

Globalization and Working Conditions:  
A Guideline for Country Studies

Raymond Robertson  
Associate Professor of Economics  
Macalester College

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## Introduction

Globalization -- defined as falling barriers to, and the increase in, trade, migration, and investment across borders -- directly affects workers in both developed and developing countries. While most global trade and investment is between the developed countries, globalization has increased dramatically in a number of developing countries. According to the World Development Indicators database, the ratio of trade in goods to gross domestic product (GDP) in the low and middle income countries increased from 33.6% to 54.7% between 1990 and 2003. In some countries, these changes have been especially large. In Cambodia, this ratio went from 22.4% to 80.5% over the same time period. Changes in foreign direct investment (FDI) have also been significant. For South and East Asia, the ratio of inward FDI to GDP increased from 9.3% to 26.8% between 1990 and 2003. As with trade, changes in FDI varied a great deal across countries. In Indonesia, this ratio rose from 7.7% in 1990 to 32.7% in 1998, but fell back to 5.0% by 2003.<sup>1</sup> These dramatic changes hold both promise and peril for workers in developing countries.

Understanding the effects of globalization is critical for governments concerned about employment, working conditions, and, ultimately, poverty reduction. Broadly defined, working conditions includes wages and other key job characteristics including (but not necessarily limited to) health and safety, hours, security, benefits, and representation.<sup>2</sup> These conditions have direct and indirect effects on the risk of falling or staying in poverty.

Unfortunately, there are few studies that systematically evaluate the effects of globalization and working conditions either within or across countries. Brown (2007) reviews the literature related to globalization and working conditions. Several conclusions emerge from her review. First, existing evidence is somewhat inconclusive. Although little evidence of a “race to the bottom” in terms of labor protections has been found in the literature, FDI is linked to higher wages at the firm level and rising wage inequality in both developed and developing countries. These results are mostly based on cross-section data and have been challenged by recent studies that use longitudinal firm-level data. The latter suggest that following liberalization, FDI-linked firms may actually lower wages.

Second, case studies are suggestive but are difficult to compare across countries. The few case studies that exist suggest that monitoring plays a significant role in firm-level working conditions, and that code compliance can improve factory performance. One of the main problems, however, is that labor markets do not function perfectly, and that imperfect labor markets may prevent rather than enhance a positive link between working conditions and globalization. Other studies suggest that trade may be linked to falling child labor. Overall, however, these case studies are often difficult to compare

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<sup>1</sup> The fall in FDI relative to GDP was mostly due to a fall in FDI rather than an increase in GDP.

<sup>2</sup> In addition to the Core Labor Standards established by the International Labor Organization (ILO), Elliott and Freeman (2003) also list dark, crowded, hot, noisy workplaces, no emergency exits or fire extinguishers, inadequate or no time to go to the toilet, no canteen or place to eat, abusive supervisors who strike young workers, below-minimum wage payments, absence of written contracts, compulsory overtime, sexual or other harassment of workers, and late or short wage payments among other concerns about working conditions in developing countries.

across countries because the interactions between local policies and globalization factors are difficult to separate when looking at a subset of firms within particular countries.

Her most important conclusion, however, may be that there are very few (if any) systematic cross-country comparisons of the relationship between globalization and working conditions. The framework in this paper offers some suggestions for filling this gap. The goal of this framework is to provide a systematic way to analyze the link between globalization and working conditions within and between developing countries.

This framework makes several contributions. First, how globalization affects employment and working conditions depends on many factors. Often the most difficult aspect of studying the effects of globalization on working conditions is defining both 'globalization' and 'working conditions.' Therefore, Section 1 presents a structure for categorizing the various facets of globalization by carefully defining various aspects of globalization. How one defines globalization will shape how one thinks about globalization's effects on working conditions and, therefore, the appropriate way to study the link between them. Along the same lines, Section 2 carefully defines working conditions. As with globalization, how one defines working conditions affects one's choice of approach.

Section 3 contains a very general theoretical framework that links the various measures of globalization and the various measures of working conditions. Along the way, the paper also discusses how previous studies have approached the issue and what these studies reveal about the effects of globalization on working conditions in developing countries.

Section 4 contains a step-by-step approach to implementing a study of working conditions in developing countries by applying the framework defined earlier in the paper. This section includes a discussion of appropriate data, methodology, and critical estimation issues that should be incorporated into an effective study. The goal of this section is to facilitate the application of this approach to generate high-quality studies that will expand our understanding of how globalization affects workers in developing countries.

During 2006-2007, four research teams applied this framework to Cambodia, El Salvador, Honduras, and Indonesia. Section 5 concludes the framework by reflecting on some of the lessons learned from these studies, and offers some suggestions for future research.

## 1. Defining Globalization

The goal of this section is to identify and describe the different relevant aspects of globalization so that the appropriate one(s) may be selected for empirical analysis. The first step in studying the effects of globalization is to carefully identify the mechanism of globalization and understand how it is affected by policy and global trends. The term "globalization" could be described as the transmission of ideas across borders, the intermingling of culture, and questions of identity. For most economic applications, "globalization" is defined as trade, migration, or foreign investment. Of these three, trade and foreign investment are the ones that have been most liberalized in the current wave of globalization. Therefore, for the rest of this paper, we focus on these two.

The second step is to understand the nature of changes in globalization. The speed and dimension of globalization are both relevant to understanding how globalization affects workers. The section below therefore discusses aspects of trade, foreign investment, and kinds of liberalization.

## 1.1 Trade

Globalization is often primarily thought of as occurring through imports and exports of goods. Trade liberalization generally involves reducing tariffs, quotas, and other barriers that are primarily designed to reduce imports. Exports may increase if trading partners lower barriers or as a result of a domestic export-promotion policy.

Services are playing an increasingly important role in international trade. Services generally fall into two categories: professional services (insurance, banking, and accounting) and less-skill-intensive services (personal services). The rise in trade in services has increasingly been in professional services. Often the concerns of working conditions are less relevant for professional services than manufacturing. In addition, governments are only now starting to collect data on trade in services. Therefore, while services are important, most studies have focused on trade in goods and the remainder of this paper will maintain that focus. Imports, exports, intra-industry trade and total trade may each have different effects on workers, so we consider each in turn.

### 1.1.1 Imports

Usually, the main concern with imports is that they increase competition for domestic firms. Facing increased competition, domestic firms may feel pressure to lower costs. Lowering (or not improving) working conditions may be one way to reduce costs. Rising imports, however, does not necessarily imply rising import competition. If imports complement domestic production, imports can lower costs and encourage domestic production. If imports are perfect substitutes for domestic products, then rising imports will, at best, hamper growth of domestic firms and, at worst, eliminate domestic production. Furthermore, while reducing trade barriers is generally followed by an increase in imports, the amount that imports increase may or may not be related to the extent that tariffs are reduced. Therefore, there no clear *a priori* link between imports and working conditions, or between imports and competition faced by domestic firms.

The most accurate way to assess the competition posed by imports would be to compare the prices of imported goods with prices of identical domestic goods. The lack of appropriate data makes this difficult in practice. Another way to assess the degree of competition between domestic goods and imports is to estimate the elasticity of substitution between imported goods and domestic goods. Doing this requires detailed consumption data (for consumer goods) and production data (for imported inputs used by domestic firms).

Another approach would be to compare the quantity of imports relative to the size of domestic production (commonly known as the “import penetration ratio”). This is generally considered the most practical. When taking this approach, it is very important to use as specifically-defined industries as possible so that one does not, literally, compare apples to oranges.

### 1.1.2 Exports

Exports may increase with globalization for several reasons. First, foreign demand may coincide with domestic liberalization. In this case, the rise in exports and imports may simply be coincidental. Exports may rise due to reciprocal liberalization. If a country enters a trade agreement with a partner, both countries may reduce tariffs causing imports and exports to rise at the same time. Thirdly, if a country imports parts for assembly, exports of final goods (often in the same industry) will increase. Rising exports are also often the result of specific government policies designed to encourage exports. For example, the High Performing East Asian countries used government-directed export-promotion policies to increase exports. Exports may therefore increase in the same or different sectors than those affected by stronger import penetration. As a result, job destruction will take place in some sectors while job creation in others also with possibly different locations.

