

Pieters, Janneke

**Article**

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# Trade liberalization and gender inequality

## Can free-trade policies help to reduce gender inequalities in employment and wages?

Keywords: trade, gender inequality, wages, employment

### ELEVATOR PITCH

Women consistently work less in the labor market and earn lower wages than men. While economic empowerment of women is an important objective in itself, women's economic activity also matters as a condition for sustained economic growth. The political debate on the labor market impacts of international trade typically differentiates workers by their educational attainment or skills. Gender is a further dimension in which the impacts of trade liberalization can differ. In a globalizing world it is important to understand whether and how trade policy can contribute toward enhancing gender convergence in labor market outcomes.

### KEY FINDINGS

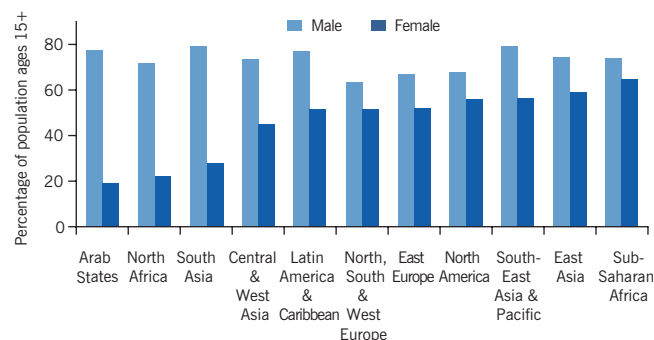
#### Pros

- + Competition promoting effects of trade liberalization can reduce discrimination, by driving discriminating firms out of business or inducing firms to discriminate less.
- + Trade liberalization induces firms to invest in new technology, which can lead to manufacturing jobs being less physically demanding and more suited to women.
- + If countries have a comparative advantage in female-intensive products, or if trade policies benefit these industries, trade can increase women's relative employment and wages.

#### Cons

- There is no clear global pattern in the trade-gender inequality relationship.
- There is no evidence that trade-induced technological change reduces gender inequality in developed countries.
- If capital-intensive exporters attract workers from labor-intensive sectors, the dilution of capital per worker can harm women more than men.
- If exporting requires more committed workers, and women are (perceived as) less committed than men, trade can increase gender inequality.
- There is no evidence to suggest that trade liberalization affects gender inequality in low-income country labor markets.

Male and female labor force participation rate in 2018



Note: Data from *World Employment and Social Outlook: Trends for Women 2018—Global Snapshot*. Geneva: ILO, 2018; Table 1.

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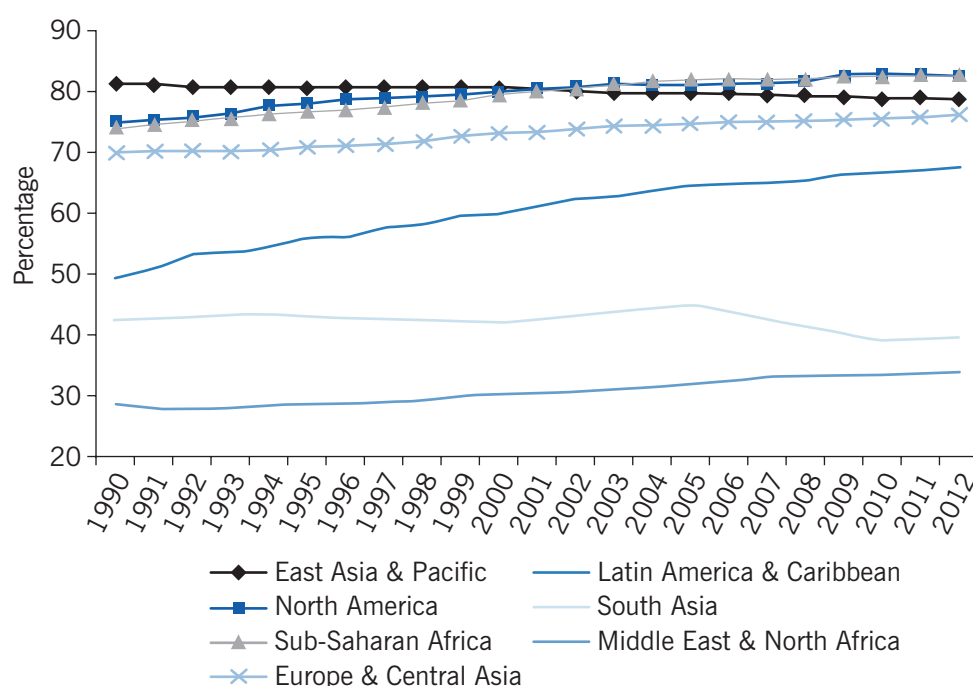
### AUTHOR'S MAIN MESSAGE

