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TRADE POLICY AND GENDER:

EXAMINATION OF GENDER AND SECTOR-SPECIFIC OUTCOMES

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Abstract: This paper assesses the economic impact of U.S. trade agreements implemented from 1984 to 2013 on U.S. labor markets for male and female workers. The main challenge in retrospective analysis, such as that undertaken in this paper, is to disentangle the impact of the trade agreements from the many changes in economic conditions that coincided with the implementation of the agreements. This paper combines an econometric model of trade with the GTAP CGE simulation model to estimate the impact of the bilateral and regional agreements on sector-level bilateral trade in goods and services. This paper builds on earlier work by the U.S. International Trade Commission. In particular, the U.S. input-output statistics are expanded to identify employment by sector for female and male workers. These employment statistics are obtained from the Current Population Survey (CPS). The paper finds that the U.S. trade agreements have generally benefitted the American workers and that women benefitted more than men, both in terms of wages and employment.

Keywords: trade, trade agreements, distributional effects, gender

Introduction

The era of the Free Trade Agreements (FTAs) in the United States began in mid-1980s with the Uruguay round of multilateral trade negotiations. The first bilateral trade agreement signed by the United States, the US-Israel FTA, entered into force in 1985. Thirteen additional agreements went into force by 2013. During that period, in addition to reducing tariffs, the U.S. FTAs evolved to include coverage of issues like government procurement, intellectual property, investment, e-commerce, labor, and the environment (USITC, 2016). While none of these FTAs include provisions on gender, the policies in those agreements may have differential effects on men and women in the United States.

The topic of trade impacts on gender-specific outcomes has become more important in the last several years. Two new Regional Trade Agreements (RTAs)—the Chile and Uruguay FTA of 2016 and the modified Canada-Chile FTA of 2017—include a chapter on gender equality in trade policy. The WTO's Joint Declaration on Gender and Trade in 2017 was endorsed by over 100 countries. Major international organizations such as OECD, WTO, UNCTAD, and the World Bank Group have called for more data collection and analysis of the effect of trade on gender (in)equality.

However, the academic literature on the topic is relatively small. Work linking trade exposure to wages and employment of men and women separately is primarily focused on the gender wage gap and female employment in manufacturing industries. The findings are generally positive for women, although mechanisms at work differ. Brussevich (2018) finds that gains from trade in the United States are higher for women than men and the gender wage gap declines. That is because women tend to work in services industries that do not compete directly with imports, while men more often work in import-competing manufacturing. At the same time, export-intensive U.S. manufacturing firms tend to pay

higher wages and the wage premium is higher for women in those firms than for men (Gurevich and Riker, 2018). The results for the United States are similar to those for other large countries.[1]

The literature also puts a large emphasis on the importance of sectoral segregation in employment and trade barriers in determining women's economic outcomes stemming from trade. WTO Report (2017) notes that higher tariff barriers on certain products together with the sectoral structure of female employment may make it more difficult for women to reap the benefits of exporting. For example, in India women tend to work in sectors that face higher barriers to exports in the destination countries. UNCTAD (2016) report that gender-based occupational segregation is pervasive, persistent, and accompanied by the gender wage gap.

To understand the linkages between trade and gender, this paper assesses the economic impact of U.S. trade agreements implemented from 1984 to 2013 on U.S. labor markets for male and female workers. The paper's scope includes the multilateral Uruguay Round agreements as well as 15 U.S. bilateral and regional trade agreements. In chronological order, the trade agreements are the U.S. bilateral agreements with Israel and Canada; the North American Free Trade Agreement; the Uruguay Round Agreements; U.S. bilateral agreements with Jordan, Singapore, Chile, Australia, Morocco, and Bahrain; a U.S. regional trade agreement with the Dominican Republic and five Central American countries; and five more U.S. bilateral agreements, with Oman, Peru, South Korea , Colombia, and Panama.