The effects of exports on employment and working conditions may differ depending on the nature of the goods that are being produced.<sup>3</sup> One basic criterion that determines these effects is the goods' technological complexity. We can think of the technological complexity of production as ranging between two extremes. At one end is simple assembly of imported inputs. These goods can range from apparel to computers, but the production process is simply assembly. At the other end is the original brand-name manufacturing in which the exports are products that are designed domestically and sold in foreign markets under a unique brand name (often associated with specific retailers in developed countries). The reason these effects differ is that working conditions generally improve with technological complexity, and technological complexity often rises with worker training and human capital.

Another issue that arises with export orientation is how contractual relationships may affect working conditions and wages. Firms that produce for export under contract with foreign firms may be more likely to adopt different working conditions because of pressure exerted by the foreign firm. If higher working standards are important to the foreign firm, the contracting firms may increase working standards to comply with the preferences of the foreign firm. Elliott and Freeman (2003, Chapter 6) describe several cases in which pressure on and then from foreign affiliates lead to changes in working conditions.

### 1.1.3 Intra-Industry Trade and Total Trade

Intra-industry trade is defined as simultaneous imports and exports of similar products. Intra-industry trade is extremely common today, with over 60% of world trade being intra-industry. Often intra-industry trade is linked to production fragmentation,

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<sup>3</sup> A country may want to know if expansion of the export sector is due to poor working conditions. This is a different question than the effect of globalization on working conditions. In this case, the working conditions that fostered exports were in place prior to exports. Furthermore, in this case, working conditions would be "poor" relative to trading partners, rather than within the country itself. The question of whether or not globalization affects working conditions therefore uses changes within a country over time.

such as outsourcing and assembly-based trade. Under these conditions, the effects of imports are very different than imports of consumption goods because these imported inputs may actually enhance domestic production for firms that use imported inputs, while increasing competition for firms who produce inputs. Therefore, total trade has been used in place of imports and exports separately.

Total trade flows often capture effects of working condition that are not accurately captured when imports and exports are considered separately. The main reason for this is that exports and imports may have confounding effects. Since imports and exports may be either complements or substitutes for domestic production, total trade can capture the total effect of these forces. Total trade can also capture the net effects of inter-industry and intra-industry trade and therefore is appropriate when capturing aggregate effects of globalization.

## 1.2 Foreign Direct Investment

Foreign investment can be classified in two categories: portfolio and direct investment. Portfolio investment includes stocks, bonds, and other assets that are generally considered to be very mobile and may not have any direct impact at the firm level. In contrast, foreign direct investment (FDI) includes physical plants and assets and therefore is generally considered to be more relevant for working conditions.

As with trade, there is no clear *a priori* link between FDI and working conditions. There are at least two critical aspects of foreign direct investment that may have different implications for workers. The first is the orientation of the foreign firms' production. Production can either be directed at the domestic market or foreign markets. The second is ownership share. Each of these is discussed in detail below.

### 1.2.1 Production Orientation

There are at least two ways that foreign firms could produce complementary products. Foreign firms' products could be new varieties that are not direct substitutes for domestic products, and therefore just expand the product space. Additionally, foreign firms can use inputs produced by domestic firms and produce inputs for domestic firms. In the literature, these have been called "forward" and "backward" linkages. When complementary with domestic firms, FDI can "crowd in" domestic investment. That is, foreign investment may encourage domestic investment, expand economic activity and increase labor demand. One critical dimension to keep in mind is that market structure and regulatory institutions also shape the role of FDI in the domestic economy. This is particularly relevant for investment in public goods, such as utilities.

Foreign firms may enter a market to avoid import tariffs and service the domestic market. This circumvents domestic production protection. It is therefore possible that foreign firms increase competition with domestic firms. The degree of competition depends on the degree of substitutability between foreign and domestic goods. In this case, FDI acts in much the same way as imports that compete with domestic producers: it puts pressure on firms to lower costs, which may adversely affect working conditions.

Foreign firms may enter to produce goods intended for export. Goods produced for export may be thought of as either assembly or another model that incorporates more

technology and opportunity for advancement. Firms that produce for foreign markets are less likely to compete with domestic firms, and therefore may directly increase the demand for labor.

### 1.2.2 Ownership share

Foreign firms may either build new plants or acquire existing plants. The new plants may be 100% foreign owned or may have a mix of foreign and domestic capital (joint ventures). When 100% foreign owned, firms may have more foreign links and import domestic technology. Research has suggested that these firms are less likely to engage in research and technological upgrading, but these firms may also be more likely to use state of the art technology.<sup>4</sup> On the other hand, firms with a mix of foreign and domestic capital may also be more likely to engage in technological upgrading. Joint ventures may also be more likely to cause “spillovers” and have effects that are more extensive than those with just foreign capital.

### 1.2.3 Spillovers

Foreign firms may have a direct effect on employment and working conditions if they have different policies than those in the host country. Foreign firms may also affect the rest of the firms in the market. These effects are called “spillovers” and they have received much attention in economics literature. There is very little agreement about the extent to which foreign firms affect domestic firms. Foreign firms may increase labor demand and therefore cause wages in the entire labor market to increase. They may also set industry standards that competing firms are compelled to follow. The concept of spillovers often justifies studying the effects of FDI on industry-level employment and working conditions.

## 1.3 Kinds of liberalization

Countries can become increasingly exposed to foreign markets in three ways. First, global trends, such as falling transportation costs, may reduce what Lall (2002) calls a country’s natural isolation. Second, a country’s trading partner may liberalize trade or investment (such as ending the Multi-Fiber Agreement). Third, a country may change its own barriers to trade and investment. Liberalization can be slow or it can be rapid. Liberalization can also be in one specific industry or it can be broad based. These differences affect the methodology of the study. They affect the choice of what measures to use and the relevant timeframe.

### 1.3.1 Speed

Liberalization can be slow or rapid. Examples of slow liberalization include a gradual phase-out of tariffs and a gradual decline in transportation costs. Examples of sudden liberalization include joining the WTO and immediately adopting a conformable tariff code. There has been much debate about how the different rates of liberalization

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<sup>4</sup> For example, see Alvarez and Robertson (2002).

contribute to successful liberalization. The rate of liberalization is especially relevant when one focuses on worker adjustment or displacement (discussed below). The rate of adjustment will affect the relevant timeframe for the empirical study.

### 1.3.2 Dimension

Trade liberalization can be horizontal or vertical. Horizontal liberalization refers to a broad-based liberalization that reduces tariffs across the board or a “large” number of industries. The degree of tariff reduction for various industries may affect relative prices, depending on whether or not all tariffs are reduced equally. Vertical liberalization refers to reducing tariffs in a small number of industries (e.g. one). Vertical liberalization changes relative prices and will have a more localized effect than horizontal liberalization.

## 2. Defining Working Conditions

This section has three main goals. The first goal is to decompose the general concepts of employment, wages, and working conditions to precisely identify variables of interest for the empirical study. The second goal is to relate each variable to the theoretic framework above, discussing caveats as appropriate.

The third goal is to discuss the current state of economic knowledge as it relates to each variable. For the most part, however, our knowledge of how globalization affects working conditions (employment, wages, and other facets) is rather limited, especially for developing countries. Furthermore, due to data limitations, studies on the effects of globalization on working conditions in developing countries are often limited in their econometric techniques. The two most common methods of analysis look at trends over time or conduct a before and after comparison around a globalization event. Papers most often look at Foreign Direct Investment (FDI), export orientation, or total trade and its effects on such characteristics as total employment, wages, skill level, productivity, child labor rates, and education participation (Ghose, 2000, Carr, Chen and Tate, 2000, Kabeer, 2004, Kaplinsky, 2001, and Moss, Ramachandran and Shah, 2004, are examples).

### **Box 1: Globalization Studies Generate Conflicting Results**

Studies using FDI are mixed in their results. Slaughter (2002) finds that inward FDI is positively and significantly related to skill upgrading across several countries; while Berik (2000) finds that outward FDI is negatively (but not significantly) related to wages in Taiwan. Mehmet and Tavakoli (2003) find that FDI is positively related to GDP growth in The Philippines and Singapore, but is negatively related to GDP growth in Thailand and China. Their results also show that FDI is positively related to real wages in the Philippines, but negatively related to wages in China, Singapore and Thailand. Studies using trade as their measure of globalization are more consistent in their results. Coe, Helpman, and Hoffmaister (1997) found that the R & D capital stock of a country’s trading partners (the countries that they import machinery and equipment from) produce “substantial spillovers” and is positively and significantly related to TFP, though the effects are greater for the East Asian countries than other regions. Gruben and McLeod (2006) found that increased exports of textiles and apparel increased both female and

male schooling as well as decreased the incidence of child labor. They also note that a survey done in Bangladesh and Indonesia reported that exporting firms paid more than firms that produced solely for the domestic market, while Berik (2000) finds that export orientation is negatively related to wages in Taiwan.

