However, as human rights activism and anti-sweatshop organizations proliferated, the probability of detection and the penalty ***F*** for paying low wages or failing to adhere to the minimum wage increased, particularly for firms with high visibility such as large multinationals or well established exporters. The higher probability of detection resulted 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

[6] 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).

with labor standards. To capture the impact of anti-sweatshop campaigns on wage setting behavior, we propose making ***G(F,u)*** 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.

To capture the effect of the treatment, which in this case is the anti-sweatshop movement which focused on the highly visible companies of Nike, Reebok, and Adidas, we create a dummy variable called ***TREATMENT*** equal to one if both of the following are true:

(1) The plant was producing textiles, footwear or apparel (***TFA***) at the beginning of the period

(2) The plant operated in the districts which had subcontractors for Nike, Reebok, or Adidas.

We allow the impact of activism to vary depending on whether the subcontractor is a foreign or exporting enterprise, leading to the following specification:

$$X_{irt} = a_1 + \alpha_2 M_{rt} + b_1 EXP_{it0} + b_2 FOR_{it0} + b_3 TREATMENT_{it0} + b_4 (EXP*TREATMENT)_{it0} + b_5 (FOR*TREATMENT)_{it0} + a_4 L_{it} + \alpha_5 Z_{irt} + r_r + e_{it} \quad (3)$$

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 r_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 6 shows the share of TFA in overall production (unskilled worker) employment. Textiles, footwear and apparel employees increased from 25 percent to account for 35 percent of all unskilled workers in manufacturing employment 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 for manufacturing employment.

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 both the fact that some firms go out of business while others enter, as well as changing reporting requirements.

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 applies 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.

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 in domestic TFA and non-TFA plants was not much different at the beginning of the sample period. 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 in1996 (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 the district where the plant operated in 1996 less the log of the minimum wage in 1990. If that difference is negative, the gap is set equal to zero.

The first row includes only ownership dummies for foreign ownership, export activities, and participation in the treatment group, as well as interactions between TREATMENT, foreign ownership and export orientation. Foreign ownership, export status, and sector are defined based on the beginning of the period, to avoid endogeneity of ownership. More specifically, firms are considered to be foreign if they were at least 10 percent foreign-owned over the entire period. Firms are considered to be exporters if at least 10 percent of their sales were exported over the entire period. Initially we only include plants that were present in all years of the sample, which is necessary for long-difference estimation. The results 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, establishments in the treatment group with foreign ownership were the exception. The coefficient on treatment for foreign enterprises varies between .18 and .22. Controlling for the impact of minimum wage changes, the results suggest that wages in foreign treatment plants grew from 18 to 22 percent faster than in other plants.

The coefficient on the minimum wage, which is equal to .67 when all controls are added, suggests that a 1 percent increase in the real value of the minimum wage led to a .67 percent increase in the real unskilled wage. 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. Given a mean value of .5 for the minimum wage gap across all enterprises included in the estimation, the coefficient implies that minimum wage increases accounted for about a 35 percent increase in real wages. Columns (2) through (6) in Table 2 add a number of controls to the basic specification. In the second column we add controls for plant and worker characteristics, including log changes in real material inputs, the real value of the reported capital stock, and plant size (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 does not change the magnitude and significance of the coefficients on Foreign*TREATMENT or the minimum wage.

The next four columns add region controls, total factor productivity, technology expenditures, and output growth. There are several alternative explanations for the increase in wages for foreign enterprises: first, foreign owners may have invested in plants with higher productivity; previous studies suggest that foreign ownership is associated with higher productivity. Consequently, we redo the analysis, controlling for plant-level productivity growth, using total factor productivity growth (TFPG) as our measure of productivity. Second, 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 TREATMENT plants might have increased due to investments in new technology; adding technology expenditures controls for this possibility. The results are robust to the inclusion of all these controls.

Column (7) tests whether firms cut non-wage benefits to offset the higher wages induced by minimum wage changes and activist pressure. The results show that although foreign firms and exporters

offset wage increases with reductions in non-wage benefits, treatment firms did not. The coefficients on Foreign*TREATMENT and Exporting*TREATMENT are zero and not significant. However, exporters in general did partially compensate for higher wages by cutting non-wage benefits. Exporters cut non-wage benefits by seventy-six percent, suggesting that firms did respond to increasing minimum wages by cutting other benefits. Column (8) reports the results when wages and non-wage benefits are added together. Since wages account for most of the income for unskilled workers, the results are very similar in magnitude to those reported in the first six columns of the table.

Column (9) of Table 2 restricts the sample to large plants (with at least 100 employees) producing only textiles, apparel or footwear products. This sample allows us to compare the evolution of wages for plants of a similar size, producing the same types of goods. If unobserved output or price shocks differentially affected this sector, then we can achieve identification by only comparing plants producing the same types of goods in districts with and without Nike subcontractors. The results are robust to this additional test: again, wages in the affected districts increased by twenty percentage points more in real terms than in other districts, after controlling for minimum wage increases, plant and worker characteristics, output growth, and technical change. Finally, column (10) reports the results of estimating the same specification for non-production workers. If an unobserved positive demand shock led textile and apparel workers in the treatment districts to increase wages, we should observe the same wage increase for skilled workers in these factories. The results in column (10) show that this is not the case. There were no significant wage increases for skilled workers in exporting or foreign enterprises in treatment districts.

Table 3 presents additional robustness tests. The first three columns replace the dummy variable for textiles, apparel, and footwear (TFA) plants with other sectors, including chemical products (column (1)), wood products (column (2)), and fabricated metal enterprises (column (3)). In contrast to TFA employers in the affected districts, foreign and exporting employers from other sectors who operated in the treatment districts exhibited significantly lower wage growth than other similar plants. In column (4), we randomize the treatment districts. If the treatment district is assigned at random, instead of only

targeting those districts with Nike subcontractors, there is no longer any evidence of positive wage pressure. The coefficient on the treatment dummy, as well as the treatment interacted with foreign or exporter, is close to zero in magnitude and statistically insignificant. The first four columns of Table 3 indicate that the significant effects of activism are restricted to only plants in the textiles, apparel, and footwear industry operating in those districts where there was anti-sweatshop activity.

We perform one more test of robustness using nonlinear matching techniques. While a number of approaches are possible for estimating treatment effects using non-linear matching techniques, we adopt a procedure using nearest neighbor matching as outlined by Abadie, Drukker, Herr, and Imbens (2004). This approach allows us estimate average treatment effects of anti-sweatshop activism on wage growth, using as controls those firms which match most closely those firms that have been treated. To identify the most appropriate control group (the "nearest neighbor"), one must specify a list of covariates. For the treatment effects reported in Table 3, we included as our set of covariates all the controls reported in the first six columns of Table 2. Enterprises in the control group were matched to the treatment group on the basis of minimum wage changes, size, output growth, growth in capital stock, growth in material inputs, province, educational attainment of the work force, productivity growth, and expenditure on research and development.