The main challenge in retrospective analysis, such as that undertaken in this paper, is to disentangle the impact of the trade agreements from the many changes in economic conditions that coincided with the implementation of the agreements. This paper combines an econometric model of

[1] For Brazil, see Benguria and Ederington (2017); for an overview of OECD countries, a selection of large Asian and South American countries see WTO (2017); for Mexico see Artecona and Cunningham (2000).

trade with the GTAP CGE simulation model to estimate the impact of the bilateral and regional agreements on sector-level bilateral trade in goods and services. The econometric model estimates the total tariff equivalents of the barriers to cross-border trade that are removed by the trade agreements, including both tariffs and nontariff measures. The tariff equivalents measure the sizes of the trade barriers that explain the observed volume of trade between agreement partner countries, assuming that they can be approximately represented by an ad valorem tariff.

The contribution of this paper is twofold. First, sectors considered here include not only manufacturing but also tradeable services. Second, this paper is the first study to our knowledge to provide a retrospective evaluation of the effects of decades of the U.S. trade policy specifically on women separately from men. The remainder of the paper is structured as follows: the next section discusses changes to the GTAP model that were made to produce the simulations. It is followed by sections on data, results, and conclusions.

Model

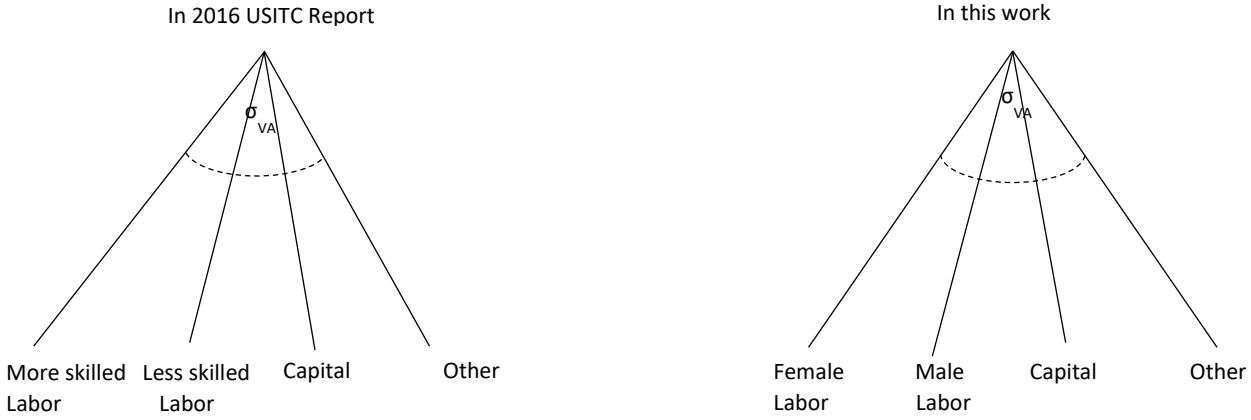
The simulated effects reported in this paper are based on work developed in a 2016 report by the U.S. International Trade Commission titled "*The Economic Impact of Trade Agreements Implemented Under Trade Authorities Procedures."* In that work the GTAP framework (Hertel, 1997 and Corong et al., 2017) was employed to simulate the impact of U.S. trade agreements at four years: 2004, 2007, 2011, and 2012. The model datasets for 2004, 2007, and 2011 were obtained from Version 9 of the GTAP Database GTAP (Aguiar, Narayanan, and McDougall, 2016). Each one of the four simulations was based on a dataset for a different year and a different trade policy scenario because, for example, the U.S. had implemented more trade agreements in 2011 than in 2004.

In the USITC report, the GTAP datasets specified all relevant U.S. trade partners and 45 sectors. Forty-three of the sectors were standard GTAP sectors in Version 9. Two other sectors represented

aggregations of the remaining 12 GTAP sectors: one sector represented all extractive activities, and the other sector represented services which are mostly non-traded. Extraction and non-traded services were not affected directly by U.S. trade agreements, that is their trade costs were not shocked.

For this work we edited the labor data for the U.S. economy in the 2004, 2007, and 2011 datasets based on the statistics discussed in the data section below. We changed the specification of labor from two types of skill (less than average skill and more than average skill) to male and female workers. We did not change the substitution possibilities between labor, capital, and other primary factors at the sector level, figure 1.