Feliciano (2001) and Revenga (1997), who both conduct event studies on the liberalization of Mexico in the 1990's, find somewhat conflicting results. Feliciano's results suggest that the effects of liberalization on the Mexican labor market were only modest. She argues that the trade reform reduced relative wages, but had no effect on employment or average weekly hours worked. Revenga finds more significant results that suggest that decreasing quotas lowered real wages but had no effect on employment, decreasing tariffs lowered real wages but increased employment, and decreasing the licensing of inputs increased real wages (when controlling for changes in productivity the effect was neutral) and increased employment.

Although over one hundred recent papers analyze the relationship between globalization and wage inequality, the theoretical and empirical link between them remains contested. Studies of trade and wages in developing countries have also generated conflicting results. Wood (1997) summarized several studies that indicate that, following trade liberalization, wage inequality rose in Latin American countries but tended to fall with liberalization in East Asian countries. Subsequent papers further explored this debate. Robertson (2004) shows that Mexican wage inequality falls after Mexico joined the GATT, but fell after Mexico entered into the North American Free Trade Agreement.

## 2.1 Employment

Lall's (2002) theoretic overview of the possible effects of globalization on employment points out that, unless globalization is well-defined, the link is unclear. Neoclassical trade theory offers little guidance in this area, generally speaking, because the most common Ricardian and Heckscher-Ohlin trade models assume full employment. This assumption is obviously problematic in most developing countries. The main concern in terms of employment, however, is whether or not globalization results in a net gain in jobs in expanding sectors. There are several ways to approach that question, and several of these are discussed below.

### 2.1.1 Employment Levels

Employment levels are important for many developing countries characterized by high rates of underemployment or "surplus labor." In these cases, the net employment change from globalization is the main focus. Evaluating the link between globalization and employment levels seems relatively straightforward. With aggregate employment data by sector, one would first identify the change in the globalization variable (trade or FDI) by sector, and compare employment changes in the affected industries against another control group. This approach would therefore allow one to capture the reallocating effects of increased trade or the expansion effects of FDI. The main difficulties are identifying an appropriate control group, controlling for macroeconomic factors, and controlling for endogeneity.

The empirical evidence on the link between globalization and employment levels is mixed for several reasons. One reason is timeframe. In the long run, employment depends on national economic growth. In the medium run, employment will depend on whether or not trade is accompanied by other factors that are also conducive to growth, such as strong institutions, and the degree to which domestic production is a complement or substitute to the relevant measure of globalization. In the short run, the issue of globalization and employment depends on adjustment, as described in more detail below.

### 2.1.2 Unemployment Rates

Unemployment rates have a cyclical component and a long-run component. The long-run component is generally driven by government policies, such as unemployment insurance. Economies with more generous unemployment insurance packages generally have higher unemployment rates. Furthermore, unemployment may not mean much in many low and also middle income countries lacking unemployment insurance and with a large informal sector. In these countries unemployment is often a luxury the poor cannot afford; the question is more the “quality” of employment. Therefore, there are few studies that focus on globalization and long-run unemployment rates.

Short-run unemployment rates are generally driven by national business cycles. Despite years of research, we still have a limited understanding of what drives business cycles. Regional unemployment rates are generally highly correlated, suggesting that forces driving national business cycles also drive local unemployment rates.

Adjustment to a new globalization policy may be rapid or slow. The economy takes time to adjust. These changes may affect workers because an economy in flux creates and destroys job market opportunities. If one is looking at the link between globalization and unemployment rates, then the key issue to consider is worker adjustment. Globalization often induces a change in allocation of workers between and within sectors. To move between sectors, workers leave their jobs and, ideally, find jobs in other sectors. Job search can be slow and costly, and therefore unemployment rates generally may increase if the change was large and rapid and it takes time to find a new job. The link between globalization and unemployment rates is therefore not considered to be permanent. If a change in globalization increases demand for workers, then one may see a fall in the unemployment rate that may fade out as the economy adjusts.

### 2.1.3 Displacement Probabilities

Another possibility is to focus on the displacement probability. Displacement probability can be analyzed in two components. First, one may have an increased risk of losing one’s job because the globalization increases competition. This kind of risk is not trivial. To measure this, one would basically assess the correlation between the rate of job loss (turnover) and globalization measures.

The second link between globalization and displacement probability relates to the overall volatility of the economy. Some studies have begun to look at the link between globalization and volatility, but this is still a young literature that is focused more on the harmonization of business cycles across integrating countries.

#### 2.1.4 Job-Search Duration

The time it takes to find a job is a measure of hardship for workers. Globalization may affect unemployment duration by inducing a reallocation of workers across sectors and changing the relative demand for skills. Workers with skills that are less in demand after globalization may have a more difficult time finding jobs following displacement (whether or not the displacement is directly related to globalization). The length of time it takes to find a job is therefore one measure of globalization's effects on workers.

#### 2.1.5 Formal vs. Informal Sector

One of the main employment concerns in developing countries is employment in the informal sector. Several recent papers (e.g. Maloney 2004) suggest that employment in the informal sector is linked to productivity in the formal sector and that workers often enter the informal sector to escape the cumbersome burdens imposed on the formal sector. These results, however, may be limited to Latin America. The informal sector is also commonly believed to be an alternative for workers who cannot find jobs in the formal sector (see Marcouiller et al. 1997). The latter, although very heterogeneous, often coincides with very poor conditions and low wages. These poor conditions are especially prevalent in the informal sector in poorer countries.

Therefore globalization could have two different effects on informal sector employment. In the short run, the adjustment that comes with trade liberalization could result in rising informal sector employment. In the medium run, the size of the informal sector would be linked to productivity and expanding opportunity in the formal sector that may come with globalization. Goldberg and Pacvnik (2003) offer an example of a recent study that looks at the effects of trade liberalization on the informal sector in developing countries.

### 2.2 Wages

If one is concerned about the effects of globalization on workers and working conditions, the first variable to analyze is wages. Wages often make up the majority of income for workers, and data on wages are easier to find and analyze than other aspects of working conditions.<sup>5</sup> Furthermore, wages are considered to be a good proxy for measuring the effects of globalization on workers, as nearly all of the current empirical studies of the effects of globalization on workers focus on some aspect of wage income.

There is a very large literature (indeed, entire fields of economics) analyzing factors that affect wages. A worker's wage is affected by the economy-wide average wage, the worker's personal characteristics (gender, age, education, ability, occupation), and the worker's industry. Globalization affects all three of these aspects, but probably at different timeframes. Average wages are affected in the long run. Wage changes due to

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<sup>5</sup> One might be concerned about the firm's ability to substitute poor working conditions for low wages (that is, induce workers to accept poor working conditions in exchange for higher wages. While anecdotal evidence suggests that this occurs, the empirical evidence suggests that this tradeoff may not be empirically relevant (see Appendix discussion of compensating differentials). This means that one can analyze wages and working conditions separately, although one should be mindful of the possibility of such a tradeoff.

different personal characteristics are probably affected in the medium run, and industry-specific wages are affected in the short run. Each of these is discussed in turn below.<sup>6</sup>

### 2.2.1 Average Wages (Absolute Wage Levels)

Average wage levels can be decomposed into two components: short run and long run. Short run wage levels are generally determined by business cycle effects. As the economy improves and unemployment falls, average wages rise. Long run average wages, however, are determined by productivity. Comparing cross-country wages and productivity levels reveals a very strong positive relationship. Over time, rising productivity generally leads to higher wages.

Since absolute wage levels are tied to productivity in the long run, the key link between wage levels and trade is through productivity. Globalization can increase productivity in several ways. First, trade may increase competition that causes the least productive firms to contract or disappear, thus raising average productivity. Globalization also gives firms access to a wider array of inputs that may increase productivity. Globalization also may induce innovation and training, which may also increase productivity.