It is not possible in the context of matching estimation to allow for multiple treatment effects simultaneously. Consequently, in columns (5) and (7) we estimate the impact of treatment on wage growth for foreign TFA plants in the districts with anti-sweatshop activism, but we cannot use nonlinear matching techniques to simultaneously measure the impact of foreign ownership, export activity, and treatment districts on wage growth, as we did in the OLS specifications. Nevertheless, the results in Table 2 show that the coefficients on ownership, export status and TREATMENT status alone are insignificant in explaining wage growth between 1990 and 1996 once we add the full set of controls. Consequently, estimating the impact of TREATMENT*Foreign should not be biased due to the omission of separate effects for TREATMENT or Foreign. We use the same approach in columns (6) and (8) to measure the impact of treatment on TFA exporters. The impact of activism on wages estimated using

nonlinear matching is remarkably similar to the OLS results reported in Table 2. Anti-sweatshop activism raised wages between 19 and 27 percent in real terms, which is consistent with the magnitudes reported earlier. The results are comparable whether we include all plants as possible controls (columns 5 and 6), or restrict the treatment and the control group to textiles, apparel, and footwear only (columns 7 and 8).

The results in Tables 1 through 3 suggest that wages increased systematically more for exporting and foreign TFA plants in treatment districts relative to other plants with similar characteristics. In addition to the 35 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 a more than 50 percent increase in real wages and a doubling in nominal wages for unskilled workers in targeted exporting or foreign plants (see Appendix Table 1.A for real versus nominal values). Below, we explore whether these wage gains had other possibly adverse effects. For example, these wage gains may have led to employment losses and falling investment, or caused plants to shut down operations in Indonesia.

IV Other Outcomes: Employment, Profits, Investment, Entry and Exit

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 changed 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 this 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. Rama (1999) and SMERU (2001) also 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 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.

In Table 4, we repeat the type of analysis presented in Table 1 and 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 for multinationals and exporters in the treatment group led to employment declines. The coefficients on Foreign*TREATMENT and Exporting*TREATMENT are positive and sometimes significant. 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 generally higher for exporters and foreign enterprises, including those operating in districts where anti-sweatshop activists targeted Nike, Reebok, and Adidas subcontractors.

However, the results in Table 5 show a robust and negative impact of the minimum wage increase on employment growth. In column (1), the coefficient on the minimum wage increase is -.14, which suggests that a 100 percentage point increase in the minimum wage would be accompanied by a 14 percentage point decline in employment. The different specifications presented in columns (2) through (7) suggest that a 100 percentage point increase in the real minimum wage would be accompanied by employment declines of 12 to 18 percent. In light of the fact that mean increase in the real minimum wage gap for the plants included in the sample was over 50 percent, these employment responses represent very important effects. The only enterprises not affected by the rising minimum were small plants, defined as enterprises with fewer than 100 employees, where rates of compliance with the legislation were much lower. The significant negative impact on employment for larger enterprises needs to be seriously considered in any campaign to increase the mandated minimum wage or to increase compliance with the minimum wage.[7]

As a final check, we redo the analysis of employment using annual data instead of the long difference panel. We include both the balanced panel (in column (9)) and the unbalanced panel (column(8)). 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 suggest that while minimum wage increases generated employment losses across all of manufacturing, anti-sweatshop activism targeted at textiles, apparel, and footwear did not. Trends in aggregate employment for TFA and non-TFA firms confirm this. In Figure 7, we show total unskilled

[7] 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.

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.

Output Growth, Investment, Productivity, and Profits The evidence in Tables 1 through 5 points to strong positive effects of anti-sweatshop campaigns on wage growth for production workers, with no adverse consequences for employment. If wages grew but employment was unaffected, we would expect that output would not have been affected either. We would, however, expect profits to be adversely affected. Table 6 shows that this is the case. While output growth for the treatment group was not significantly different than other enterprises, profits were significantly and negatively affected. Growth in profitability for foreign textiles and apparel firms in the treatment districts was 14 to 16 percentage points (of value-added) lower than for other similar plants. Lower growth in profits appeared to be linked to lower growth in capital stock, at least for foreign TFA plants in treatment districts. These same plants also exhibited lower productivity growth.

The last two columns of Table 5 seek to disentangle the extent to which the treatment group was associated with higher wage growth simply because those firms exhibited higher compliance with the rising minimum wage. To do this, we add a triple interaction term between foreign, TREATMENT, and the minimum wage gap. If all of the impact of activism was to increase compliance with the minimum wage, then this interaction term should capture that effect and the coefficient on foreign*TREATMENT should become small in magnitude and insignificant. The results in column (9) show that this is not the case. The coefficient on foreign*TREATMENT remains significant and the magnitude does not change, indicating that there is an independent impact of activism on wage growth apart from minimum wage compliance. Although the coefficient on the triple interaction is large in magnitude, it is not significant, indicating that there was also likely to have been higher compliance with the existing minimum wage associated with treatment. In column (10) we add the triple interaction to the standard employment

regressions from Table 5. Again, the inclusion of the additional term does not affect the results, suggesting that while activism was associated with additional wage growth it was not associated with greater employment declines, or with falling employment stemming from more vigilant compliance with the minimum wage.

Exit and Entry Finally, in Table 7 we explore whether the pressures imposed by anti-sweatshop activists have induced more firms to close down operations and exit the sector or discouraged entry. 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 1988 through 1996. If the pressures imposed by either higher minimum wages or anti-sweatshop activities led to higher exit or relocation abroad, then 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 of the likelihood of exit reported in column (1) of Table 7. For the whole sample, there is no evidence that exporters or foreign firms in districts with anti-sweatshop activism are more likely to shut down. In fact, foreign plants in general are less likely to exit. Foreign plants producing textiles and apparel sectors and located in the treatment districts are also less likely to exit: 2 percent less likely than other plants. These lower probabilities of exit for foreign enterprises are consistent with the unconditional exit probabilities depicted in Figure 8, which do not control for plant characteristics. However, higher minimum wages did increase the probability of exit, with a 10 percent increase in the real minimum wage leading to a higher probability of plant exit by .8 percent.

In a recent paper, Bernard and Sjoholm (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, changing the composition of the sample in favor of larger plants, which are less likely to exit. One possibility is that exporters and foreign plants in textiles and apparel are less likely to exit because they are significantly larger than other plants. To address this possibility, in the second column we only include plants with at least 100 workers. The coefficients are unaffected; foreign firms in the

treatment group were significantly less likely to exit during the sample period. Minimum wages have about the same impact as before, raising exit probabilities significantly.

Interestingly, our results are somewhat different from Bernard and Sjoholm (2004), who find that foreign plants in Indonesia are more footloose than other plants. Our results suggest that foreign plants are *less* footloose. This could be because the number of foreign enterprises in Indonesia in the 1980s—Bernard and Sjoholm 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 column (3) we turn to an analysis of plants with less than 100 employees. In general, small exporters are 4 percentage points more likely to exit than small large firms. However, there is no evidence that smaller plants operating in districts with anti-sweatshop activism were more likely to close. In columns (4) and (5), we restrict the sample to plants producing only textiles, footwear and apparel. The results are unaffected. The next 5 columns remove controls for worker characteristics. Since worker characteristics are only recorded for three years in the 1990s, including worker characteristics restricts the sample to firms that either do not exit or that exit after 1995, when worker characteristics were first recorded. In this larger sample, the evidence is consistent with lower probability of exit for foreign enterprises, including both TFA and non-TFA foreign plants. While all foreign enterprises were less likely to exit than other enterprises during the sample period, foreign TFA plants operating in districts with anti-sweatshop activity where even less likely to exit than other foreign plants. These results are again consistent with the unconditional exit probabilities evident for plants with foreign participation, as indicated in Figure 8.

