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 benefited the American workers and that women benefited more than men, both in terms of wages and employment.

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1 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 U.S.-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 and digital trade, 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. Furthermore, some of the U.S. trading partners have began adding chapters containing gender provisions to their trade agreements.[1]

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 declines with increase in trade. 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.[2]

[1]This trend began with Chile–Uruguay FTA signed in 2016; Canada followed suit in 2019, signing three FTAs containing chapters on gender provisions: with Argentina, Chile, and Israel.

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

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 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 (WTO, 2017). For example, in India women tend to work in sectors that face higher barriers to exports in the destination countries. A UN report generalizes that gender-based occupation segregation is pervasive, persistent, and accompanied by the gender wage gap (UNCTAD, 2016). In this paper, we consider how U.S. trade agreements affect workers of different genders, occupations, and skill levels. This allows us to examine the impact taking into account heterogeneity in employment across sectors of the economy.

To understand 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 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.

This paper considers two simulation scenarios. In the first scenario, workers in the United States are separated into two gender groups, based on their respective shares in each sector of the economy. Wage changes for are then reported for men and women in aggregate economy. We find that overall, wages increase for both men and women with larger increases in later years. Additionally, women experience a slightly higher increase in wages. In the second scenario, U.S. workers are split into twenty types based on their gender, level of education, and broad occupation category. We find that while wages generally go up for all workers as a result of the U.S. trade agreements, there is considerable heterogeneity in impact for men and women with different level of skill employed in different occupations.

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 evolution of effects of decades of the U.S. trade policy over time 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.

2 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, ed (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 et al., 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 first 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. This scenario is described in the left panel of figure 1. We then further changed labor data for the same years to specify twenty worker types, based on workers' gender, skill, and occupation. This scenario is illustrated in the right panel of 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. We discuss our results in more detail below.

To understand whether there are notable differences between men and women in the labor

Figure 1: Substitution between factors of production

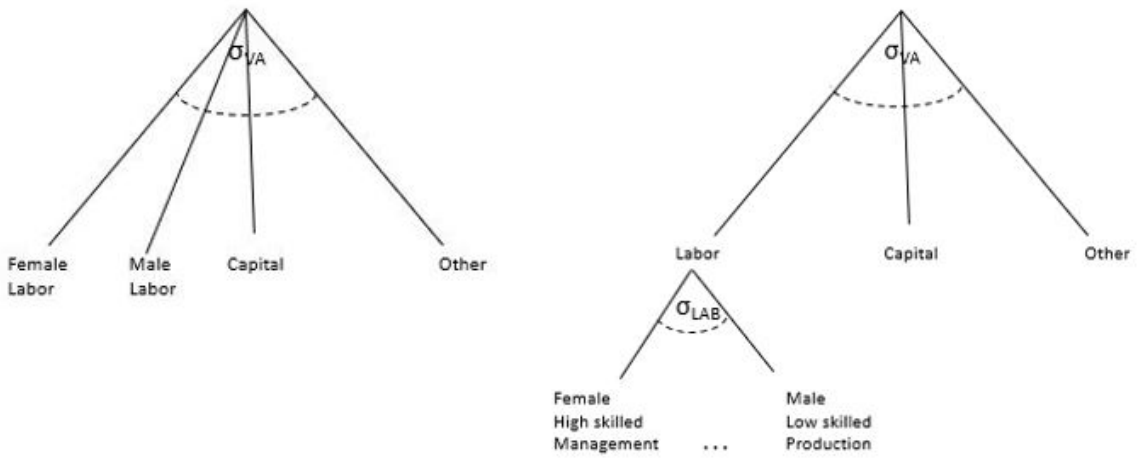
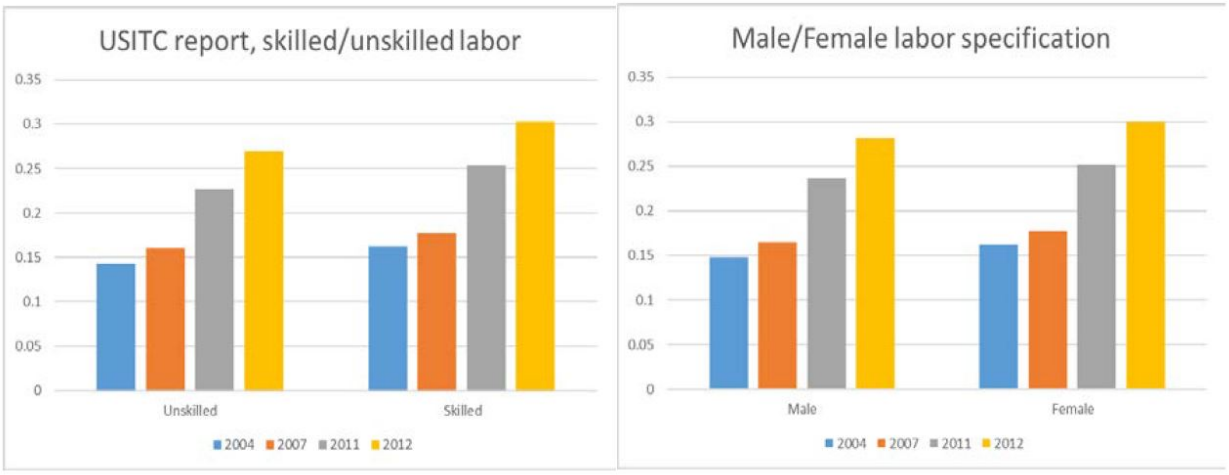