Average wages are also affected by other factors. Technological change, labor supply (such as births and migration), and local labor market conditions all affect wage levels and therefore it is important to control for as many of these possible other factors as possible when trying to identify the link between globalization and wage levels.<sup>7</sup>

### 2.2.2 Personal Characteristics (Relative Wages)

Personal characteristics contribute to a worker's wage. For example, men are generally paid more than women. If women's wages rise on average, a female's wage is likely to be affected. Changes in the "returns" to different personal characteristics are often the result of economy-wide changes that occur in the medium run (that is, they require some movement of workers between industries).

Relative wage levels can be defined in several ways. The most common is between skill groups, such as between workers with different levels of education or in

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<sup>6</sup> Another aspect of wages that is worth mentioning is income risk. Since people would exchange income for security, economists have argued that risk makes people worse off. Globalization may either increase or decrease income risk. In the short run, a globalization policy (such as tariff reduction) induces movement between sectors and the possibility of job loss. It may also make income in the future less certain. If firms are subject to a more volatile economic climate, globalization may make wages more volatile. By the same token, increased liberalization with more stable countries may have the opposite effect. Krebs et al. (2005) find that trade liberalization in Mexico increased income risk. They show that this increase in risk can be expressed as a fall in welfare. Household surveys are the most appropriate data with which to analyze the link between globalization and income risk. The correlation between a measure of income risk work workers in industries affected by globalization and a measure of globalization would indicate whether or not globalization increases income risk.

<sup>7</sup> Mehmet and Tavakoli (2003) use the ratio of net FDI inflows to total investments (foreign and domestic) when testing the effect of FDI on wages. They also use simple OLS models using aggregate country level data for four different countries. They estimate each country separately and include time trends for each country. In addition they include dummy variables for each country to separate time periods when the trends were different

different occupations (generally production and nonproduction workers). Relative wages can also be defined between men and women, people with different levels of experience, workers in firms with different levels of foreign capital, and workers in different industries.

There are several ways to evaluate the effects of globalization on relative wages. Nearly all of them are based on the concepts of supply and demand. Globalization is generally considered to affect demand. Rising exports increase the demand for workers making the exported good, while rising imports would reduce the demand.

If the question were how tariffs affect relative wages, then one could link the changes in tariffs to changes in relative prices. These relative prices are mapped to changes in relative wages. This approach is called a “price study” and can be carried out in four basic steps. First, one establishes whether or not the change in tariffs across industries is correlated with skill intensity. That is, whether or not tariffs on industries that use relatively more skilled workers fell more than tariffs on other goods. Second, one checks the correlation between tariffs changes and changes in relative prices. Falling tariffs are generally linked to falling prices. The third step is to compute the correlation between changes in relative prices and changes in relative wages. Once these three basic steps are complete, the last step is to check for any other factors (such as changes in technology or supply) that might also be affecting relative wages.

Berik (2000) uses a combination of FDI and trade to account for globalization in Taiwan. She measures the ratio of outward FDI to GDP by industry. Due to data concerns she turns the variable into a dummy variable equal to one if the value is greater than 0.05. In addition, she includes export orientation as the value of exports as a share of sectoral gross output. She tests the effects of these measures of globalization on wages using two independent wage equations by gender, and a third measuring gender wage inequality. She includes the ratio of wage to salaried workers to proxy for skill level by industry, capital to labor ratio in each firm to proxy for labor productivity and technology, and the female share of employment for each industry. Dummies for firm size and year fixed effects are also included. Gruben and McLeod (2006) also note the importance of separating males and females in econometric models because different industries affect genders differently. In their study they test for the effects of increased exports on schooling outcomes, family factors such as age at marriage and childbirth, and labor force participation of children. They use aggregate data from 48 countries that were part of the Multifiber Agreement, and individual level private survey information, and focus on the apparel and shoe industry to test for the effects on female outcomes.

### 2.2.3 Industry-Specific Wages

Workers with identical characteristics in identical occupations often earn different wages in different industries. These industry-specific wage differences have been used in several studies (e.g. Revenga (1997), Cragg and Epelbaum (1996)). The idea is that in the short run, workers (and capital) cannot move between industries, and therefore the effects of an industry-specific change will affect wages in a particular industry before the effects can spread to the rest of the economy and affect other personal characteristics or average wage levels. To the extent that these premiums are important in determining workers’ wages, and that they can be directly linked to measures of globalization, they

provide perhaps the most straightforward way to analyze the short-run effects of globalization on wages. The technical details of using this technique are described in the “Empirical Analysis” section (IV.F.).

## 2.3 Labor Standards

In 1998, the International Labor Organization defined “core” labor standards. These four standards include freedom of association and the right to organize, freedom from forced labor, elimination from child labor that is harmful to the child or interferes with schooling, and nondiscrimination in employment (Center for Global Development 2004). These core standards are incorporated into ILO conventions that member countries have a chance to ratify. In doing so, countries adopt what could be called international working condition standards. These conventions illustrate the fact that working conditions may be the result of globalization through the effect of exposure to organizations and nations that adopt common ideals (akin to international “peer pressure”), and may or may not be directly related to the measures of globalization discussed above.

### 2.3.1 Unionization

Unions may be important to the extent that they affect other aspects of working conditions that are difficult to measure, such as the resolution of grievances, protection from employer abuses, or productivity. Globalization may either increase or decrease unionization. Globalization may increase unionization in the population as a whole if industries with higher-than-average unionization rates expand relative to others as a result of globalization. Unionization may also increase if foreign firms welcome unions. Foreign firms may welcome unions if unions increase productivity, reduce turnover, or create a positive public image. On the other hand, globalization may weaken unions. Firms may use the threat of moving abroad to discourage union activity. Foreign firms may also seek ways to discourage unions if the firms believe that unions reduce productivity, or increase wages beyond increases in productivity.

Firm or industry-level data are generally the most appropriate to analyze the link between unionization and globalization. Unionization may differ by firm, and differences across firms provide important information about how globalization affects unionization. Changes in unionization can then be broken down to those that occur across industries (if globalization’s effects vary across industries) and those that occur within firms.

Without firm-level data, industry-level data may also be used as long as the data include information about unionization rates. In this case, the differences across firms are assumed to matter less than differences across industries. These data would allow one to estimate the contribution of between-industry shifts on unionization rates. If the industry data are sufficiently disaggregated, one may be able to identify the effects that outsourcing may have. If unionization rates differ within sub-sectors, outsourcing may affect sub-sectors differently and thereby affects aggregate unionization rates.

### 2.3.2 Hours

Hours worked are an important aspect of working conditions. Hours worked are generally determined by local labor law. Labor law, however, generally sets a maximum, and firms are able to hire workers for contracts that stipulate fewer hours worked than the national full-time norm. Firms also alter hours as a result of short-term fluctuations in demand.

Hours would, however, be a relevant metric of working conditions that might be linked to globalization if firms that were specifically engaged in international trade were either exempted from national convention or were not subject to normal enforcement of labor law. In this case, the composition approach described above would apply.

### 2.3.3 Child Labor

The ILO conventions on core labor standards set a standard for child labor. The link between globalization and child labor has received much attention in the popular press and increasing attention in the academic literature.<sup>8</sup> Elliott and Freeman's (2003) four examples of globalization - labor standards link were either primarily focused on (three of the four) or linked to child labor. Child labor fits very well into the theoretical framework described above, and therefore the appropriate timeframe is relevant.

### 2.3.4 Benefits

In addition to wages, firms may also provide benefits to workers. Some are mandated by the government and others are provided through firm initiative. Benefits may include contribution to social security, training, vacation time, and insurance contributions. These also fit very well into the theoretic framework described above, but data that measure these benefits are often difficult to find. As a result, there are very few, if any, specific studies of the link between globalization and worker benefits.

## 3. Theoretic Framework for the Effects of Globalization on Working Conditions

The point of economic theory is to formalize one's thinking in ways that help guide empirical analysis. The goal of this section is to present a general theoretic framework for thinking about the relationship between globalization and working conditions. The theory presented here is general enough to help one identify the relationships of interest without being too technical. For the following discussion, "working conditions" can be taken to include employment, wages, or other aspects of working conditions were previously defined.

The link between globalization and working conditions is complex for several reasons. First, different measures of globalization have different implications for working conditions. Second, working conditions are the result of forces operating at different levels in the economy (government, industry, and firms). Third, these different levels respond at different speeds. In the short run, workers are not very mobile between industries and therefore globalization first affects firms within industries. In the medium run, workers (and capital) begin to move between industries. New innovations are

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<sup>8</sup> In particular, see Edmonds and Pavcnik (2005).

implemented and production techniques may change. Therefore, if one is interested in the medium run, then one may focus on between-industry shifts. In the long run, working conditions may be affected international pressure and economic development.