However, in this larger sample, the evidence is consistent with higher exit probabilities for exporters in the treatment group. While exporters in general were not more likely to exit, exporters operating in the treatment districts were significantly more likely to exit, with a 3 percent higher probability of exiting compared to other enterprises. If the sample is restricted to exporters with fewer than 100 employees, the differential is even larger. Exporters of textiles and apparel products in the

treatment districts were 10 percent more likely to exit during this period, a significantly higher probability of exit which is consistent with the unconditional exit probabilities depicted in Figure 8.

One possibility is that TFA exporters are simply are more volatile, exhibiting higher rates of entry as well. Figure 9 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 9, 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. Other probit regressions (not shown) confirms that there was less entry into textiles and apparel, particularly among exporters. If entry fell and exit rates rose for exporting 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.

V. Conclusion

During the 1990s, anti-sweatshop activists increased their efforts to improve working conditions and raise wages for workers in developing countries. Indonesia, which had more Nike subcontractors than any other country apart from China, was a primary target for these activists. At the same time, the Indonesian government (prompted by the U.S. government) greatly increased the minimum wage throughout Indonesia. This paper analyzes the impact of these two different types of interventions on labor market outcomes in Indonesian manufacturing. The results suggest that the more than doubling of the real value of the minimum wage resulted in a 35 percent increase in real wages for unskilled workers between 1990 and 1996. The anti-sweatshop campaigns also had a significant impact on wages. Our

research suggests that unskilled real wages increased by an additional 20 percent for exporters and multinational plants in sweatshop industries, defined as textiles, footwear, and apparel (TFA).

The combined effects of the minimum wage legislation and the anti-sweatshop campaigns led to more than a 50 percent increase in real wages and a doubling of 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.[8] We examine 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. Surprisingly, however, anti-sweatshop activism did not have significant adverse effects on employment in the TFA sectors. The fact that wages soared and employment remained steady in textiles and apparel suggests that the anti-sweatshop movement had a positive impact on workers in these factories. The different impact of these two approaches to addressing labor market conditions suggests that anti-sweatshop activism in Indonesia was a "win-win" situation. Despite the rising labor costs during this period, increased market demand for textile, footwear, and apparel products led to net employment increases in foreign and exporting firms.

Since our study focuses on a relatively small time period, such gains could be temporary. Foreign firms such as Nike have already begun shifting production to other low-wage countries throughout Southeast Asia, such as China, Vietnam, and Cambodia. It also remains an open question as to whether activism targeted at other sectors in Indonesia could be as successful. Wages in apparel and garment factories were very low prior to the onset of the anti-sweatshop campaigns. This meant that subcontractors for Nike were able to implement significant wage increases before even approaching the average wages across the Indonesian manufacturing sector. One implication is that anti-sweatshop activists correctly targeted some of the lowest paid workers in the country. Another key consideration is

[8] 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. The internet link is http://cbae.nmsu.edu/~dboje/NIKfaqcompensation.html This interview with Nike is from 1998, but is no longer part of Nike's "official" website.

that many of the goods produced in Indonesia's TFA sectors ultimately end up in expensive retail markets in the U.S. and the EU, where profit margins are relatively large, brand identity is paramount, and the firms clearly have the financial resources with which to improve both labor conditions in their factories[9]. In industries where more firms compete for market share, where profit margins are smaller, and there is no brand recognition, anti-sweatshop campaigns may not be as effective.

[9] One only needs to witness the many millions of dollars Nike has spent on trying to improve worker conditions as well as the money it has spent on public relations campaigns to improve its image. Nike employs 85 people full-time

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to maintain Nike's compliance with environmental and labor standards in the countries where Nike operates and Nike workers inspect apparel and footwear factories on a daily or weekly basis (Locke 2003).

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

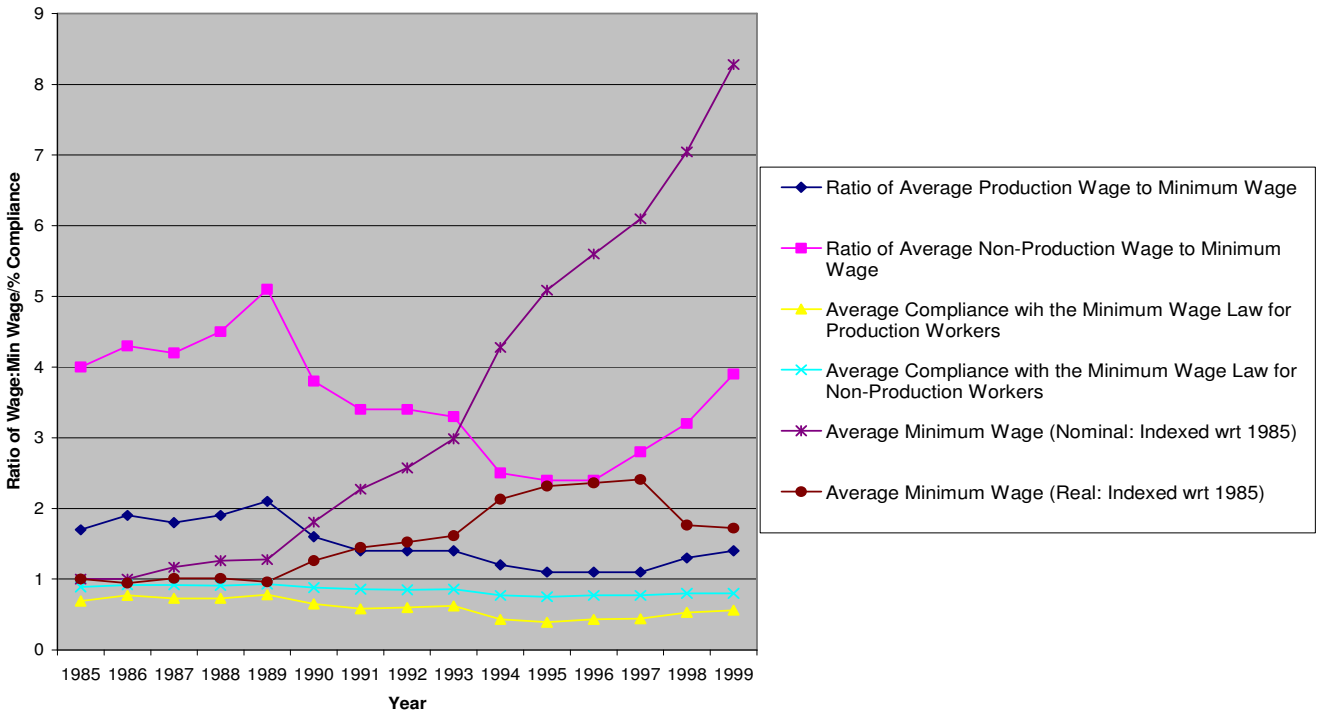


Figure 2: Articles about "sweatshops" and "child labor" in Major Newspapers 1990-1999