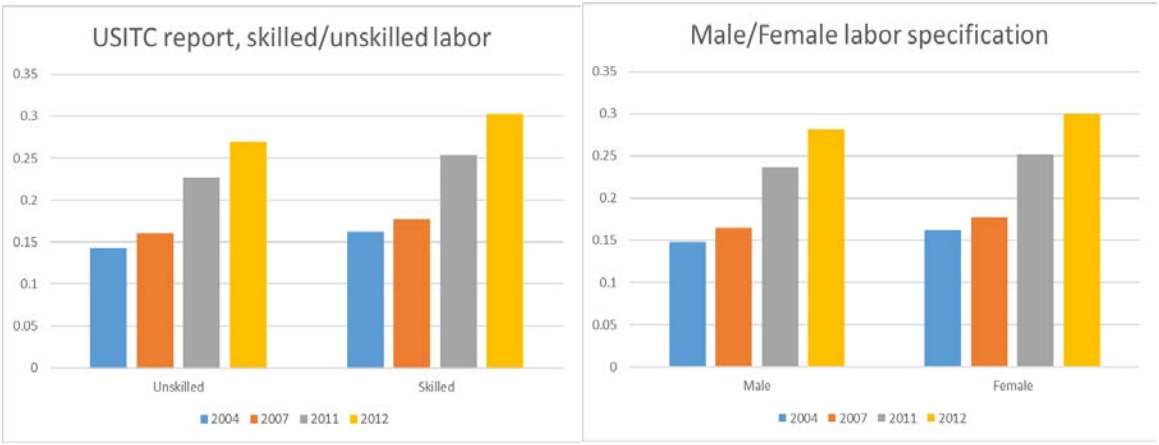
Figure 1



We then re-run the U.S. trade agreements scenarios. Figure 2 shows the simulated effects for real wages for male and female workers as well as for more and less skilled labor from the 2016 USITC report. Figure 2 reports effects for all workers in the U.S. economy.

A comparison of the two sets of simulated effects reveals that the magnitude of effects in this work is the same with the magnitude of effects obtained in the 2016 USITC report and the effects for male workers are almost identical to the effects for female workers.

Figure 2



To understand whether there are notable differences between men and women in the labor force, we then disaggregated the U.S. labor statistics by skill level and by gender: male–less skilled, male–more skilled, female–less skilled, and female–more skilled and re-run the U.S. trade agreements scenarios.