While it is not clear that trade liberalization always reduces gender inequality, research indicates a number of channels by which trade policy can improve gender equality in wages and employment. The pro-competitive effects of liberalization can stimulate firms' investment in new technologies and reduce discrimination. Technology upgrading induced by liberalization can make jobs less physically demanding and so improve opportunities for women relative to men. Liberalization policies can also induce a change in the sectoral structure of production; however, this can have positive or negative effects on gender inequality.

## MOTIVATION

In general, women consistently work less and earn lower wages than men. According to projections by the ILO, 75% of men aged 15 and older participated in the labor force in 2018, compared to 48.5% of women. While the economic empowerment of women is an important objective in itself, women's economic activity also matters as a condition for sustained economic growth. Globally, gender gaps have been declining slowly since the 1990s, a period during which countries have become increasingly integrated through international trade. Yet progress varies widely across regions (Figure 1).

Figure 1. Ratio of female to male labor force participation rate



Note: Data apply to the population aged 15+. The declining ratio in South Asia since the mid-2000s is a combination of rising male participation rates and stagnating or even declining female participation rates in some countries, notably a declining female participation rate in India.

Source: ILO Key Indicators of the Labor Market. Online at: [http://www.ilo.org/empelm/what/WCMS\\_114240/lang--en/index.htm](http://www.ilo.org/empelm/what/WCMS_114240/lang--en/index.htm)

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The debate on the labor market impacts of international trade acknowledges the fact that there are winners and losers, typically differentiating workers by their education or skills. Gender, however, is a further dimension within which the impacts of trade liberalization can differ. As global integration continues, it is important to understand whether and how trade liberalization can contribute toward gender convergence in labor market outcomes.

## DISCUSSION OF PROS AND CONS

There are several dimensions of gender inequality in the labor market, which are often closely related. Research on the effects of trade liberalization on gender inequality has tended to focus predominantly on inequality in wages and in employment, or labor force participation rates.

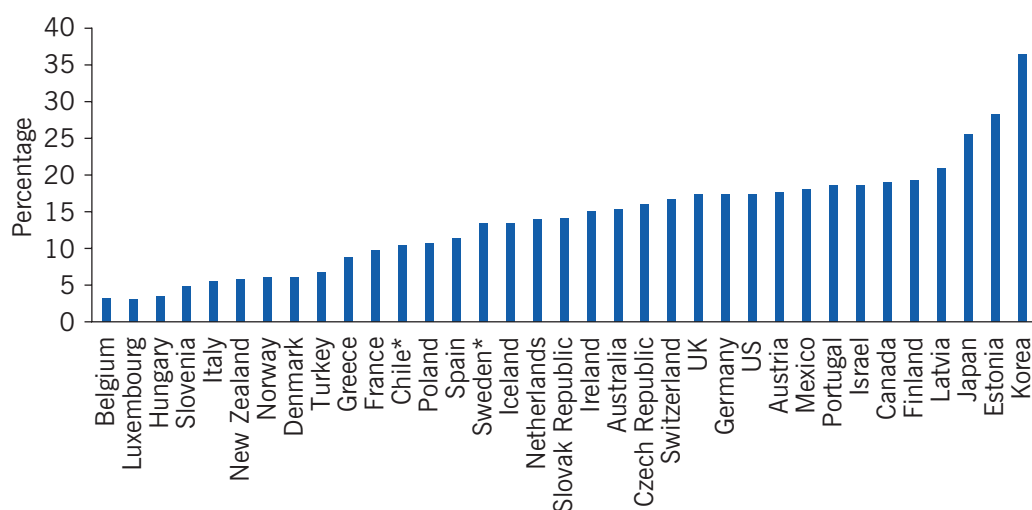
Gender wage inequality can be measured in a variety of ways. The most straightforward measure compares mean, or median, wages of male and female workers. Figure 2 shows gender wage inequality for full-time workers in OECD countries, based on median wages. It demonstrates that, across OECD countries, women earn between 4% and 40% less than men. However, the fact that average wages are not equal does not necessarily suggest that there is gender inequality in pay. It might reflect actual gender differences in productivity.