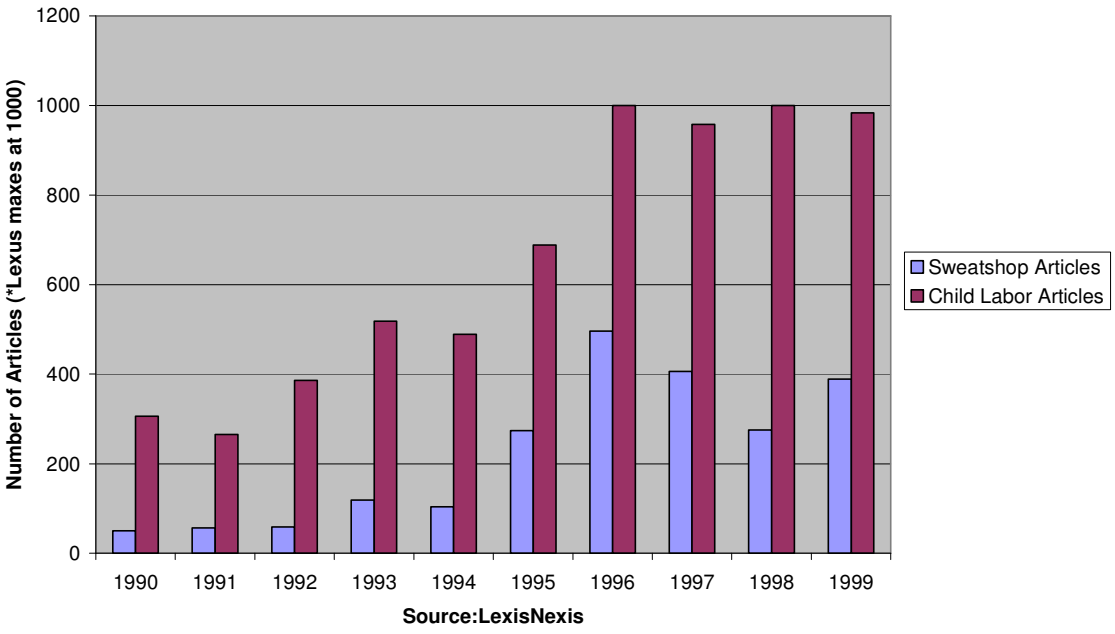
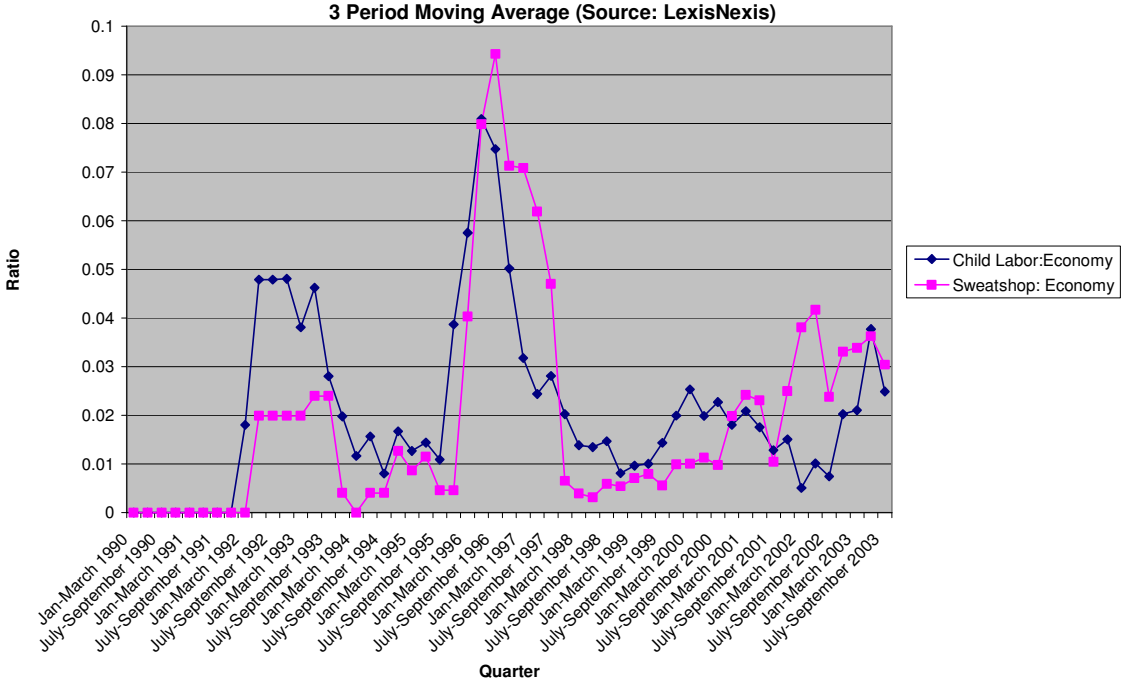
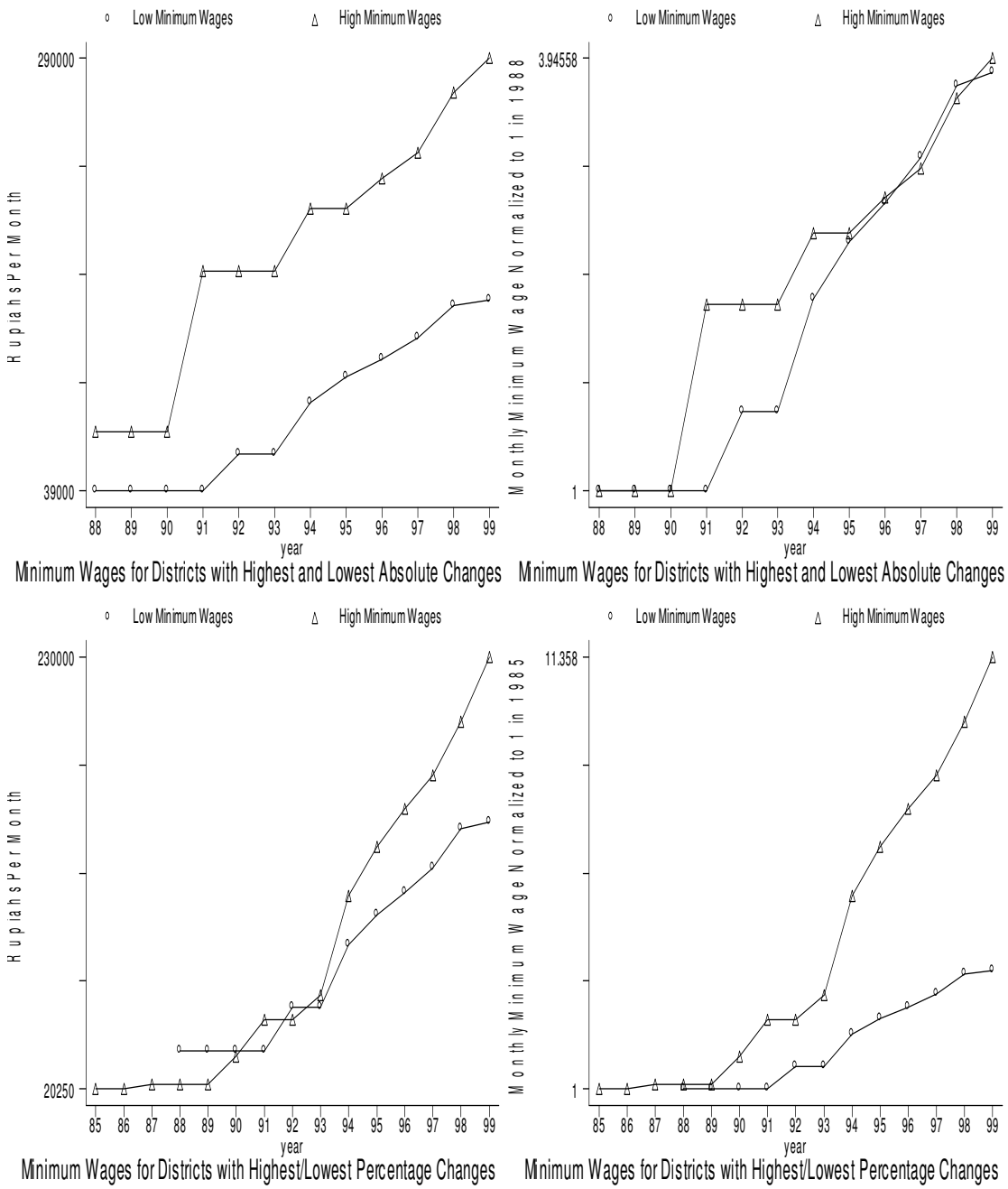


