



VOL. 1, NO. 3  
MARCH 2006

# EconomicLetter

A stylized world map graphic in shades of teal and blue, showing the outlines of continents.

*Insights from the*  
FEDERAL RESERVE BANK OF DALLAS

## **Apparel Exports and Education:** *How Developing Nations Encourage Women's Schooling*

by William C. Gruben and Darryl McLeod

*To qualify for factory  
jobs in major apparel-  
and footwear-  
exporting nations,  
more women stay  
longer in school.*

Whether Americans shop in fashion boutiques or low-priced superstores, the clothes and shoes they buy are often made in other countries. Many of these nations are poor, not just by U.S. standards but by global norms as well. In years to come, the have-not countries will likely continue to expand their role as world suppliers of apparel and footwear. With the dismantling of the Multifiber Arrangement in January 2005, the last quotas on clothing imports were lifted—except against China. In the World Trade Organization's Doha Round, negotiators are considering a proposal to end tariffs on all exports from the world's 70 poorest countries.





Activists criticize working conditions in developing nations' factories and warn about U.S. jobs lost to imports. But even they concede that entry-level jobs provide much-needed employment for poor workers, particularly young women. Some observers, however, suggest the factory jobs might inflict subtle harm: What if these factory jobs tempt girls to leave school early, sacrificing years of education and sentencing them and their children to a future of low-wage jobs?

Our research refutes claims that apparel and footwear production leads to lower educational achievement for women. We find that clothing and shoe production requires more education than the average woman has attained in many developing countries. The plants usually don't hire women without at least a junior high education. In Bangladesh and other major apparel-exporting nations, to qualify for these jobs, more women stay longer in school (*Chart 1*). Our study also allays concerns that the export factories create jobs for underage workers: Female workers' commitment to seek more education delays child-bearing and lowers the incidence of child labor.

In short, the maligned suppliers of Nike, Gap and Wal-Mart encourage governments to educate women, give women a reason to stay in school and pay them well by local standards. Our study presents a picture of textile and footwear plants that's far less harrowing than the sweatshop stereotype and more compatible with surveys in dozens of countries that find female workers feel they benefit from the factory jobs.

Skill development and increased incomes for women aren't tied simply to apparel and footwear manufacturing, but to production of these goods for export. The reason may involve the industry's peculiar demographics: Women are far more likely to work in export operations. A Bangladesh survey reported in 1999 that 90 percent of garment workers in plants that

serve domestic markets were male. In contrast, 90 percent of export-plant employment was female.<sup>1</sup>

Finding that textile and shoe factories aren't an albatross has important implications for economic development. Since at least the 1940s, economists have argued that nations typically transition from farm-intensive production to light industry and then to higher value-added production. The progression can bog down if countries—perhaps spurred by critics' views—shun the kind of light manufacturing found in textile and shoe production or burden these operations with regulations that make them uncompetitive.

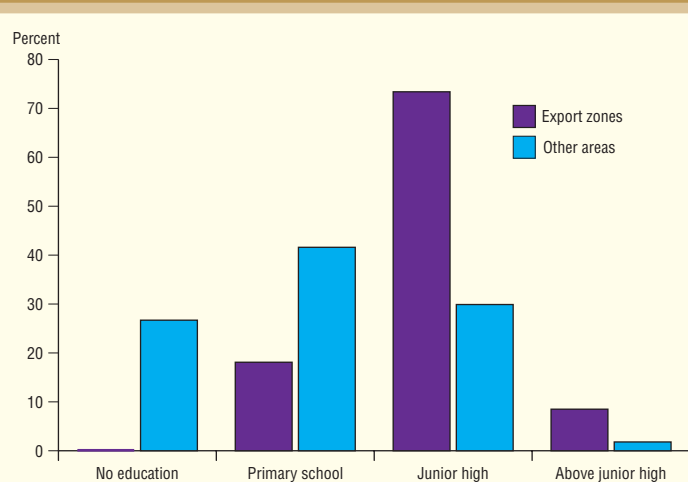
### Exports and Education

We developed a model to analyze the links between shoe and textile exports, education and other key factors in 48 countries, such as Brazil, Ecuador, Mexico, Indonesia, Bangladesh and Madagascar.<sup>2</sup> These nations are among the developing world's most prolific exporters of

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Chart 1

### Education Among Female Apparel Workers in Bangladesh



SOURCE: "The Gender Imbalances in the Export Oriented Garment Industry in Bangladesh," by Pratima Paul-Majumder and Anwara Begum, World Bank Policy Research Report on Gender and Development, Working Paper Series no. 12, June 2000.

shoes and clothing to generally richer member nations of the Organization for Economic Cooperation and Development.