Empirical research often uses workers' age, work experience, and level of education as a proxy for their productivity. The wage gap that remains, after these characteristics are accounted for, measures inequality in pay for equally "skilled" men and women. Women will earn less than equally skilled men if they get less pay for the same job, but also if for some reason they work in different types of jobs—with lower pay—despite having similar observable skills as men.

Trade liberalization can also have several meanings. Typically, countries do not move from a situation of no trade to free trade. Empirical analysis on the impacts of trade sometimes analyzes observed changes in countries' openness, measured as trade to GDP ratios or foreign direct investment (FDI) inflows. In other cases, analysis is based on trade policy reforms, which include episodes of unilateral import tariff reductions and the introduction of bilateral or regional trade agreements. Depending on the type of liberalization reform undertaken, trade policy can either increase competition from imports or expand opportunities for exports, or both.

A number of studies have analyzed the relationship between trade openness and gender inequality across a large set of countries (e.g. [1]), in order to try to determine whether countries that have engaged more in international trade and FDI also experienced greater reductions in gender inequality. Such a link might be reasonably expected because,

Figure 2. Gender wage gap in OECD countries, 2014



Note: Gender wage gap for full-time employees and self-employed, calculated as (male–female median wage)/(male median wage). Numbers for Chile and Sweden are for 2013.

Source: OECD. Gender Wage Gap (Indicator), 2018. doi: 10.1787/7cee77aa-en [Accessed May 4, 2018].

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for example, free trade encourages stronger competition, which makes discrimination more costly. Trade can also enhance job opportunities for women in countries that have a comparative advantage in female-intensive sectors, such as textiles and clothing. However, the cross-country empirical evidence is mixed, and indicates there is no clear global pattern in the trade–gender inequality relationship. The level of development of a country and its sectoral structure appear to matter, which may be reflecting the importance of comparative advantage. It is also unclear whether the associations found in the data reflect a causal effect of trade openness or merely a correlation.

Since there are several potential reasons why gender inequality exists in the first place, there are also multiple channels through which trade liberalization can have an effect on gender inequality. The most convincing empirical evidence on the causal effects of trade liberalization is provided by studies that focus on one or more of these channels.

Two potentially important determinants of gender inequality in wages and employment are: (i) discrimination; and (ii) differences in characteristics of men and women. Although there are certainly other determinants of inequality, which are difficult to disentangle, it is helpful to organize the discussion of empirical evidence around these two factors.

## Discrimination

Gender discrimination can be defined as a situation in which a woman receives a lower wage than a man for the same job and level of productivity. In theory, the trade–discrimination relationship stems from the assumption that some employers are for some reason more inclined toward discrimination. That is, some employers prefer to hire men for jobs for which women are equally qualified. Yet if women earn lower wages than men, on average, employers could actually reduce their costs by employing more women. This is why discrimination is costly. In a competitive market, non-discriminating firms have a competitive advantage and would be expected to drive discriminating firms out of business. Discrimination will therefore persist only in those markets in which firms have market power. To the extent that international trade exposes firms to increased competition, it will reduce discrimination, either by driving discriminating firms out of business or by inducing firms to discriminate less.

Empirical evidence for the US shows that during the 1980s, increased competition from international trade led to a reduction in gender wage inequality and an increasing share of women in employment [2]. The analysis uses employment, wages, and imports in US manufacturing industries in the period 1977–1994. The gender wage gap is measured among full-time workers aged 18–64 and is conditional upon education, age, and race. Industries that saw a greater increase in the ratio of imports to domestic output also showed a larger reduction in the gender wage gap. However, it was only amongst those industries within which domestic firms previously had market power (i.e. the so-called “concentrated” industries). In the group of industries that were already competitive prior to the increased import penetration, there was no relationship with changes in gender wage inequality. Their findings suggest, therefore, that the effect of import penetration on gender wage inequality was driven by increased competition in previously uncompetitive markets.

A more recent study focuses on a trade policy reform in Colombia to analyze the causal effect of trade liberalization on gender inequality in the manufacturing industry [3].