Figure 3: Percentage of Articles on Sweatshops or Child Labor in Indonesia Relative to all Other Articles on the Indonesian Economy in the NYT
3 Period Moving Average (Source: LexisNexis)





Trends in the Statutory Minimum Wage Across Four Districts

Figure 4: Trends in the Indonesian Minimum Wage
In Low and High Minimum Wage Disticts

Figure 5: Wage Distributions in Foreign and Exporting Firms in Treatment and Non-Treatment Districts

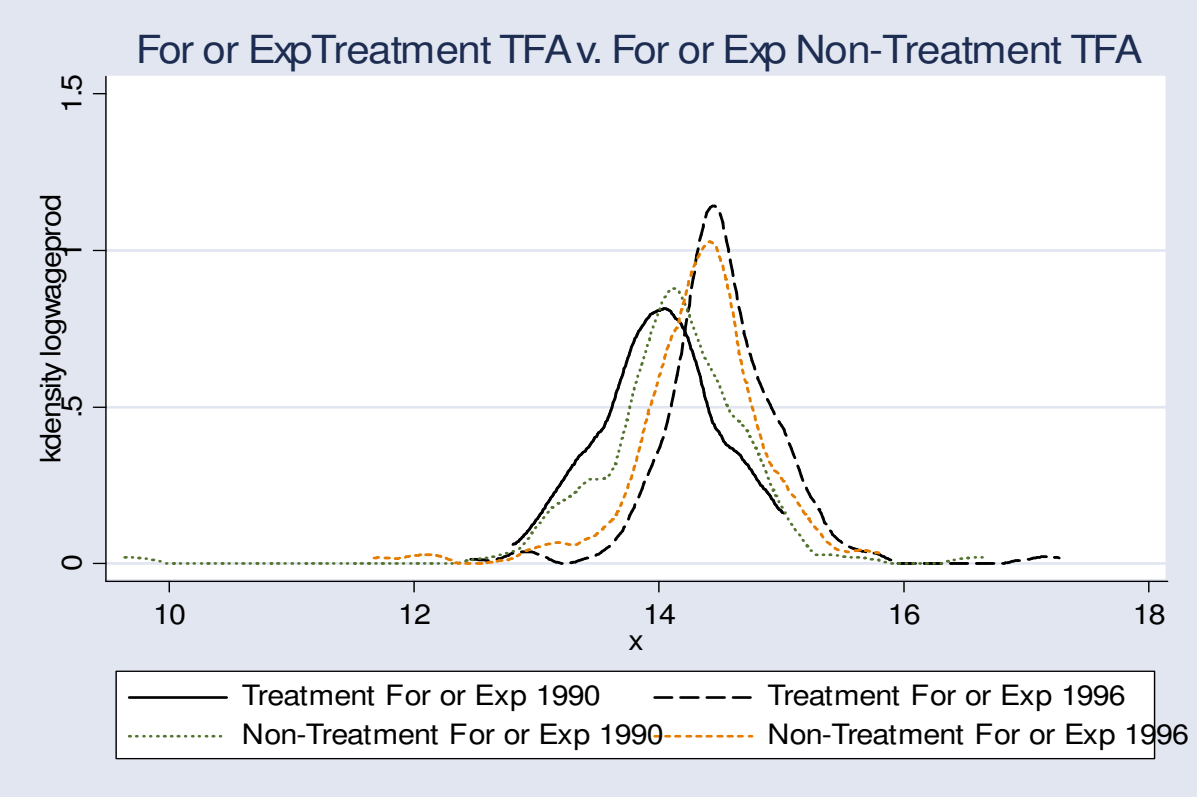


Figure 6: Share of Total Production Workers Employed in Foreign and Exporting TFA in Indonesia 1988-1996