These channels are obviously interrelated, but it is useful for the purposes of framing an empirical study to identify and discuss each channel separately. In doing an empirical study, it is pragmatic to focus on the effects of globalization in the order that they unfold in time and are listed below.

### 3.1 Within Industry / Firm-Level Shifts (Short-run, partial equilibrium)

Firms are the basic decision-making unit in the supply side of the economy. Interactions between firms and workers determine labor-market outcomes. Globalization affects these interactions. For example, an increase in economic activity (due to opening of export markets or the arrival of non-competing foreign firms) may increase the demand for workers. Alternatively, firms may change working conditions as a defensive maneuver in response to globalization, such as rising import competition or the arrival of competing foreign firms.

The main point here is that, in many developing countries, adjustment costs may be quite high in the short run (Heckman and Pages (2000)). These adjustment costs mean that, in the short run, workers (and capital) cannot shift between industries. The effects of globalization are therefore identifiable at the firm and industry level.

For example, an increase in demand for workers can tilt power towards workers: workers can begin to demand incremental improvements in wages and working conditions. As long as productivity is increasing, firms may be inclined to acquiesce to these demands and take steps to improve working conditions within affected industries. Alternatively, firms may be pressured to cut costs and increase output. Working conditions, such as wages or safety expenditures, could be one way in which firms reduce costs. As affected firms take these steps, other firms in the same industry may be pressured to take similar steps either to attract workers (if demand is increasing) or to cut costs (if demand for workers is falling).

### 3.2 Between Industry Shifts (Medium-run, general equilibrium)

Globalization does not affect all industries equally. Some industries will expand if export opportunities increase or globalization brings in cheaper inputs. Others may contract if import competition increases. These industry-level effects are the net result of the changes at the firm level. In the medium run, workers (and capital) can shift from contracting industries and into

Since industries may differ in working conditions, globalization may induce an expansion in industries that have good conditions and a contraction in industries that generally have poor conditions. In this case, globalization may cause working conditions to improve overall.

The main point here is that, in the medium run, mobility between industries causes the industry-specific effects of globalization to spread to the entire economy. The net effects of industry-specific wage, employment, and conditions changes will diffuse through the economy and can be detected empirically.

### 3.3 Economic Development and Policy (Long-run, growth)

#### 3.3.1 Development

Developed high-income countries generally have better working conditions than developing countries. Many facets of working conditions follow this pattern. Just for the purposes of illustration, Figures 1 and 2 show two examples of this relationship. The standard work week in manufacturing (Figure 1) and number of fatal accidents (Figure 2) fall as Gross National Income (GNI or log GNI) rises.

Does globalization lead to development? Countries that trade more have higher incomes. This relationship is probably not the result of the fact that higher income countries trade more: trade and international integration seems to lead to higher growth rates and higher living standards.

It is important to point out, however, that rising income is probably only a necessary, and not sufficient, condition for development. Other factors, such as rule of law, transparency, efficacy of services, and other institutional characteristics play a significant role translating rising income into development. If globalization contributes to development, then one would expect globalization to contribute to improving working conditions.

The problem with this idea, of course, is that it is only valid in the very long run. The link between globalization and income has been confirmed in studies across countries at a particular point in time (cross-section studies) and therefore implicitly assumes that all countries follow the same path to development. It does not imply that liberalizing countries will immediately experience rising living standards. In fact, the path from liberalization to growth is uncertain and not well understood. Empirically, perhaps the most appropriate way to focus on the income channel is to compare differences across countries at different levels rather than to focus on changes in a single country.

#### 3.3.2 Policy

As countries integrate, they exchange ideas and negotiate common standards. In this way, countries may move towards harmonizing standards as a matter of government policy. Standards and conventions are more likely to be adopted as countries integrate. There are many examples of this indirect effect, including, but not limited to, the effect of being exposed to non-governmental organizations and watchdog groups (for example, see Elliott and Freeman 2001), adopting common standards in trade negotiations, and public opinion's effects on firm behavior.

While few studies have focused on these aspects of globalization (Elliott and Freeman 2001 and 2003, Brown et al. 2003, Harrison and Scorse 2004), they are often, by necessity, more qualitative in nature. Furthermore, the policy channel is idiosyncratic in the sense that it is strongly affected by political factors that economists are difficult to quantify and therefore analyze in an empirical study. Institutions matter, as does the focus of international attention. Therefore the policy environment must be considered and appropriately incorporated.

#### 4. Application: Step-by-step

An effective study of the effects of globalization on working conditions does not need to include all of the aspects described above. The elements should be combined to directly address the most specifically-defined, yet pressing, question at hand. A thorough study, however, will probably contain several elements from each category above. Once these elements have been identified, however, the relevant empirical approaches are relatively straightforward.

##### 4.1 Identify the relevant aspects of globalization and competitiveness

The first part of the study should be a descriptive analysis of the nation's experience with globalization in order to identify the key variables that will be used in the empirical analysis (tariff changes, imports, exports, foreign direct investment). In this context it is also useful to assess the degree of competition for domestic firms brought about by globalization.

The degree of competitiveness is relatively straightforward to assess, but it depends on which variable is being evaluated. Furthermore, the quality of the results depends a great deal on the level of aggregation of the data. With appropriately disaggregated production data, one can assess the degree of competition using simple correlation coefficients.

This exercise is trivial in the case of a vertical liberalization. For example, if the government reduced tariffs on a particular sector, one can begin by focusing on that particular sector. For the more general case of a broad-based liberalization, however, one would calculate the correlation between the change in tariffs and employment or production share in the economy. A small correlation suggests that the government lowered tariffs most on industries that were least important, in terms of production, in the economy. The same approach applies to imports, but only in the case in which intra-industry trade (production fragmentation) is not the focus. Thus, it would be important here to first discern whether or not the imports were intermediate inputs or were products that were for domestic consumption.

##### 4.2 Working Conditions

There are two criteria that should be applied to determine the relevant variables for working conditions: relevance and availability. Relevance depends on the intended audience for the study and the interests of those conducting the study. If one is interested in the effects of globalization on workplace safety, for example, then one needs to find (or collect) data on workplace safety. In most cases, these data are hard to find and difficult to collect without the help of legal mandate. It is then important to find the closest possible measures in available data. Data availability is also obviously critical, and we focus on this in the next step.

##### 4.3 Time Frame

The theoretic framework above suggests that different measures of working conditions would be related to different measures of globalization in different time frames. Since the long run is generally best captured in cross-country studies, single-country studies will probably best be served by focusing on the short and medium run. Which of these is appropriate will depend on the variables chosen, as described above. For the most part, however, medium-run studies (3-20 years) are probably the most effective at capturing the effects of globalization on working conditions. Therefore, the best data would be those that can span several years to facilitate comparisons across time.

#### 4.4 Data

Studies can be conducted at the industry level, the firm level, or the worker level. There are important characteristics of each kind of study, and each study will answer slightly different questions.

##### 4.4.1 Industries

Industry-level data often come from government surveys or mandatory reporting. They are most useful for identifying changes between industries, changes in aggregate variables (such as employment, average wages or production shares). High-frequency industry-level data are also very useful in capturing the time-path of different variables, such as relative wages, production shares, and employment because it is easier to remove the business-cycle component from high-frequency data. An advantage of these data is that they are often easy to find. The main disadvantage is that they lack the level of detail to accurately capture many of the aspects that are relevant when analyzing the effects of globalization.

##### 4.4.2 Firms

Firm-level data would be ideal for identifying the effects of globalization on working conditions across firms and therefore identifying composition effects. The key, of course, is to have some measure of working conditions at the firm-level, which is rare. Firm-level data also allow one to identify effects of globalization on plant survival (if firms or plants are followed over time). For example, Bernard, Jensen, and Schott (2006) show that competition from low-wage countries increases the probability of closure or contraction of low-productivity plants, but can be positively correlated with expansion of high-productivity plants. The net effect on employment, wages, and working conditions would be revealed, however, at the industry level. The main disadvantage of these data is that they are difficult to find, especially in developing countries. Notable exceptions include Chile (Pavcnik 2002, Alvarez and Robertson 2002), Mexico (Hanson and Harrison 1999, Verhoogen 2004), and Indonesia (Lipsey and Sjöholm 2004a and 2004b). One disadvantage is that these data may not be available consistently over time, or may be limited to particular sectors (in particular, manufacturing).