Between 1985 and 1991, Colombia unilaterally reduced its import tariffs in order to align the country's trade protection structure with that of other members of the World Trade Organization. Tariffs declined by 31.4 percentage points on average, but by much more in some industries than in others, so that competition from foreign producers increased more in some industries than in others. The study found that firms in industries that saw the greatest tariff reductions had the largest increase in the female share of employment. Surprisingly, however, the effect of tariff cuts was *more* pronounced in industries that were already more competitive prior to the trade policy reforms. These results suggest that discrimination was not the channel through which liberalization reduced gender inequality in Colombia. It remains unclear what mechanism did lead to lower gender inequality in this case. As will be discussed below, trade-induced technological change is one possible explanation.

### Gender differences in worker characteristics

Even in the absence of employer discrimination against women, gender gaps in pay and employment can result from gender differences in worker characteristics. Recent labor market research has built on the notion that, whereas men and women have equal cognitive abilities, men have more physical strength than women. It could therefore be said that men are relatively better endowed with physical strength and women are relatively better endowed with cognitive ability, even if they have the same age and education level. This matters because strength and cognitive ability are not equally important across all production technologies. Generally speaking, in production processes that use advanced technology and equipment, workers with high cognitive ability can be highly productive, whereas in production processes that use more simple machinery and equipment, workers tend to require more physical strength in order to be highly productive.

What this implies is that men can be relatively more productive than women in certain industries. Furthermore, if technology is upgraded within a firm or industry, physically demanding jobs can be made easier so that the productivity of women in those jobs will increase relative to that of men. Effectively, the advantage of male workers' greater physical strength is reduced. The link between this observation and trade liberalization is twofold. First, international trade can induce technological change. Second, trade liberalization can lead to a reallocation of production factors across sectors of production. Both of these links are now considered separately.

### Technological change

The notion that trade liberalization stimulates technology upgrading bears similarity to the idea that trade liberalization discourages discrimination. Increased competition from imports and improved opportunities for exporting can induce firms to invest in technology upgrading as a means of improving their competitiveness.

Research on the US labor market in the 1970s and 1980s shows that increases in computer use can explain more than half of the growth in demand for female workers [4]. Another study found that skill-biased technological change, especially the adoption of computers, could explain about 41% of the closing gender wage gap between 1979 and 1999 in the former West Germany [5].

One recent study analyzes the effect of trade liberalization on gender inequality through technological change, explicitly using the North American Free Trade Agreement (NAFTA) between Canada, Mexico, and the US [6]. Tariffs on trade between the countries were reduced, which improved export opportunities for firms in Mexico. The study uses data for medium- and large-size Mexican manufacturing firms during the period 1991–2000. Firms in industries with larger US import tariff reductions were more likely to start exporting, compared to firms in industries with smaller US import tariff reductions. Further results show that exporting firms were more likely to upgrade their technology (by acquiring new automatic or computerized machinery and equipment from developed countries) than non-exporters, and that technology upgrading was more likely in industries with larger tariff reductions.

Finally, the results show that the female share of blue-collar employment increased more in industries with larger tariff reductions, while there was no effect on the female share of white-collar employment. In sum, the study provides compelling evidence that liberalization-induced technology upgrading benefitted women more than men, by reducing the physical strength required in blue-collar occupations.

Importantly, NAFTA not only improved Mexican firms' access to the US market, but also increased competition from imports, since Mexico also reduced its tariffs on imports from Canada and the US. This could have driven technology upgrading as well. A third channel through which trade liberalization can stimulate technological change is by giving domestic firms access to cheaper, better, or new imported intermediate products. The researchers show, however, that the effect in Mexico was driven by improved access to the US market, rather than through increased competition from imports or reductions in import tariffs on intermediate inputs. Finally, it is important to note that in this study, firms' investments in technology were only considered to be "upgrading" if the firms imported their new machinery and equipment from rich countries. This suggests that similar effects may be less pronounced in rich countries, where there is less scope for firms to upgrade their technology.

## **Sectoral reallocation of production**

The second link between male–female differences in characteristics and trade liberalization relates to the sectoral reallocation of production factors. Standard trade theory predicts that trade liberalization induces an expansion of the particular sector in which a country has a comparative advantage. A consequence of this is that production factors are reallocated from import-competing sectors toward exporting sectors. What makes this reallocation across sectors relevant for gender inequality is the fact that a strong sectoral segregation of male and female workers can be observed in virtually all countries of the world. Female workers are more likely to work in the services sector than male workers, while men are more likely to work in the manufacturing sector. And within the manufacturing sector, the female intensity of production also differs widely across industries. For example, textiles and apparel production are, typically, relatively female-intensive, whereas the production of motor vehicles is very male-intensive.