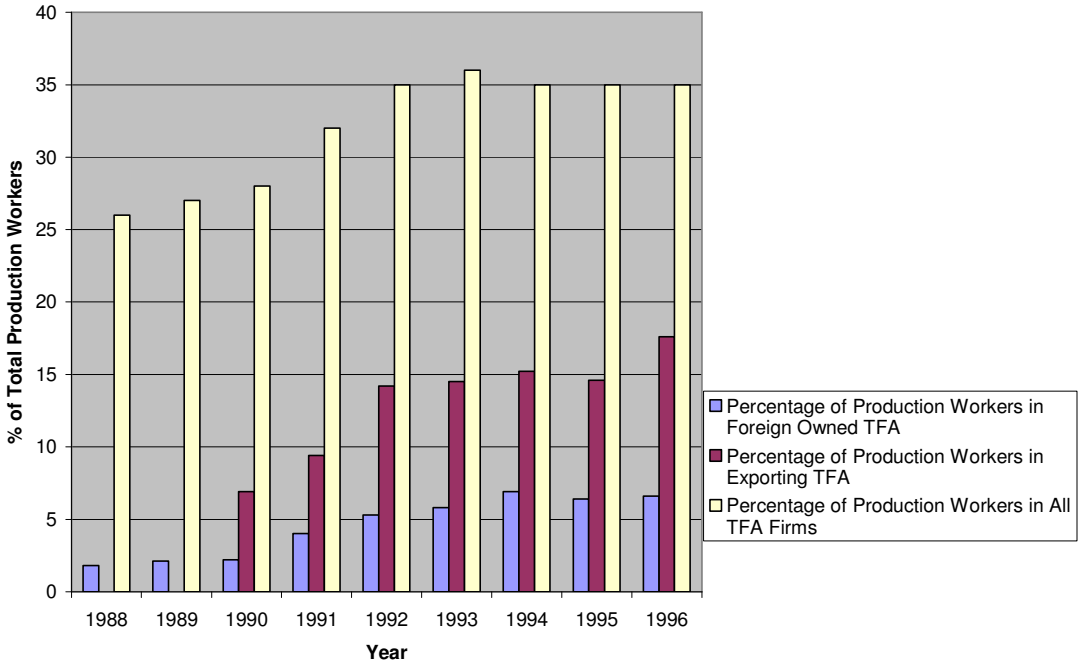


Figure 7: Total Production Worker Employment 1988-1999

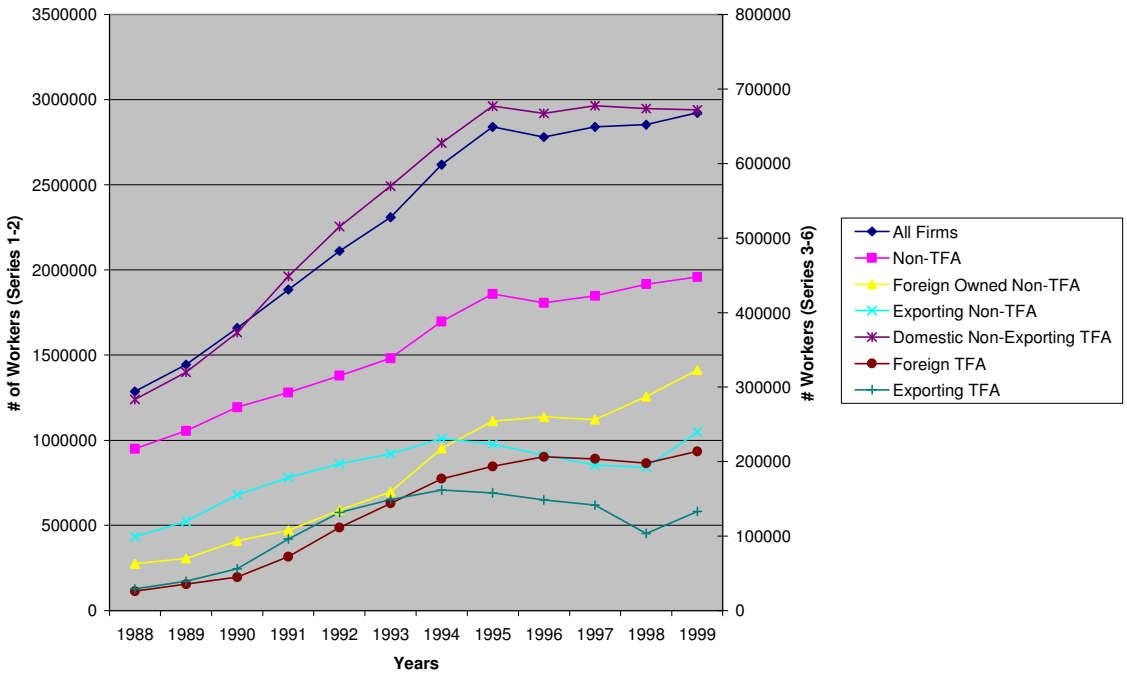


Figure 8: Percentage of Firms Exiting in Years 1988-1999

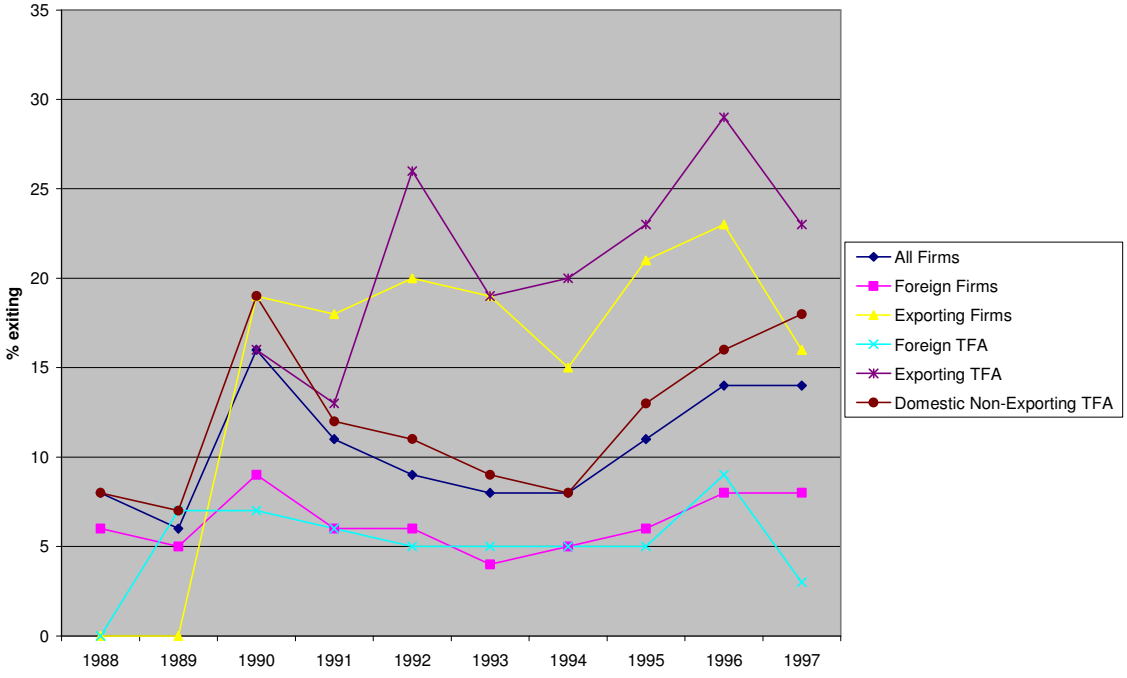


Figure 9: Percentage of Firms Entering In Years 1989-1997

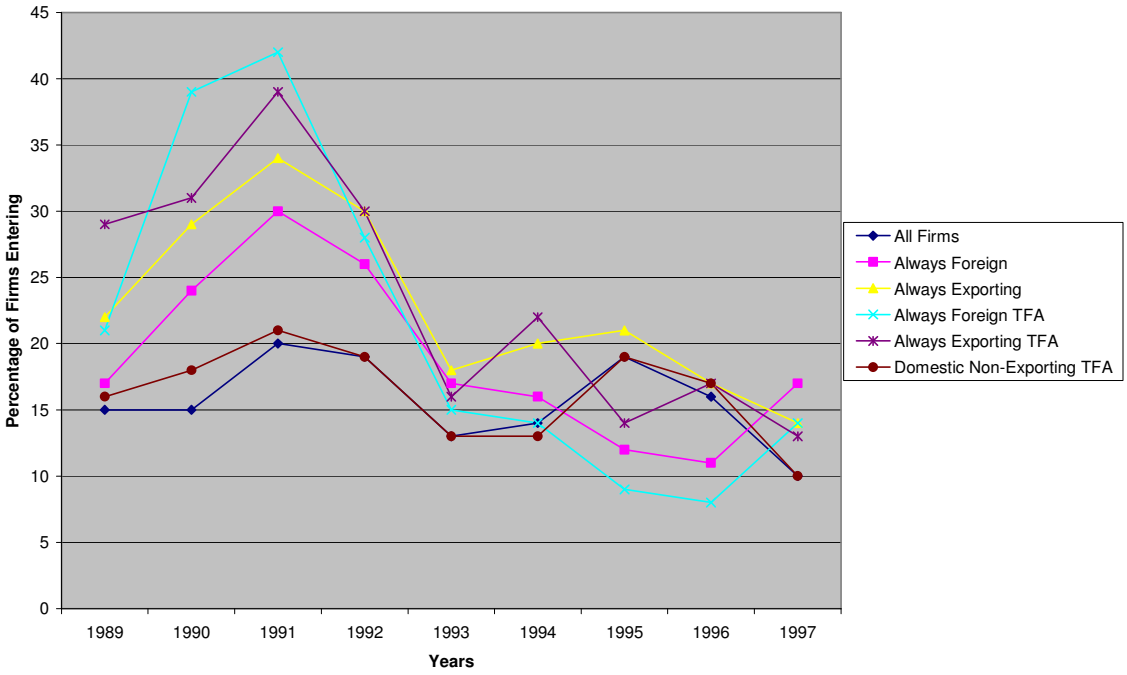


Table 1A: Average Production Worker Wages per Establishment in 1990 and 1996
In Thousands of 1996 Indonesian Rupiahs (Standard Errors in ())