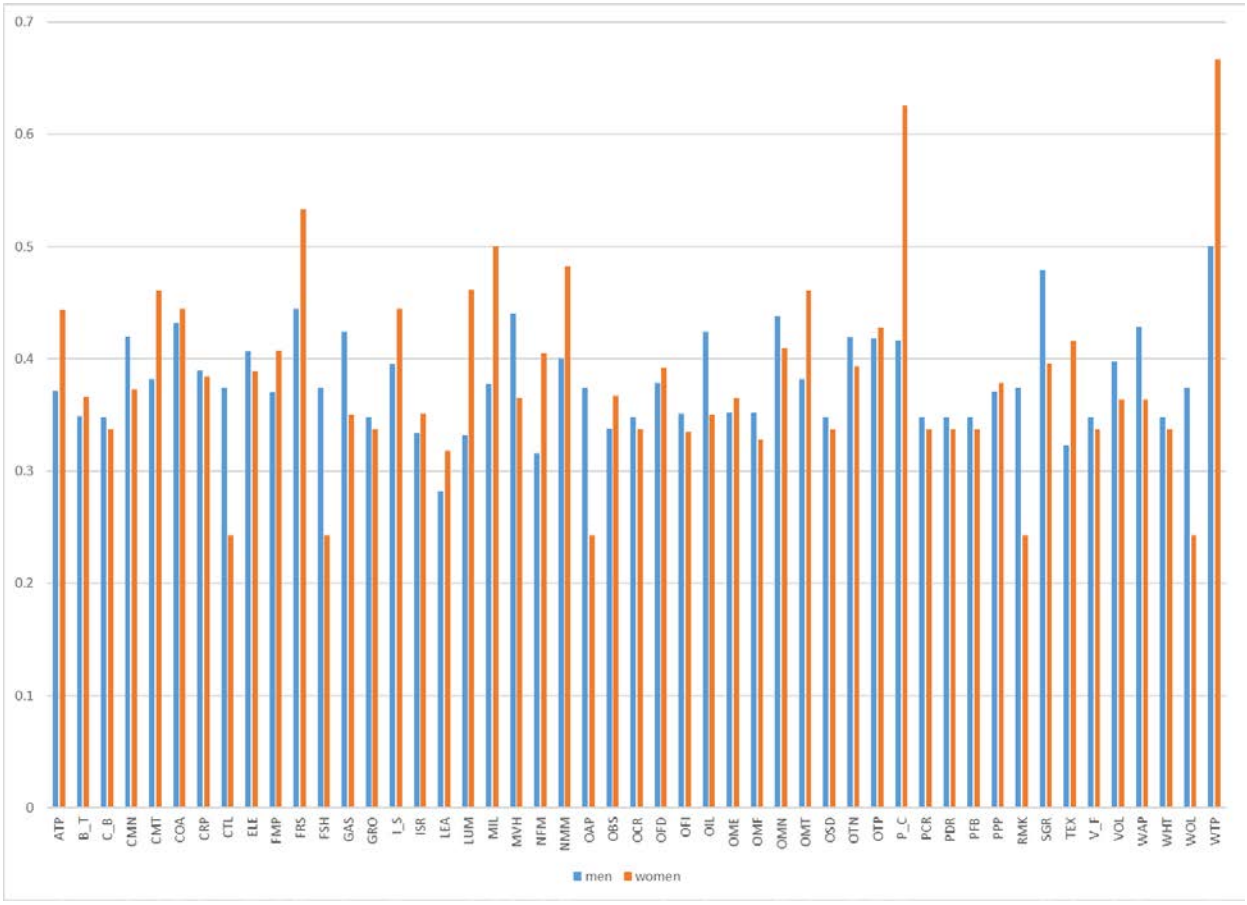
Data

This paper builds on earlier work by the U.S. International Trade Commission (USITC 2016). In particular, the U.S. input-output statistics are expanded to identify employment by sector for female and male workers. These employment statistics are obtained from the Current Population Survey (CPS) using the annual demographic files.[2] The dataset is a repeated annual cross-section survey of a representative sample of the U.S. civilian noninstitutional population age 16 and older. This paper uses 2004, 2007, 2011, and 2012 CPS releases. To maintain consistency with the USITC 2016 report, this paper uses aggregated gender and employment data on six groups of sectors: grains and crops, livestock and meat, mining and extraction, light manufacturing, heavy manufacturing, and tradeable services, defined in Table F.1 of the USITC report. The analysis utilizes variation in sectoral employment by gender and wage and changes in the U.S. trade policy from 1984 to 2013.

[2] For more information and to download data, visit https://www.bls.gov/cps/

Each CPS release contains detailed information about some 80,000 U.S. workers' industry of employment, wage income, and gender. An average worker in the sample is around 42 years old, with men older than women by several months. Unconditional mean wage of women is about 70 percent that of men who earned an average of $43,200 in 2007. However, there's variation in earnings of men and women in different sectors. Figure 3 illustrates earnings heterogeneity by comparing shares of workers, by gender, earning above-average wage in each sector. For example, as can be seen from the figure, there are more women earning above average wages in the textiles industry, while a higher share of men earns above average wages in the fishing industry.