Most important, we look at the relationship between increases in apparel and shoe exports as a share of GDP and the primary- and secondary-school enrollment for males and females. These nations often experienced surges of textile and apparel manufacturing after they were award-

ed large new quotas under the Multifiber Arrangement, a 1974 agreement that regulated apparel trade for over 30 years. Although the Multifiber Arrangement has lapsed, it was in effect during the years of our study and it served to strengthen our conclusions.

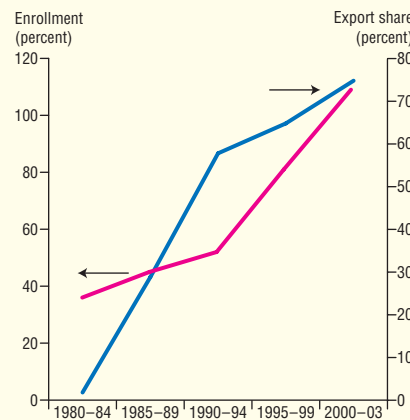
Among the countries studied, increases in apparel and shoe exports as a share of GDP were positively associated with subsequent upturns in

*For the average country, a doubling of apparel and footwear exports as a share of GDP raises female secondary-school attendance by 20 to 25 percent.*

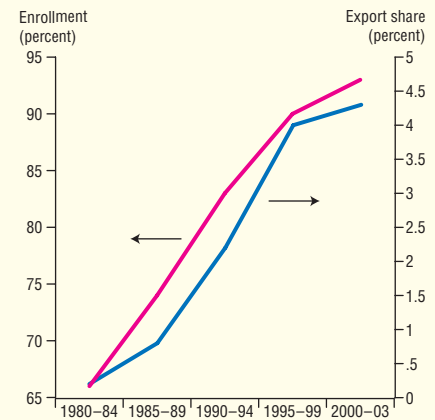
Chart 2

### Female-to-Male Secondary-School Enrollment vs. Apparel Export Share: Typical Scenario

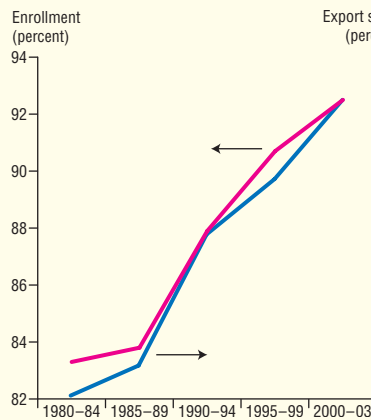
#### Bangladesh



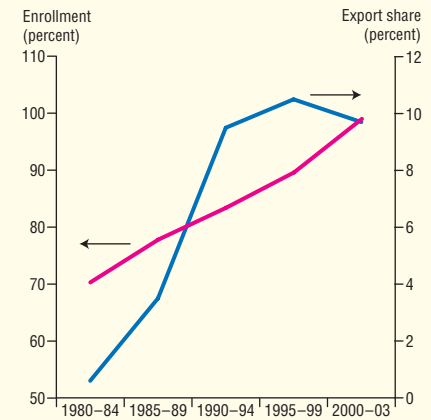
#### Egypt



#### Guatemala



#### Indonesia

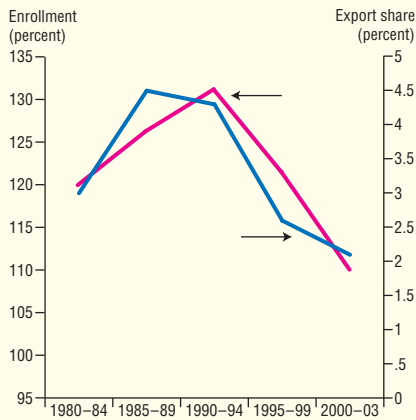


SOURCES: OECD; The World Bank.