As noted previously, men are physically stronger and can therefore be relatively more productive than women in activities that require physical strength. This can be a reason



why male and female workers tend to be concentrated in different sectors of production, although there are certainly other explanations for sectoral segregation, such as gender differences in preferences and social norms that stigmatize female factory work. But to the extent that female intensity of production varies across sectors due to gender differences in productive characteristics, what matters for gender inequality is not so much the overall level of trade, but rather the sectoral pattern of trade. This is because the sectoral pattern of trade will determine whether trade increases the demand for female workers relative to male workers.

Unfortunately, there is little agreement on how exactly the sectoral pattern of trade matters for gender inequality, and the available empirical evidence is limited. A few recent studies have analyzed the impact empirically, but they arrive at somewhat different conclusions.

### ***Comparative advantage and fertility***

The first study analyzes the link between comparative advantage and fertility [7]. It starts from the idea that a country's technology and resource endowments determine in which sectors it has a comparative advantage. Furthermore, each sector has a certain female share of workers, which is assumed to be the same across countries and is calculated as the average female share of labor in each sector across a large number of countries. In some countries, the comparative advantage sectors are relatively female-intensive (for example, in countries with a comparative advantage in textiles and apparel), while in others they are relatively male-intensive. In the former countries, women are relatively more productive than men. This is, in part, because international trade increases demand for comparative advantage goods, thereby inducing a flow of capital from male-intensive to female-intensive sectors. Higher relative wages for women imply that women face a higher opportunity cost, in terms of forgone wages, for raising children, and therefore fertility will be lower.

The empirical analysis uses industry-level export data for 61 manufacturing industries in 145 countries over the period 1980–2007. It shows that countries with a comparative advantage in more female-intensive goods do indeed have a lower fertility rate. This suggests that the effect of trade liberalization on gender inequality in the labor market varies across countries, with liberalization reducing gender inequality only in those countries that have a comparative advantage in female-intensive goods.

### ***Capital intensity within sectors***

The second study argues that what matters is the capital intensity of different sectors [8]. It builds on the idea that capital-abundant countries will have a comparative advantage in capital-intensive sectors. Furthermore, because women have less physical strength, women's labor productivity is more closely tied to the capital intensity of production than men's labor productivity. If capital-rich countries liberalize trade with poorer countries, production factors will reallocate toward the capital-intensive export sector. Because the contracting sectors are more labor intensive, capital per worker in the export sector will be diluted. This reduces women's productivity more than men's, which results in increased gender inequality in wages and employment. The empirical analysis shows that gender gaps in employment and wages in the US increased due to growing trade with Mexico. States closer to Mexico had greater growth of trade with Mexico between



1990/1991 and 2006/2007 and experienced a decline in the female share of employment and a rising gender wage gap, relative to states further away from Mexico.

Neither study investigates whether the reallocation of capital and workers is in line with their theoretical model, although this appears to be crucial for the predicted impact of trade on gender inequality. From other research it is known that trade liberalization does not always lead to a shift of production factors toward comparative advantage sectors or exporting firms. One study of 25 liberalization episodes in developing and transition economies found only a small and statistically weak increase in labor movements across manufacturing industries after liberalization [9].

It is not well understood what exactly limits labor movements, but potential explanations include restrictive labor regulation and domestic policies that counteract trade liberalization policies. Another explanation is that trade liberalization often involves sector-specific tariff reductions. Consider a country with a comparative advantage in heavy manufacturing: if this industry was historically highly protected and is confronted with greater import tariff reductions than other industries, it is unlikely to absorb many workers from other industries. In general, the sectoral structure of import tariff reductions is likely to affect the sectoral patterns of labor reallocation, and therefore the impacts of liberalization on gender inequality. Two recent studies illustrate this point.

### ***Sector-specific import tariff reductions***

Brazil is an example of a country where trade liberalization did not lead to a reallocation of workers toward comparative advantage sectors or exporting firms. In Brazil, unilateral trade reforms that reduced import tariffs in the early 1990s reduced total employment in the tradable sector, with workers moving into unemployment, inactivity, and the non-tradable sector [10]. The employment effects on men were stronger than on women, which can be explained by the fact that the tradable sector as a whole is relatively male-intensive in Brazil [11].