Figure 3: Share of above average earners, by sector, by gender, 2004

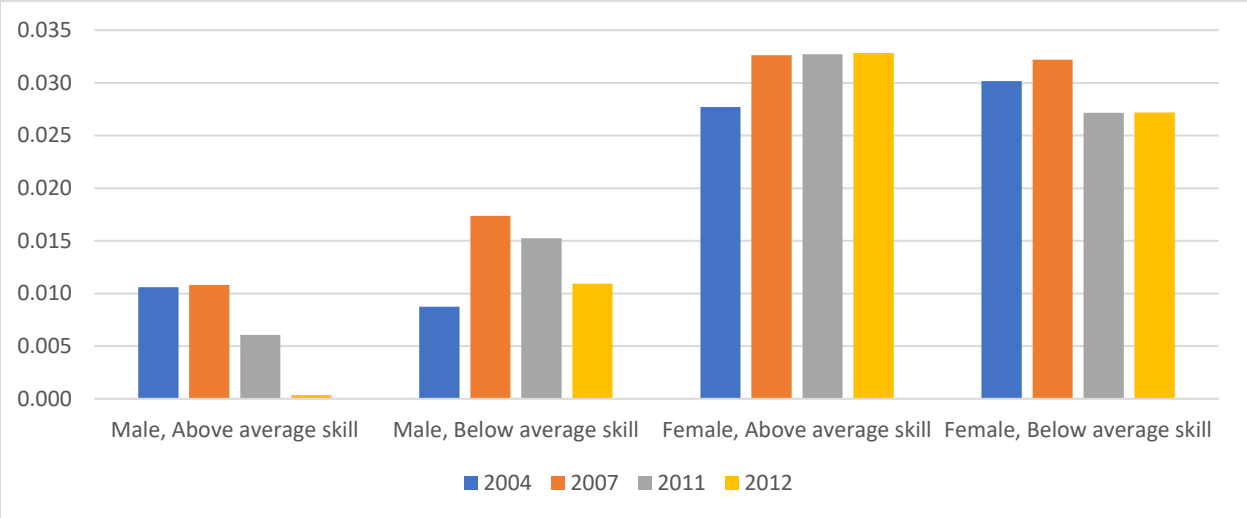


To take advantage of this earnings heterogeneity, in each year, each worker was classified as earning above or below average wage in their sector. Those workers were then split into males and females who earn above or below average. The shares determined the split of total wage bill in the GTAP database.

Results

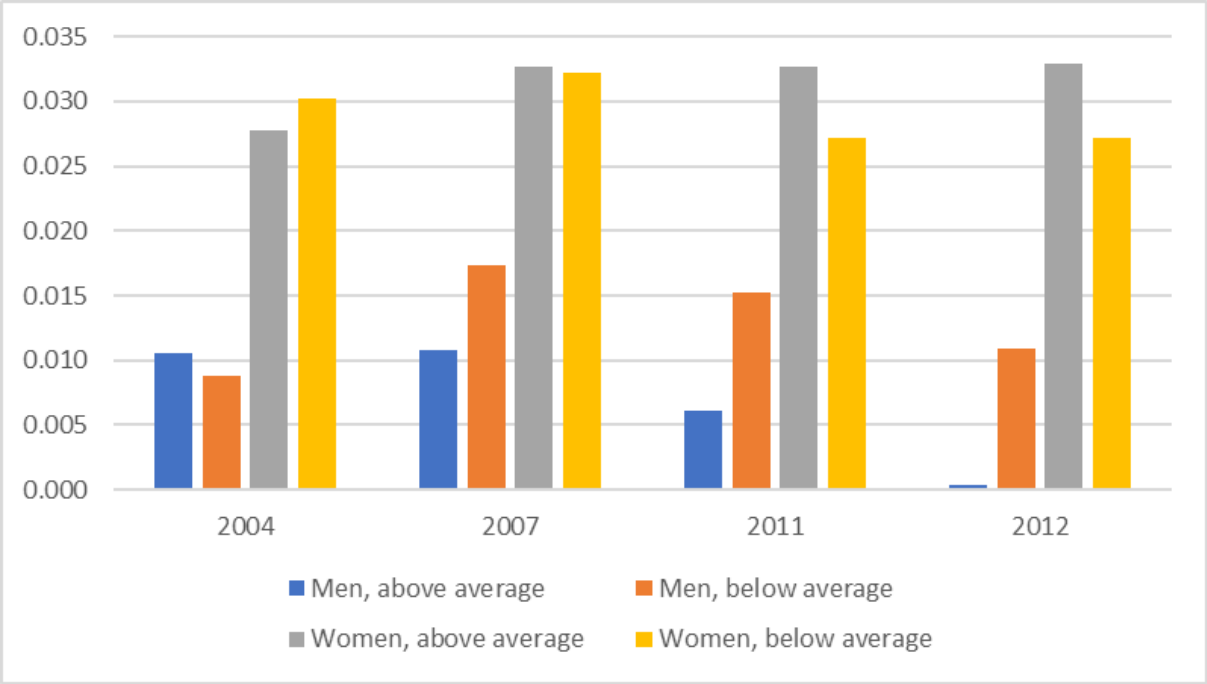
We find that the past U.S. trade agreements were more beneficial for female than male workers in sectors that were directly affected by the changes in trade policy (i.e., excluding workers in extraction and non-tradeable services industries). Figure 4 summarizes the simulated effects for real wages for male and female workers by skill level and year. In each year reported, for both skill levels, women saw a percent increase in wages at least twice the size of that for men even though the magnitude of the effects was small.