##### 4.4.3 Workers

Worker-level data come from household surveys and are becoming increasingly available for developing countries. There is a very long list of papers that analyze these kinds of data in developing countries. Several studies have used worker-level data to evaluate the effects of globalization on wages, job loss and unemployment duration, and wage inequality. Labor force or household surveys generally include demographic data that enable the researcher to control for education, age, and other worker characteristics that may mask the effects of globalization. They are also necessary to help one identify the effects on workers in different demographic groups. These data may also include information about hours worked, benefits, and other aspects of working conditions that are not available from aggregated or firm-level data. Perhaps most usefully, they often contain industry of employment and cover many sectors of the economy.

#### 4.5 Methodology

Globalization studies can be roughly sorted into three groups according to methodology. Event studies, the first group, compare the variables of interest before and after a globalization event (e.g. rapid trade liberalization). Price studies, mainly applied to studies of globalization and wage inequality, are based on the neoclassical trade theory (the Stolper-Samuelson theorem) that suggests that globalization affects relative wages through changes in relative prices. The third group, quantity studies, link quantity measures (such as imports, exports, or FDI) with labor-market variables. There are advantages and disadvantages of each approach, and these are discussed below.

##### 4.5.1 Event Studies

If liberalization occurred rapidly, or if one can identify a clear date that delimits “pre” and “post” liberalization periods, events studies are an effective way to begin your analysis. Event studies compare working conditions before and after the liberalization event. The benefits of event studies are that they are straightforward and easy to implement: the comparison of working conditions before and after liberalization is relatively easy to do. The key to a successful event study is to control for all of the other factors that may have changed at the same time. Mexican trade liberalization (specifically, joining NAFTA) is a perfect example of the perils of the event study. NAFTA went into effect in January 1, 1994. In December 1994, the Mexican peso collapsed and sparked a very deep recession. The collapse of the peso may have had something to do with NAFTA, but most scholars agree that macroeconomic factors largely unrelated to NAFTA were the main reason for the collapse. Nevertheless, wages dropped sharply in 1995. Event studies that tried to identify the effects of NAFTA in Mexico have had a very difficult time to identify the effects of NAFTA separately from the effects of the peso crisis.

Nevertheless, event studies are often an excellent place to start because they highlight what most people care about: the bottom line. For example, wages are either different after liberalization or they are not. If they are not, and there are no confounding events that may have also affected wages, then it is difficult to make the case that liberalization had a significant effect on wages. Prominent examples of event studies include Revenga (1997) and Feliciano (2001), which are described in more detail below.

### 4.5.2 Price Studies

Aggregate variables, such as inflation, interest rates, unemployment, and GDP movements capture changes in wages and employment. These aggregate variables also affect domestic demand, which affects imports, and domestic production capacity, which affects exports. The result is that changes in imports and exports can change for reasons not related to trade policy, liberalization, or changes in foreign competition.

Trade theory, therefore, relies more on changes in relative prices to capture the effects of liberalization. If the price of a good changes relative to other goods in the economy, the change will affect the conditions of workers (especially wages) within that industry. Therefore, when considering the link between liberalization and working conditions, one possibly important variable is the industry-level price relative to all other industries.

There are several examples of price studies in developed countries (e.g. Lawrence and Slaughter 1993, Leamer 1998, Slaughter 2000), but very few for developing countries.<sup>9</sup> One reason is that product-price data are difficult to find and match with worker data. Nonetheless, these studies have revealed links between globalization and changes in wage inequality that are consistent with trade theory and suggest that changes in product prices (that can be linked to tariff changes) affect relative wages.

### 4.5.3 Quantity Studies

Quantity studies are those that relate imports and exports to working conditions. Imports and exports have several advantages. First, import and export data are generally easy to obtain, especially at aggregated levels. Second, imports and exports are commonly the first variables that come to mind when someone thinks of globalization.

Imports and exports have several disadvantages. First, they are not necessarily compatible with a strong theoretic foundation. The main reason for this is that there are many reasons why imports and exports might change, and these reasons may be correlated with facts that are affecting labor market conditions. As a result, a correlation between imports and/or exports and working conditions may be spurious.

For example, one of the most important determinants of imports is domestic demand. Increasing domestic demand is generally a sign of an expanding economy. When the economy expands, however, wages rise and unemployment falls. Working conditions may improve as workers get more power in the labor market. As the economy expands, however, imports increase. Ignoring the role of domestic demand could generate a positive correlation between imports and wages.

To address this problem, disaggregated industry-level imports and exports are useful. These data allow one to focus on the industry-specific effects of trade while at the same time controlling for other factors that may affect working conditions and globalization measures.

## 4.6 Empirical Analysis

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<sup>9</sup> Exceptions include Beyer et al. (1999) and Robertson (2004).

#### 4.6.1 General Framework

The empirical analysis will depend on the variables chosen and the methodology described above. The description above isolates 8 possible globalization variables and 13 possible working condition variables, resulting in a minimum of 104 possible combinations of a single globalization variable and a single working condition variable, which is why globalization studies tend to generate disparate results.

The goal here is to present a generalized estimation approach that can be easily adapted to the different variations presented above. In the most general sense, we are interested in estimating the following relationship.

$$y_{it} = \alpha + \beta X_{it} + e_{it} \quad (1)$$

in which  $y$  represents working conditions (employment, wages, or other aspects),  $X$  represents a vector of globalization variables (imports, exports, trade barriers, or FDI) for individual identifier (worker, firm, or industry)  $i$  at time  $t$ . The error term represents a composite error term which may or may not include specific effects for each group or time period.

There are two general concerns with the above specification: timeframe and the presence of fixed effects. Therefore, one should consider estimating (1) in differences.

$$\Delta y_{it} = \alpha + \beta \Delta X_{it} + e_{it} \quad (2)$$

Differencing removes the individual-specific fixed effects that are often correlated with unobserved characteristics. The second issue is the timeframe over which to difference the data. For short-run studies, the difference should be over the shortest period possible with the data. For medium-run studies, a 3-5 year difference is often a good place to start.

At this point, there will be many particular estimation issues that relate to the specific combination of variables chosen. Once these are addressed, the results can be combined with the earlier data of the nature of globalization to complete the analysis of how globalization affects working conditions in a given country.

#### 4.6.2 Estimation Issues

While each study will face different estimation issues depending on the data and approach used, there are several key issues that will affect all studies. The first is endogeneity. This is particularly relevant for studies of FDI and wages. Wages, either high (representing qualified workers) or low (representing potential labor cost savings) may attract FDI and therefore attempts to assess the relationship without taking this into account will generate the wrong conclusion. This is why the time dimension is important to include in the study.

Furthermore, one must also control for possible third variables that could be driving a revealed relationship. The example of the peso crisis above illustrates this point. While studies often define globalization differently and are testing different outcomes, there are several common factors in the studies. One is the importance of

including year dummies and/or time trends, and including either country or industry level fixed effects. All of the studies mentioned above have some method to account for time and country/industry effects. Isolating effects by gender, industry, economic classification, or country is also common.

#### 4.7 Specific Examples

The examples below focus on wages, because nearly all of the studies of globalization on working conditions focus on wages. The few studies that focus on other dimensions of working conditions have been more qualitative than quantitative in nature.

##### 4.7.1 Short-Run Industry-Specific Effects [Feliciano 2001, Goldberg and Pavcnik 2005]

**Globalization:** Trade Liberalization (tariff reduction)

**Working Conditions:** Industry-specific wages

**Data:** Time-Series of Household Surveys for Mexico (Feliciano 2001) and Colombia (Goldberg and Pavcnik 2005).

**Theoretic Framework:** The theoretical framework follows the short-run described above because it assumes that workers are not mobile across industries and therefore the effects of the driving variables are not diffused through beyond the individual industries.