Figure 2: Comparison with USITC 2016 results



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.

3 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.[3] 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.

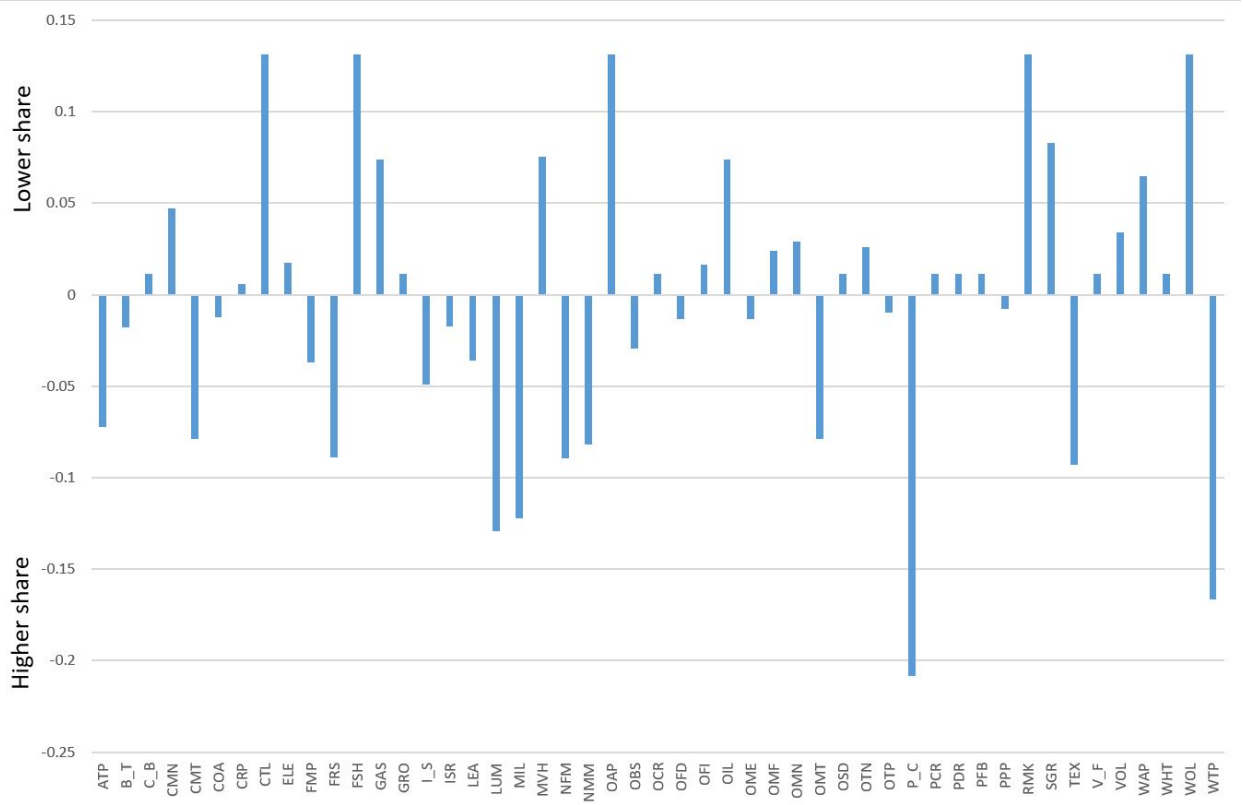
Each CPS release contains detailed information about some 80,000 U.S. workers' industry of employment, wage income, gender, occupation, and level of education. An average worker in the sample is around 42 years old, with men older than women by several months. Unconditional mean wage of women is about 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.