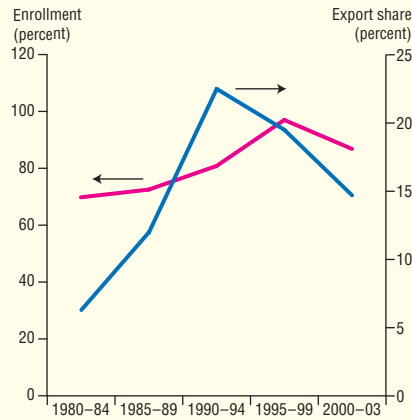
Chart 3

### Female-to-Male Secondary-School Enrollment vs. Apparel Export Share: Brazil and China

#### Brazil



#### China



SOURCES: OECD; The World Bank.

both male and female secondary-school enrollment. For the average country, a doubling of apparel and footwear exports as a share of GDP raises female secondary-school attendance by 20 to 25 percent.

The average, however, masks large country-by-country differences (Chart 2). As apparel and footwear exports surged in Bangladesh, for example, females' secondary-school enrollment actually rose to exceed that of men, starting from 40 percent relative to male enrollment in the early 1980s. In Egypt, an export increase helped women's school attendance rise from 65 percent to over 90 percent of men's. In Guatemala, women's enrollment gained 10 percentage points to approach 93 percent of men's. Indonesia went from 70 percent to nearly 100 percent.

Not all countries show a straight-line pattern. Brazil and China, for example, saw women's enrollment in secondary schools relative to men's rise for a time but then fall back as

clothing and shoe exports ebbed as a share of GDP (Chart 3). This isn't necessarily inconsistent with the observation that the export factories encourage women's schooling. One possible explanation is that growth in industries other than apparel and footwear gave men greater incentives to get an education; thus, their enrollment rose faster than women's.

Apparel and footwear exporters employ both men and women, but female workers make up an overwhelming majority of export clothing manufacturing's labor force and play a substantial role in shoemaking. The factories' skewed demographics may explain why the impact on female education is typically twice as large as that for men.

What about primary education? Higher clothing and shoe exports are associated with even greater increases in female enrollment relative to males. This result isn't surprising. In poor countries, school attendance rates are usually much higher for males than

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Chart 4

### Influence of Apparel Exports on Women's Secondary-School Enrollment



\*Purchasing power parity, in dollars.  
 NOTE: Each country is represented by up to four dots, one for each five-year period in the sample.  
 SOURCES: OECD; The World Bank.

for females. Most boys would already be in school, so added apparel and footwear exports wouldn't motivate them to seek primary education. The girls, many of whom had been getting little primary schooling, would be sent to classes when opportunities emerged for employment in industries requiring education.

Because of cultural or other factors, not all developing nations offer the same educational opportunities to females. We handle this problem with fixed-effects modeling, which distinguishes between countries with high and low female-gender bias. Using this procedure, we find that increased apparel and footwear exports have twice the impact on female secondary-school enrollment in the 28 high-gender-bias countries but little effect on male behavior (*Chart 4*). These results suggest enrollment increases from new apparel and footwear exports would be greatest in Pakistan, Cambodia,

India, Côte d'Ivoire and Bangladesh—the top five nations in educational bias against females.

Because clothing and footwear factory work often involves migration from villages to cities as well as long workdays with overtime, women employees typically postpone marriage and childbearing for several years. A series of surveys in Bangladesh from 1990, 1993 and 1997, reported in 2000 by Pratima Paul-Majumder and Anwara Begum, found that in 1997 female workers who wed before entering garment work married at about age 16, compared with age 20 for those who married after taking factory jobs. The average woman's age at first childbirth was 17 if she had children before garment work; if the first child arrived after she started working, the average age rose to 21.<sup>3</sup>

Survey data can't demonstrate a clear connection between childbirth and factory work. It could be that fac-

tory work has no effect on the women's childbearing behavior. To determine such a relationship, we employ a model similar to the one used for school enrollment to test for the effects of apparel and footwear exports on birthrates in our 48-country sample. The results show that these export industries lead women to give birth to fewer children over their lifetimes. The effects are somewhat stronger in countries with high birthrates than in those with low rates.