**Estimation Equation:** The estimation strategy consists of two parts. The first part is to estimate the individual industry-specific wages. The dependent variable is the log of individual wages ( $\ln w$ ) for individual  $i$  in industry  $j$  at time  $t$ . The independent variables are individual characteristics ( $X$ ) and industry-specific dummy variables ( $I$ ) as the independent variables.

$$\ln w_{ijt} = X_{ijt}\beta_x + I_{ijt}D_{jt} + \varepsilon_{ijt} \quad (3)$$

The estimated premiums are the  $D$  coefficients for each industry  $j$  at time  $t$ . These inter-industry wage differentials have several advantages for understanding working conditions and globalization. Krueger and Summers (1988) established this technique in the labor economics literature. They estimate inter-industry wage differentials for a set of  $N$  industries and  $N-1$  dummy variables. Since the estimated differentials are sensitive to the omitted industry, they suggest an approach that normalizes the differentials (and approximated the resulting standard errors) so that the differential estimates do not depend on the omitted industry. Haisken-DeNew and Schmidt (1997) describe a method that adjusts the differentials so that they measure the difference between each industry's wage and the overall mean, rather than the omitted industry, and also produces the correct standard errors. Haisken-DeNew and Schmidt (1997) have developed routines for LIMDEP and GAUSS that produce the correct estimates, and Wiggins (1998) authored a routine (and help file) for STATA that also produces the correct estimates. The correct estimates can then be formally compared with various measures of globalization and analyzed over time.

Feliciano (2001) and Goldberg and Pavcnik (2005) use the estimated differentials in a second stages estimation equation that uses the estimated industry-specific wage

premiums as the dependent variables and measures of globalization as the independent variables. These could include tariffs, trade flows, of FDI and are represented here as  $T$  :

$$D_{jt} = T_{jt} \delta_T + F_{jt} \gamma_F + u_{jt}. \quad (4)$$

Equations (3) and (4) are basically equations (1) and (2) if Feliciano (2001) and Goldberg and Pavcnik (2005). The variable  $F$  includes time and industry fixed effects, which are possible to include because the estimated industry differentials form a panel (both time-series and cross-section data). The effects of globalization are then considered to be measured by the estimated  $\gamma$  coefficients.

With similar household surveys, common industry definitions, the same set of controls for personal characteristics, and similar earnings variables, these differentials and the results that follow from them may be compared across countries. It is important, however, to ensure that the earnings equations are as similar as possible if the estimates and subsequent results are to be compared.

#### 4.7.2 Short-Run Effect of Trade, FDI, and Migration on Absolute Wages [Robertson (2005)]

**Globalization:** Trade volumes during liberalization era

**Working Conditions:** Absolute real wage levels (relative to U.S. wages)

**Data:** Time-Series of Household Surveys. The data are not panel, so this study allocates labor into different age-education group categories and then takes the average wage of each cell divided by the average wage of U.S. workers in the same age-education group, and uses these averages as the dependent variable.

**Theoretic Framework:** The theoretical framework follows the short-run described above because it assumes that workers are not mobile across cities and that the effects of the driving variables are not diffused through beyond the individual city-cells. A simple supply and demand model motivates the comparison of the effects of trade, FDI, and border enforcement on absolute wage levels in Mexico. Absolute Mexican wages are normalized by United States wage levels to provide a basis for comparison.

**Estimation Equation:** The estimation regression applied is

$$w_{ict} = \alpha_0 + \alpha_1 t + \beta_1 FDI_{ct} + \beta_2 Trade_t + \beta_3 Migration_{ct} + e_{it}, \quad (5)$$

in which  $w$  represents wages for worker group  $i$  in city  $c$  at time  $t$ . The variable  $t$  represents a time trend, and FDI, Trade, and Migration represent variables that capture these aspects of globalization. The paper earlier identifies FDI as being export-oriented, and, since Mexico has a large share of intra-industry trade, total trade is used to capture the effects of trade rather than imports and exports. The paper is a quantity study in the sense that it uses trade and FDI volumes and does not focus on a pre- and post-event analysis. This framework allows the paper to directly compare the various effects of different measures of globalization on wage levels. The results suggest that total trade contributes to rising wages, but border enforcement (as a measure of migration costs) lowers wages. The results for FDI are mixed, which is placed in context with previous research that shows that firms that have 100% foreign ownership in Mexico are less likely to invest in innovation at the firm level.

#### 4.7.3 The Long-Run Effects on Wage Inequality [Beyer et al. (1999), Robertson (2004)]

**Globalization:** Trade volumes and industry prices during liberalization era

**Working Conditions:** Relative wages (personal characteristics/inequality)

**Data:** Beyer et al. (1999) use household survey data over time to estimate the skill premium and then use data on prices, openness, and labor supply to explain it. Robertson (2004) uses average wages of nonproduction and production workers to estimate the skill premium and then compares those movements with changes relative product prices.

**Theoretic Framework:** Both of these studies are long-run studies in the sense that they rely on the movement of workers between industries to diffuse the effects of globalization throughout the economy. Their theoretic foundation, in particular, rests in the Stolper-Samuelson theorem.

**Estimation Equation:** Beyer et al. (1999) use a first stage estimation equation just like (5) above. The difference is that, rather than focusing on industry-specific wages, they estimate the premium that comes from more education. They then use this premium in a second-stage equation. Robertson (2004) uses several different estimation approaches, but they all can be summarized by the simple equation

$$relativewage_t = \lambda relativeprices_t + \varepsilon_t. \quad (6)$$

The main difference in this approach from the others is that it focuses on the time-series dimension. In this sense, it allows both papers to identify the contribution of changes in prices to changes in wage inequality. Beyer et al. (1999) also include the relative supply of educated workers and trade volume (as a share of GDP). Both papers find that changes in relative prices play a significant role in explaining wage inequality.

### 5. Lessons and Conclusions

This paper identifies the main aspects of both globalization and working conditions that have been identified in the literature and presents a general theoretic and empirical framework for identifying the relationship between these variables. The goal of this framework is to provide a very general, non-technical guide to implementing country-specific studies of the effects of globalization on working conditions. A thorough study of globalization and working conditions should have two main components. First, the relevant aspects of globalization for the particular country should be carefully described. This is important because it sets the context for the study and also identifies the variables of interest in terms of both globalization and working conditions.

Second, once the relevant variables have been identified, then the data can be selected and a very general empirical approach can be applied to complete the study. The examples presented in the text are listed in the order of both the timeframe at which globalization affects working conditions, and the frequency at which each kind of study appears in the literature.

During 2006-2007, this methodology was applied to four countries (Cambodia, Indonesia, El Salvador, and Honduras). Each country study had three main components:

a description of the country's experience with globalization, an analysis of (changes in) inter-industry wage differentials that could be compared across countries, and an idiosyncratic part that analyzed some country-specific aspect of working conditions. Applying the methodology to these countries generated several important lessons and revealed some shortcomings of the approach that should be considered when applying this methodology in the future.

The first main lesson was that, although these countries are very different in many ways, including region, history, institutions, and size, both the experience with globalization and the effects on the measures of working conditions studied were surprisingly similar. While this document describes many different possible ways that globalization could be manifested in a developing country, the experience was very similar in all four of these countries: foreign direct investment primarily directed at producing for export seemed to one of, if not the, driving force of globalization. Furthermore, the FDI in these countries was generally primarily focused on the apparel sector. This is not to say that other forces were not relevant, but the results of these four country studies were more homogeneous than the description of globalization's many faces offered above.

The inter-industry wage approach had both advantages and disadvantages. The advantages were that the approach was directly comparable across countries. The results revealed that export-focused foreign direct investment was positively correlated with wage differentials, both across industries and across time. A disadvantage was that the studies did not conduct extensive formal tests of the relationship between globalization measures and wage differentials. Future work should work to formalize these comparisons. Another disadvantage was that the differentials do not capture within-industry heterogeneity. That is, wages and working conditions between plants within the same industry were not analyzed. As Brown (2006) points out, this remains a fruitful area for research.

Another advantage of the inter-industry wage differential approach is that it allowed a formal comparison between measures of working conditions between industries and wage differentials. The main result that emerged from this comparison was that the apparel differential and the food agriculture were inversely related and this correlation matched that found between measures of working conditions across industries. That is, high wages in apparel (especially relative to agriculture) were matched by relatively good working conditions (especially relative to agriculture). In general, wages and working conditions were positively related.

Finally, the comparison of other measures of working conditions was driven by data availability. Qualitative analysis revealed that monitoring and international attention played a potentially significant role in wages and working conditions. This suggests a need for continued monitoring and data collection. Data availability was recognized as a limiting factor to this approach early on, but the emphasis of using household studies (which are more often available) helps address this problem to some extent.