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. In the second scenario workers were further split into groups based on their education level (whether they received a college degree or equivalent) and broad occupation category.[4]

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

[4]We use U.S. Census definition of broad occupation categories. Those are management, business, science, and arts occupations; service occupations; sales and office occupations; national resources, construction, and maintenance occupations; and production, transportation, and material moving occupations.

Figure 3: Difference in shares of men and women with above average wages, by sector

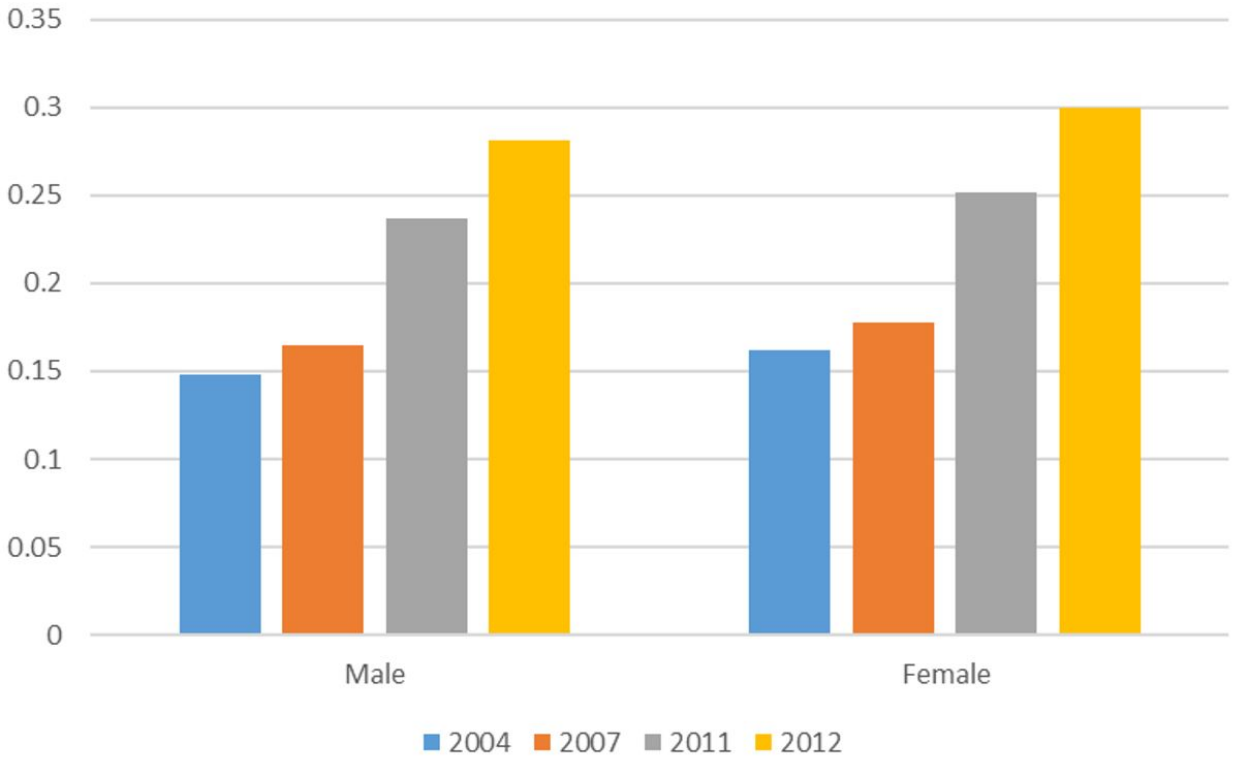


4 Results

We find that the past U.S. trade agreements are generally beneficial to the U.S. workers, with women benefiting slightly more than men in sectors that were directly affected by the changes in trade policy (i.e., excluding workers in extraction and non-tradeable services industries). Our findings are in line with previous literature showing that gains from trade accrue over time. We also find that once skill level is taken into account, the differences in wage changes for men and women become more pronounced. Figure 5 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 an increase in wages at least twice the size (in percent) of that for men even though the magnitude of the effects was small. While overall wages increase over time, most of the wage growth for men (and lower-educated women) occurs in earlier

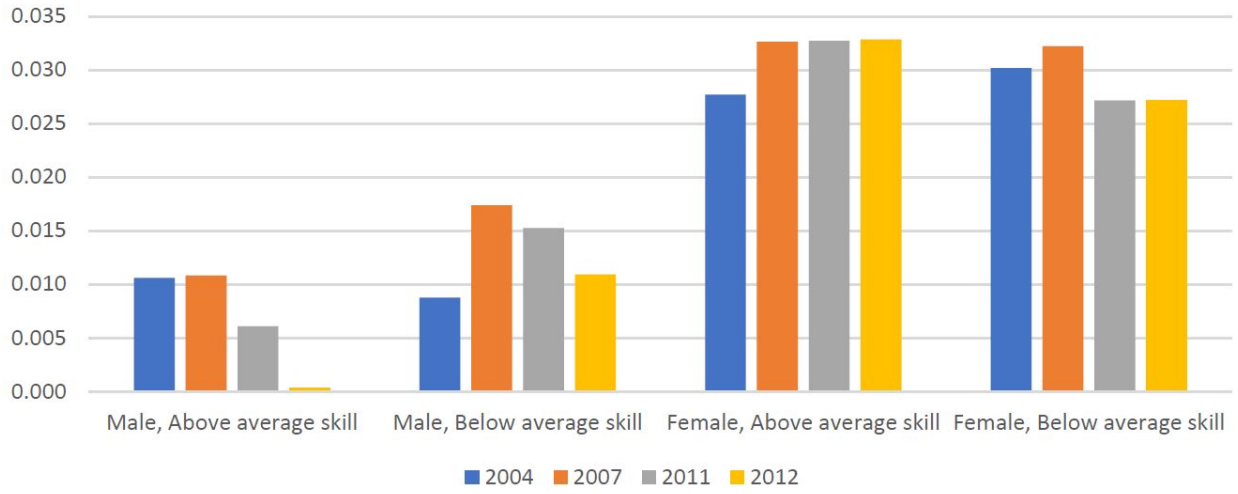
periods, while women with high skills see a larger increases in later years. Another way to look at these results is comparing men and women of different skill levels within years. A comparison of the simulated effects in figure 5 reveals that female workers benefited from the U.S. trade agreements more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

Figure 4: Wage increases, by gender



The last set of results presents a further disaggregation of workers by gender, skill level, and broad occupation. As can be seen in figure 6, there is considerable heterogeneity in how gains from trade distribute to workers in different groups.Across genders, low-skilled workers in service and sales occupations see increase in wages, while low-skilled workers in construction and production occupations see decrease in wages. Low-skilled women employed in management occupations see consistent (and comparatively large) increase in wages, while low-skilled men in the same occupations enjoy wage (smaller) gains only in earlier periods.

Figure 5: Wage increase, by gender and skill level



High-skilled workers of both genders see overall increase in wages for all occupations other than production.[5]

Figure 6: Wage increase, by gender, skill level, and occupation

[5]U.S. International Trade Commission (2021) extends this analysis by incorporating different labor supply elasticities for each labor type.

5 Conclusion

The last 40 years of the U.S. trade policy have been 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 the largest (albeit still small) increase in wages. By occupation, the largest increase in wages accrued to workers of both genders and skill levels in sales.

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