	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 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
OLS Long Difference-in-Differences Estimation: Regressing Production Worker Wage Differences for 1990-1996 on the Minimum Wage Gap, Plant Characteristics, and Other Controls

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

	(1) Ownership Dummies Only	*(2) With Plant and Worker Controls*	*(3) With Region Controls added to (2)*	*(4) With TFPG growth added to (3)*	*(5 Adding Techno-logy Spending to (4)*	*(6) Adding output growth to other controls*	*(7) Dependent variable is non-wage benefits*	*(8) Dependent Variable is wages plus non-wage Benefits, All Controls*	*(9) All textiles, apparel and footwear firms with at least 100 employees*	*(10) Dependent Variable is non-prod wages*
Foreign (a)	0.093	0.033	0.077	0.082	0.060	0.059	0.042	.060	0.026	0.042
	(1.80)	(0.52)	(1.18)	(1.30)	(0.94)	(0.97)	(0.14)	(1.24)	(0.34)	(0.53)
Exporter (b)	-0.046	-0.041	-0.024	-0.027	-0.038	-0.041	-0.762	-.040	-0.045	-0.118
	(1.10)	(1.02)	(0.47)	(0.55)	(0.75)	(0.80)	(3.18)**	(-.64)	(0.88)	(3.12)**
TREATMENT (c)	0.029	0.011	0.032	0.027	0.030	0.031	-1.560	-.010	0.012	0.155
	(0.61)	(0.20)	(1.03)	(0.88)	(0.98)	(0.97)	(2.48)*	(-.20)	(0.15)	(4.60)**
Foreign* TREATMENT	0.146	0.216	0.192	0.189	0.210	0.196	0.000	.180	0.212	0.126
	(2.66)*	(3.32)**	(3.33)**	(3.22)**	(3.39)**	(3.06)**	(0.0)	(3.73)**	(2.08)*	(0.65)
Exporting* TREATMENT	0.080	0.079	0.063	0.068	0.074	0.077	0.000	.074	0.064	0.001
	(1.74)	(1.04)	(0.79)	(0.87)	(0.99)	(1.11)	(0.0)	(.84)	(0.73)	(0.00)
Minimum Wage (d)	0.542	0.504	0.662	0.658	0.672	0.670	-0.353	.670	0.670	0.155
	(9.71)**	(10.11)**	(7.48)**	(7.45)**	(7.60)**	(7.54)**	(1.74)	(7.47)**	(8.67)**	(3.59)**
Constant	0.001	0.063	0.185	0.145	0.124	0.086	0.919	.350	-1.325	0.356
	(0.06)	(3.40)**	(4.52)**	(3.58)**	(3.33)**	(2.23)*	(4.15)**	(7.20)**	(5.14)**	(19.63)**
Obs	6165	6165	6165	5920	5920	5920	5099	5099	535	5099
R-squared	0.11	0.20	0.22	0.22	0.23	0.23	0.39	.25	0.27	0.08

Robust t statistics in parentheses, with * indicating significance at 5 % and ** indicating significance at 1 %.

(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 in a district where Nike/Reebok/Adidas subcontractors operate.

(d) Defined as the log of the minimum wage in 1996 less the log of the minimum wage in 1990, unless the plant pays above the 1996 minimum wage in 1990, in which case the minimum wage change is set equal to zero.

Table 3

Additional Tests of Robustness: Substituting Different Treatment Groups and Matching Estimators

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

	Tests of Robustness: Switching from Textiles, Footwear, and Apparel to Other Industrial Sectors or Districts				*Tests of Robustness: Estimating Average Treatment Effect Using Matching Estimators for Treatment*			
	(1) Chemical Products as Treatment	(2) Wood Products as Treatment	(3) Fabricated Metals as Treatment	(4) Randomizing Districts with Treatment	(5) All Plants	(6) All Plants	(7) Textiles, Apparel, and Footwear Only	(8) Textiles, Apparel, and Footwear Only
Foreign	0.081	0.086	0.092	0.084	--	--	--	--
	(1.16)	(1.19)	(1.29)	(1.23)				
Exporter	-0.022	-0.017	-0.022	-0.022	--	--	--	--
	(0.61)	(0.50)	(0.62)	(0.61)				
TREATMENT	0.079	0.267	0.099	0.001	--	--	--	--
	(2.92)**	(9.39)**	(2.89)**	(0.05)				
TREATMENT *Foreign	0.002	-0.009	-0.263	0.007	0.274	--	0.201	--
	(0.02)	(0.03)	(3.19)**	(0.10)	(2.23)**		(1.8)	
TREATMENT* Exporting	-0.206	-0.460	-0.411	-0.063	--	0.219	--	0.190
	(3.19)**	(4.07)**	(7.70)**	(0.84)		(2.11)**		(2.11)**
Observations	5920	5920	5920	5920				
R-squared	0.23	0.23	0.23	0.23				

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%

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

	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 columns(1)-(7) and First Differences for columns (8)-(9)

	(1) Adding Plant and Worker Controls	*(2) Adding Productivity Growth to (3)*	*(3) Adding Technology Investments and Output Growth to (2)*	*(4) All Controls, Small Firms Only*	*(5) All Controls, Large Firms Only*	*(6) Only Textiles, Apparel, and Footwear*	*(7) Only Large Textiles, Apparel, and Footwear*	*(8) First Differences, All Firms*	*(9) First Differences, Balanced Panel*
Foreign (a)	0.030	0.018	0.009	0.062	-0.011	-0.051	-0.149	0.033	0.011
	(1.27)	(0.62)	(0.37)	(0.72)	(0.44)	(1.40)	(33.1)**	(4.81)**	(1.63)
Exporter (b)	0.055	0.053	0.030	0.049	0.011	0.091	0.067	0.007	0.002
	(1.82)	(1.73)	(1.07)	(0.51)	(0.34)	(1.73)	(1.83)	(1.31)	(0.37)
TREATMENT (c)	0.007	0.011	0.013	0.017	-0.003	0.015	-0.024	0.006	0.003
	(0.31)	(0.55)	(1.17)	(0.21)	(0.37)	(0.52)	(0.85)	(1.43)	(0.92)
TREATMENT* Foreign	0.111	0.119	0.034	0.000	0.044	0.087	0.134	-0.013	0.003
	(2.14)*	(2.18)*	(1.16)	(0.0)	(1.59)	(2.17)*	(7.17)**	(1.58)	(0.42)
TREATMENT* Exporting	0.173	0.166	0.158	0.000	0.165	0.095	0.082	0.026	0.035
	(5.02)**	(5.07)**	(4.92)**	(0.0)	(5.40)**	(1.33)	(1.49)	(2.95)**	(5.51)**
Change in Minimum Wage (d)	-0.141	-0.131	-0.124	-0.021	-0.118	-0.184	-0.134	-0.047	-0.051
	(8.59)**	(8.04)**	(9.39)**	(0.80)	(8.67)**	(5.31)**	(7.75)**	(7.23)**	(3.37)**
Observations	6165	5920	5920	905	5015	1123	535	68875	33302
R-Square	0.24	0.25	0.34	0.21	0.34	0.48	0.54	0.19	0.15