The overall findings of these country studies suggest that globalization has had positive effects on working conditions. In particular, these diverse countries seemed to share a similar experience. The influx (or outflow) of export-focused foreign direct investment was positively correlated with wage premiums and working conditions, as employment in agriculture fell and apparel employment increased. This not to say that

adjustment did not affect other important dimensions, in particular informality, but the success of these studies suggests that they might serve as an important first step towards understanding the link between globalization and working conditions in developing countries.

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**Appendix**  
**Are Wages and Working Conditions Related?**  
**The Hypothesis of Compensating Differentials**

From Adam Smith, economists have theorized that workers who take jobs in less favorable conditions must be compensated with higher wages. This hypothesis has been called *compensating differentials*. If the theory holds, workers in developing countries who accept jobs with less favorable working conditions would earn higher than average wages, suggesting that wages and working conditions would be inversely related.

The theory of compensating differentials is relevant for any empirical study of working conditions for several reasons. First, one may only have data on wages, and one may want to make inferences about working conditions from wages. This is problematic in the sense that it makes finding accurate data on working conditions very important, and, generally, these data are very hard to find.

Second, if workers are working in less favorable conditions, but are being compensated for them with higher wages, then it is not clear that workers are worse off when working in less favorable conditions. In other words, if workers are fairly compensated, then it is not clear that we need to be concerned about these conditions because workers may sort themselves into jobs according to individual preferences so that workers are not necessarily worse off when working in less favorable conditions.

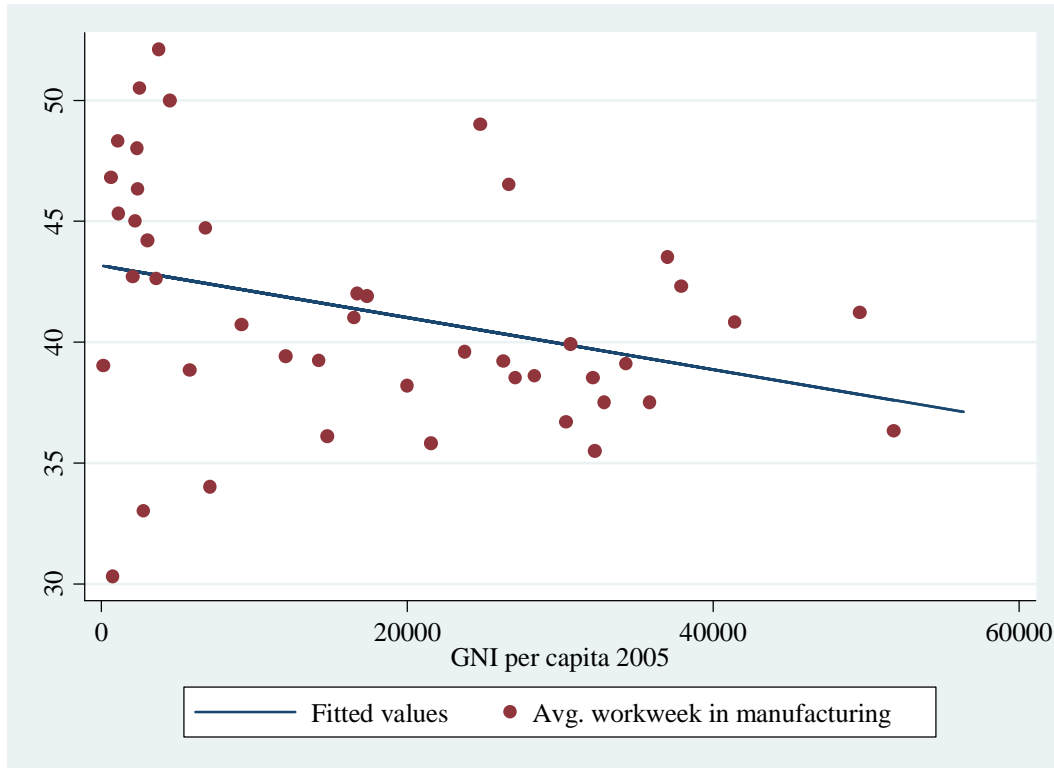
Empirical results from previous studies

Although the compensating differentials hypothesis endures, there has been surprisingly little empirical evidence to support it. In fact, the general consensus of the academic literature is that workers earn little, if any, differentials for many different dimensions of job characteristics. In fact, some papers suggest that workers in more favorable conditions may even earn higher wages. One can only assume from this literature that the link between working conditions and wages cannot be taken for granted.

Naturally, this is problematic because, as described earlier, data on specific working conditions are hard to find. Firms are generally willing to report wage data, but data on working conditions are much more closely guarded.

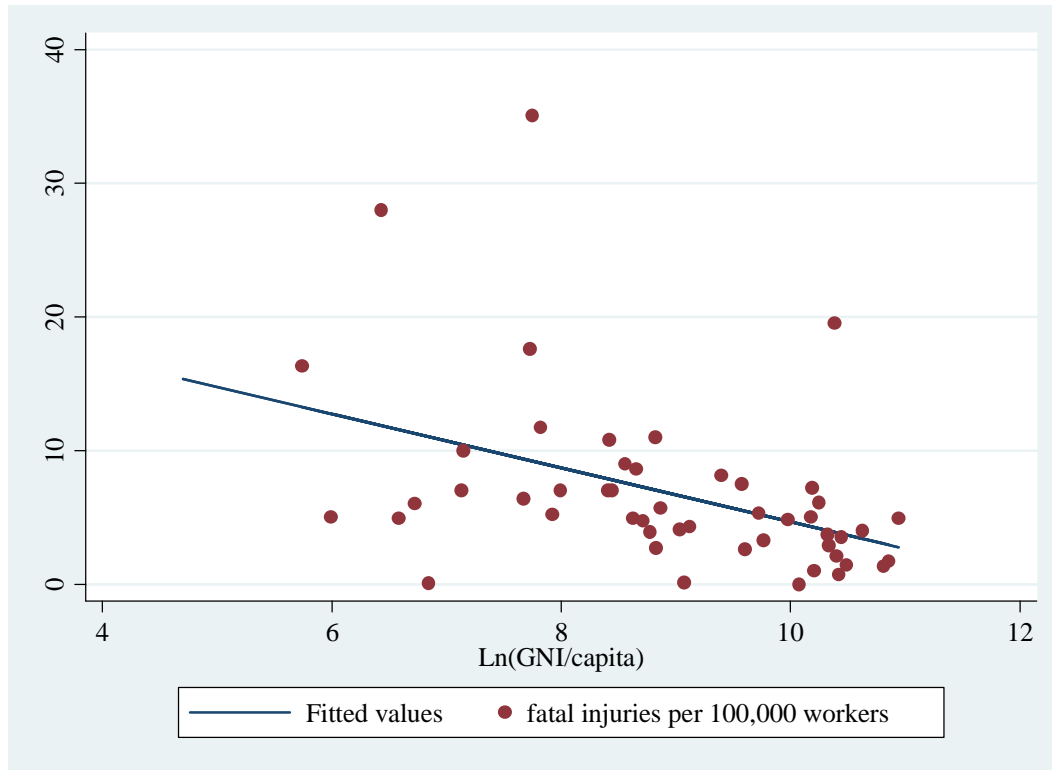
Therefore, the logical conclusion seems to be that working conditions are generally separable from wages. With the exception of minimum wages, working conditions are generally more likely to be determined by convention or law than wages are. The implication of this is that working conditions at the firm level are probably not going to change very much in the short, or perhaps even the medium run, with globalization. Changes can occur as workers shift between firms and between industries in response to globalization.

**Figure 1: National Income and Average Workweek (hours)**



**Notes:** Data on work week and fatal injuries from LABORSTA (a database of the International Labour Office Bureau of Statistics) yearly data, tables 4b and 8b available online at: <http://laborsta.ilo.org>. Work week is avg. work week in manufacturing in 2004 (some are for 2003 or 2002). Correlation between work week and GNI/cap is  $-.3264^*$ .

**Figure 3: National Income and Fatal Injuries**



**Notes:** Fatal injuries is number of injuries resulting in death per 100,000 workers in 2004 (some are for 2003 or 2002). The correlation between fatal injuries and  $\ln(\text{GNI}/\text{cap})$  is  $-.4245^{**}$ . Data on GNI/capita are from the World Bank's Quick Reference Tables available online at: <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20399244~menuPK:1504474~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html>.