The women's higher education attainment may also have an effect on child labor. The United Nations International Labor Organization and the World Bank recently began collecting data on labor-force participation of children aged 11 to 14. Because the data don't make gender distinctions, we can't isolate the effects of any factors upon female child labor. But the data do show that apparel and footwear exports as a share of GDP have a negative and significant effect on the likelihood of 11- to 14-year-olds being employed.

The Multifiber Arrangement countries provide a rich database to explore the impact of increasing textile and footwear production. Most important, the data suggest the plants encourage education, particularly for women, without exacerbating child-labor rates. Increases in exports of oil, soybeans and other products not strongly associated with women's employment didn't lead to increases in female education. The results hold even when we include other explanatory variables that might send more children to school instead of work—such as overall trade, real per capita income and previous levels of secondary-school enrollment. The models, therefore, don't attribute to apparel and footwear outcomes that were actually related to other factors.

The conclusions about clothing and shoe factories' effects on women's education are particularly striking in light of past research. Some studies have found that export manufacturing



operations in developing countries can discourage education and erode the foundations for long-run growth.<sup>4</sup>

The chain of reasoning follows a stylized version of comparative advantage. When poor countries open trade with rich ones, each will raise output of goods that require inputs it has in abundance and reduce production of goods that require inputs in scarce supply. The opening of trade encourages developed countries such as the United States to increase production of goods that require a highly educated labor force. Developing countries will shift production toward goods that require lower educational levels. As the shift in relative demand for inputs takes place, wages of low-skilled workers in poor countries rise relative to highly skilled workers. The resulting decline in the education premium in wages discourages education.

These arguments, however, assume all sectors trade internationally. They also ignore the existence of subsistence agriculture—the work women factory employees want to escape because of its low income and status—and the so-called “informal sector,” another of the inferior alternatives to factory work. Women might very well choose to gain education and find work in textile and shoe factories rather than work in these less desirable sectors.<sup>5</sup>

Previous studies found little if any connection between trade and female education because they focused on general exports, not female-intensive industries. Our study reaches different conclusions because it looks explicitly at export industries that chiefly employ women.

### How Women View Work

The model’s results largely confirm the anecdotal evidence that comes from surveys, interviews and other evidence involving developing countries’ textile and footwear workers.

Women who take jobs in apparel plants could stay home and work. Why don’t they? The at-home alterna-

tive isn’t very attractive. Surveys of female home-based workers in Brazil, Ecuador and Mexico found that they earn 25 to 60 percent less an hour than women who work in factories. In the same surveys, home-based men earned at most 17 percent less than factories pay.<sup>6</sup>

Factory pay is greater—but is it good? An Indonesian survey by Mari Pangestu and Medelina Hendytio reports that 85 percent of women in the garment industry receive at least the minimum wage. With meals, transportation and other allowances included, 96 percent surpass the minimum wage threshold. Overtime work lifts even more employees above the minimum wage standard.<sup>7</sup> The Bangladesh survey series showed factory women earning about 23 percent of their income in the form of overtime and bonuses in 1997.

If you make Nikes, you earn more. The shoe company’s Indonesian shop-floor workers on average earn more than four-fifths of the nation’s working population. In Bangladesh, garment export firms generally pay more than firms not oriented to selling outside the country.

Wages also tend to rise over time. An econometric study of Madagascar’s economy indicates that “a sustained export-driven growth in Madagascar’s textile and apparel industry will lead to a substantial increase in the income of poor households, with a consequent decrease in poverty.”<sup>8</sup>

Pay and working conditions make apparel and shoe factories preferred places to work. Indonesian women don’t see garment factory employment as low-level manual labor. More than 80 percent of them say their jobs give them higher status than being a housewife. Pangestu and Hendytio cite other surveys that find women factory workers regard the agricultural jobs they would have held back home as hard manual labor. Another Bangladesh report finds that women perceive jobs outside the home as enhancing their status.<sup>9</sup>

Relatively high pay encourages education directly by creating demand for employees with more schooling. In general, the surveys found that garment factories had come to expect the equivalent of some middle-school education—more than the national average. Textile and apparel firms expected even more. In fact, the 1993 version of the Paul-Majumder and Begum surveys found the literacy rate much higher for garment workers than for employees in nonexport sectors. More striking, this series showed that the average years of schooling attained by female garment workers increased from 4.1 years in 1993 to 6.3 years in 1997.