In Indonesia, import tariff reductions in the 1990s led to higher employment rates, primarily due to the benefits of lower tariffs on imported intermediate inputs. In the Indonesian case, the increased employment was concentrated among women, in part because more female-intensive industries relied to a greater extent on inputs for which import tariffs declined most. Hence, employment in female-intensive industries expanded relatively more [12].

In summary, it is clear that the sectoral pattern of trade matters for gender inequality effects of liberalization. But it is not clear to what extent production factors move into comparative advantage sectors, as might be expected based on the theory. This may vary across countries, depending on sector-specific trade barriers (such as import tariffs) and on other domestic policies. Equally important, the impact of sectoral reallocation on gender inequality will depend on the substitutability of male and female workers, and the complementarity between male and female workers and capital.

### **Commitment and flexibility of male and female employees**

Besides men's greater physical strength, another difference between male and female workers that has received attention in recent literature is the extent to which they are able and willing to work long hours and to be available at short notice, for instance for

business travel. Given the fact that women typically carry most family responsibilities, female workers are generally less flexible and less committed—or at least they are perceived as such. If trade is related to the commitment and flexibility that firms require of their workers, there is another link to gender inequality.

A study of the Norwegian manufacturing sector for the period 1996–2010 investigates exactly this link, and finds that when firms start exporting, the gender wage gap increases among college-educated workers [13]. Furthermore, gender wage gaps are higher when the firm's export destinations have smaller overlap in business hours with Norway. This suggests that the increased gender wage gap is at least partly driven by the need for exporting firms' employees to work outside regular business hours.

Through this channel, trade liberalization and especially export promotion contribute to higher gender inequality among educated workers.

## LIMITATIONS AND GAPS

The understanding of the magnitude and direction of sectoral labor reallocation in response to trade liberalization is still limited. However, it is known that the adjustment process can take a long time and create substantial costs for workers. What further complicates matters is that there can be considerable variation across sectors with regard to the extent to which male and female workers are substitutable, which itself can change in response to liberalization-induced technological change.

Another important gap is the lack of research on the gender inequality impacts of trade liberalization in the least developed countries. It is difficult to generalize evidence from middle-income countries to the poorest countries, as the latter may have to compete more on low-wage labor and may face difficulties in introducing advanced technologies.

Finally, while this article describes the evidence on gender inequality in the labor market, there is broader research on the links between trade and gender inequality in society. For example, globally integrated countries may be subject to more international pressure for political change. There is indeed research showing that spillovers of women's economic and social rights can be found between countries that are connected through trade or FDI.

## SUMMARY AND POLICY ADVICE

Trade policy is not generally considered among the alternatives for promoting gender equality. Yet empirical evidence suggests that trade liberalization can have significant effects on gender inequality in wages and employment. Although there is no clear global pattern by which trade liberalization always reduces gender inequality, research indicates several channels through which gender equality can be enhanced.

First, theory suggests that the pro-competitive effects of trade liberalization can reduce discrimination and thus reduce gender inequality. Yet the empirical evidence is limited and inconclusive.

Second, the pro-competitive effects of trade liberalization can reduce gender inequality by inducing technology upgrading, which can make manufacturing jobs less physically demanding. As a result, the productivity of women in those jobs will increase relative to that of men. For this to occur it appears to be important that firms have access to

advanced technology from more developed countries, as demonstrated by research on Mexican firms.

Third, trade liberalization policies can induce a change in the sectoral structure of production, which can have positive or negative effects on gender inequality. Available evidence suggests that the actual effects on gender inequality will depend on the female intensity as well as the capital intensity of those sectors in which a country has a comparative advantage.

Finally, trade liberalization can increase gender inequality when exporting increases firms' demand for employee flexibility and commitment, and when women are (perceived as being) less flexible than men.

### Acknowledgments

The author thanks two anonymous referees and the IZA World of Labor editors for many helpful suggestions on earlier drafts. Version 2 of the article introduces a new “con,” updates the illustration on p. 1 and Figure 2, introduces a number of new key references [11], [12], [13], and discusses the relationship between trade and employee commitment and flexibility and its link to increasing gender inequality.

### Competing interests

The IZA World of Labor project is committed to the *IZA Guiding Principles of Research Integrity*. The author declares to have observed these principles.

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