Robust t statistics in parentheses, with * indicating significance at 5 % and ** indicating significance at 1 %.
(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 in a district where Nike subcontractors operate..
(d) Defined as the log of the minimum wage in 1996 less the log of the minimum wage in 1990, unless the plant pays above the 1996 minimum wage in 1990, in which case the minimum wage change is set equal to zero.

Table 6
The Impact of Treatment on Other Outcomes (Output Growth, Change in Capital Stock, TFPG, and Profits)

Dependent Variable indicated in columns:

	(1) Output Growth	*(2) Output Growth (Textiles, Apparel, and Footwear Plants Only)*	*(3) Growth in Capital Stock*	*(4) Growth in Capital Stock (Textiles, Apparel, and Footwear Plants Only)*	*(5 TFPG*	*(6) TFPG (Textiles, Apparel, and Footwear Plants Only)*	*(7) Change in Profits*	*(8) Change in Profits (Textiles, Apparel, and Footwear Plants Only)*	*(9) Dependent Variable is Change in Log Wage, with Triple interaction Added*	*(10) Dependent Variable is Change in Log Employment, with Triple interaction Added*
Foreign (a)	0.241	0.334	0.388	0.121	-0.008	0.157	0.018	0.000	.059	.015
	(2.24)*	(2.47)*	(6.70)**	(0.70)	(0.23)	(3.54)**	(1.45)	(0.0)	(.060)	(.025)
Exporter (b)	0.057	0.033	-0.038	0.156	-0.012	-0.022	-0.013	0.003	-.041	.029
	(0.80)	(0.19)	(0.61)	(1.62)	(0.73)	(0.32)	(-1.74)	(0.10)	(.051)	(.026)
TREATMENT	-0.065	0.078	0.074	0.176	0.005	0.044	0.030	0.031	.030	.015
(c)	(0.80)	(0.91)	(1.68)	(2.83)*	(0.38)	(1.64)	(3.20)**	(7.18)**	(0.96)	(.014)
Foreign *	0.157	0.093	-0.275	0.020	0.008	-0.155	-0.141	-0.124	0.202**	.026
TREATMENT	(1.57)	(0.70)	(-4.26)**	(0.12)	(0.21)	(-3.04)**	(-7.65)**	(-4.33)**	(.068)	(.032)
Export *	0.335	0.309	0.204	-0.024	0.012	0.020	-0.019	-0.030	-0.35	.293**
TREATMENT	(2.07)	(1.09)	(1.12)	(0.10)	(0.26)	(0.22)	(-0.69)	(-0.94)	(.061)	(.094)
Foreign* TREATMENT* Change in Minimum Wage (d)	-	-	-	-	-	-	-	-	.142 (.095)	-.169 (.105)
Observations	6165	1173	6165	1173	5920	1123	4854	898	5920	5920
R-squared	0.03	0.09	0.03	0.10	0.02	0.03	0.01	0.05	0.22	0.32

Robust t statistics in parentheses, with * indicating significance at 5 % and ** indicating significance at 1 %.

(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 in a district where Nike/Reebok/Adidas subcontractors operate..

(d) Defined as the log of the minimum wage in 1996 less the log of the minimum wage in 1990, unless the plant pays above the 1996 minimum wage in 1990, in which case the minimum wage change is set equal to zero.

Table 7

Determinants of Exit: Probit Regressions,
1988-1996 (Coefficients are Derivatives)

	Includes Controls for Educational Attainment of Employees					Excludes Controls for Educational Attainment of Employees				
	(1) All Firms	(2) Large Firms Only (at least 100 employees)	(3) Small Firms Only (less than 100 employees)	(4) Only Textiles, Apparel, and Footwear	(5) Only Large Textiles, Apparel, and Footwear	(6) All Firms	(7) Large Firms Only (at least 100 employees)	(8) Small Firms Only (less than 100 employees)	(9) Only Textiles, Apparel, and Footwear	(10) Only Large Textiles, Apparel, and Footwear
Foreign	-0.009	-0.002	-0.015	-0.006	0.000	-0.042	-0.018	-0.049	-0.059	-0.032
	(2.57)*	(0.62)	(2.20)*	(1.57)	(0.02)	(7.98)**	(3.53)**	(6.48)**	(8.34)**	(4.80)**
Exporter	0.005	-0.001	0.034	0.001	0.000	-0.031	-0.022	0.009	-0.026	-0.009
	(0.72)	(0.26)	(3.12)**	(0.10)	(0.02)	(2.49)*	(2.15)*	(0.53)	(1.24)	(0.93)
TREATMENT	0.004	0.012	-0.004	-0.006	-0.000	0.006	0.021	0.001	-0.018	0.002
	(0.91)	(6.02)**	(0.69)	(0.83)	(0.13)	(0.61)	(3.27)**	(0.05)	(0.90)	(0.18)
Foreign* TREATMENT	-0.017	-0.016	..	-0.021	-0.016	-0.030	-0.033	..	-0.015	-0.029
	(2.35)*	(3.89)**		(1.84)	(2.43)*	(1.87)	(2.94)**		(0.72)	(2.00)*
Exporting* TREATMENT	-0.002	-0.002	0.006	0.005	0.001	0.036	0.018	0.098	0.031	0.002
	(0.33)	(0.31)	(0.48)	(0.32)	(0.08)	(2.30)*	(1.56)	(2.87)**	(1.28)	(0.16)
Change in Minimum Wage	0.071	0.055	0.081	0.082	0.052	0.075	0.066	0.073	0.063	0.057
	(2.48)*	(3.03)**	(2.31)*	(2.39)*	(2.88)**	(3.15)**	(2.87)**	(3.22)**	(2.42)*	(2.12)*
Observations	81840	28438	53219	15847	7004	92907	30904	61968	18260	7653

Robust z statistics in parentheses. A "*" indicates significance at 5%; ** significance at the 1% level. Reported coefficients are the change in the probability of exit, evaluated at the sample mean. All specifications include the full set of controls from the previous tables.

Appendix Table 1: Mean Minimum Wage and Selected Wages for Indonesia 1988-1999

						a. Non-TFA Wages		b. TFA Wages (Production Workers Only)		
Year	CPI_{96}	MW_{Nom}	MW_{96}	$MW_{\$US}$	(ru/$)	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 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
All wages are annual means