Figure 4



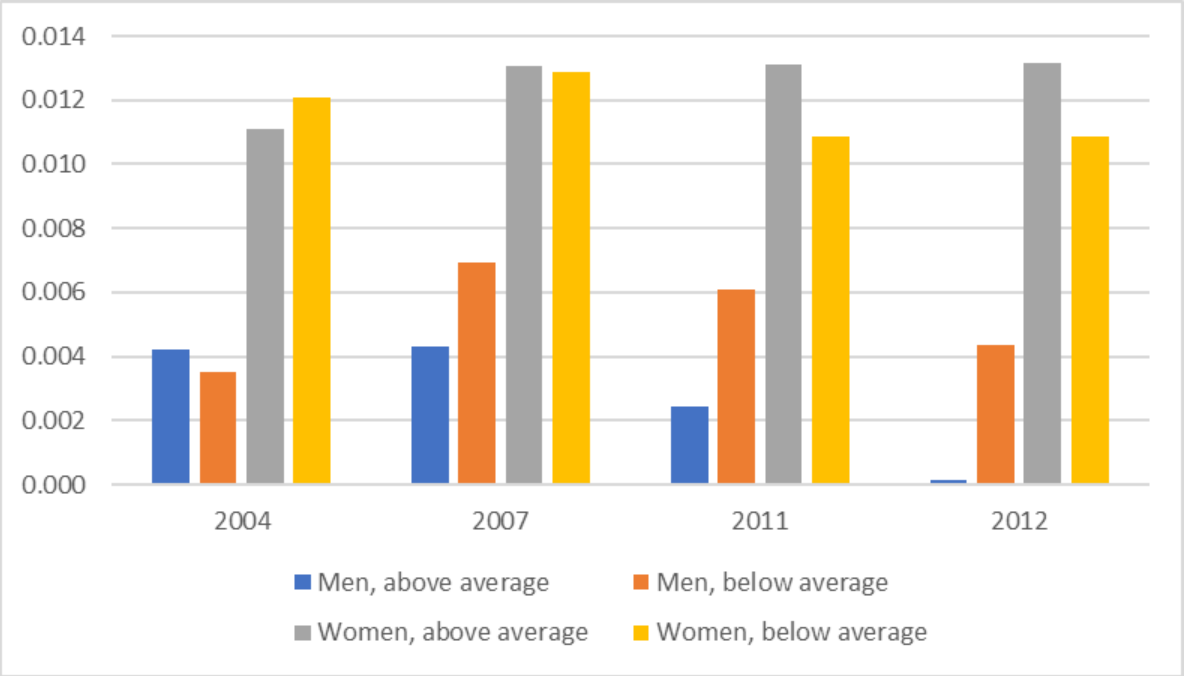
Another way to look at these results is comparing men and women of different skill levels within years. A comparison of the simulated effects in figure 5 reveals that female workers benefited from the U.S. trade agreements more than male workers, and that male workers with skills below average benefited more than male workers of above average skill.

Figure 5: Percent increase in real wage



We also report changes in employment following implementation of various FTAs. As shown in figure 6, employment increased for all groups in question with larger increases in female employment and bigger changes in the earlier years. With the exception of 2004, the smallest benefits accrued to men of above average skill level and the highest benefits accrued to women of below average skill level.

Figure 6: Percent increase in employment



Conclusion

The last 40 years of the U.S. trade policy were generally beneficial to the American workers but have had differential effects on men and women in the labor force. The biggest beneficiaries were women with below average skill level who saw a 0.030 percent increase in wages and a 0.013 percent in increase in employment.

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