The factories boost education in another way, albeit indirectly. In the Indonesia survey, factory pay was good enough to allow 69 percent of the women to assist their families financially. One of the uses of this money was to pay for siblings’ education. The survey reported that these respondents migrated to cities and

*Because clothing and footwear factory work often involves migration from villages to cities as well as long workdays with overtime, women employees typically postpone marriage and childbearing for several years.*

found work in the industrial sector as a means of alleviating poverty, both for themselves and their children. The survey also found that the women not only valued the income but also the independence that went with it.

Other surveys echo these findings. The Bangladesh compendium of surveys revealed that women were often paid less than men for the same job, but 19 percent of the female garment workers still said they had opened bank accounts without their husbands' and families' knowledge.

### Reassessing Women's Work

The disappearance of the Multifiber Arrangement's quotas has resulted in some shifting of operations from very poor countries to China, where transportation infrastructure, availability of low-cost industrial water and other nonlabor factors hold down production costs. Despite the persistence of quotas, China has emerged as the top clothing supplier to the U.S. market. The quota removals for other countries were not accompanied by tariff removals. If the Doha Round negotiations succeed in removing all tariffs faced by the 70 poorest countries, these countries will have opportunities for upward mobility that many of them don't have now.

Some of the best opportunities will be in the apparel and footwear export factories. Much of the criticism aimed at them has been undeserved. Our study shows that these industries encourage rather than diminish women's education. Clothing and footwear manufacturing employment also tends to delay female workers' marriage and motherhood, and it doesn't increase child labor.

These findings should help remove the stigma attached to factory jobs and encourage nations to include them as an integral part of development. The findings also reinforce long-held arguments in economic

development theory that the replacement of agricultural or rural informal-sector jobs with light-industry assembly firms is an important step in raising incomes.

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### Notes

- <sup>1</sup> "Female Employment Under Export-Propelled Industrialization: Prospects for Internalizing Global Opportunities in the Apparel Sector in Bangladesh," by Debapriya Bhattacharya and Mustafizur Rahman, U.N. Research Institute for Social Development, OPB no. 10, Sept. 1, 1999.
- <sup>2</sup> "The Effect of Apparel Manufacturing on Female Education and Child Labor in Developing Countries," by William C. Gruben, Darryl McLeod, Rosendo Ramirez and Maria Davalos, working paper, forthcoming.
- <sup>3</sup> "The Gender Imbalances in the Export Oriented Garment Industry in Bangladesh," by Pratima Paul-Majumder and Anwara Begum, World Bank Policy Research Report on Gender and Development, Working Paper Series no. 12, June 2000.
- <sup>4</sup> "In Search of Stolper-Samuelson Linkages Between International Trade and Lower Wages," by Edward E. Leamer, in *Imports, Exports, and the American Worker*, ed. Susan M. Collins, Washington, D.C.: Brookings Institution, 1998.
- <sup>5</sup> "Skill, Trade and International Inequality," by Adrian Wood and Cristóbal Riddo-Cano, *Oxford Economic Papers* 51, no. 1, 1999, pp. 89-119, and "Trade, Skills and Persistence of Gender Gap: A Theoretical Framework for Policy Discussion," by Ramya Vijaya, *International Gender and Trade Network*, January 2003.
- <sup>6</sup> "The Home as Factory Floor: Employment and Remuneration of Home-Based Workers," by Wendy Cunningham and Carlos Gomez, *World Bank Policy Working Paper* no. 3295, May 6, 2004.
- <sup>7</sup> "Survey Responses from Women Workers in Indonesia's Textile, Garment, and Footwear Industries," by Mari Pangestu and Medelina Hendytio, *World Bank Policy Research Working Paper* no. 1755, April 1997.
- <sup>8</sup> "Who Benefits and How Much? How Gender Affects Welfare Impacts of a Booming Textile Industry," by Alessandro Nicita and Susan Razzaz, *World Bank Policy Research Working Paper* no. 3029, April 15, 2003.
- <sup>9</sup> *The Power to Choose: Bangladeshi Women and Labour Market Decisions in London and Dhaka*, by Naila Kabeer, London: Verso, 2000.

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