



Distributional Effects of International Trade: Misconceptions about Losses and Gains

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International trade increases efficiency but also redistributes income, thus creating winners and losers. To account for the total impact and calculate redistributive effects correctly and fully, the different channels of gains and losses must be measured precisely. This Brief shows that measuring the gains is often much more challenging than measuring the losses, generating misconceptions and an overstatement of the adverse impacts of international trade. To assess the effects of trade shocks objectively, and to promote effective policy options, policy makers must be aware of the limitations in data and methodology surrounding the research on the distributional effects of international trade, and the misconceptions that ensue.

Three Recurrent Misconceptions about the Distributional Effects of International Trade

International trade is one of the oldest fields of modern economics. David Ricardo started writing about international trade and the theory of comparative advantage only a few decades after Adam Smith's pathbreaking work, *Wealth of Nations*, launched economics as a modern social science (Ricardo 1817; Smith 1776). Economists have been thinking about international trade for more than two hundred years as its importance is universally well understood: International trade can increase efficiency, create knowledge spillovers, and kindle rapid development, but at the same time it can redistribute wealth and create winners and losers (Stolper and Samuelson 1941). Therefore, garnering support for policies that promote trade liberalization can be politically challenging. Policy makers must understand who loses and who wins with free trade, and also by how much, to design politically sustainable policies that promote overall economic efficiency and welfare.

Despite the long history of international trade economics, our understanding of the impact of international trade on workers has been rather limited and unsatisfactory, partially due to lack of data but also due to a lack of interest in the research community.

Fortunately, two centuries after Ricardo, there has been a recent spark of interest in the comparative advantage theory and the redistribution of wealth across workers based on increasing trade across nations. Most notably, the "local labor markets" approach taken by Autor, Dorn, and Hanson in their 2013 paper found that increasing imports from China caused income inequality across regions in the United States. Many other research and policy papers have followed. Despite this welcome surge in the number of research and policy papers, the discussions about the distributional effects of globalization through international trade are still riddled with much confusion and many misconceptions.

This Brief will focus on three common misconceptions about international trade and its impact on workers, outline sources of this confusion, and explain how to interpret the results correctly with an awareness of the severe shortcomings in data and methodology. Although the main sources of misconceptions are technical in nature, the economic intuition behind them is straightforward. This Brief will discuss these intuitions.

The first misconception about international trade is to think that identifying both winners and losers from data are equally easy tasks. Although free trade usually generates both, it is often much more difficult to identify winners than losers (Artuc, Porto, and Rijkers 2020). The second misconception is to assume that as number of academic research papers on trade and inequality increases, the chances will improve for a more unbiased picture to emerge (Artuc, Bastos, and Lee 2021). The third misconception is to assume that compensation of losers from free trade is prohibitively costly, even for developed nations such as the United

States (Autor et al. 2013; Artuc, Lopez-Acevedo, Robertson, and Samaan 2019).

Although journalists are not to blame for these misconceptions, their tendency to oversimplify and search for striking results magnifies the confusion, even when they report only research findings. For example, the work of David Autor, who is one of the leading academics in the field, is often reported as showing that US workers lose from trade with China. Although it is true that many workers lose, he consistently points that United States, as a whole, benefits significantly from trade with China (Rodriguez 2018).

Two Main Channels of International Trade Effects

International trade affects workers directly by two main channels: First, it changes the prices of goods and services, and therefore the amounts and patterns of consumption. Second, it changes income and job opportunities.

The first order immediate effects of free trade usually emerge as a decline in overall prices, especially for tradable goods. While prices of some goods and services might increase, they are more likely to be export goods and services. Most consumers would enjoy a decline in living costs if trade barriers were lifted, since they could consume more for a given fixed budget thanks to lower prices. As a result, free trade has a positive immediate impact on average consumption in most scenarios, especially in the short run.

Unlike the favorable impact on average prices from the perspective of consumers, it is impossible to generalize the immediate impact on income, because depending on the industry of employment or specificity of skill, incomes would increase for some workers and decline for others. Those workers employed in exporting industries or who have skills used intensively in exporting industries are likely to enjoy increases. However, workers employed in import-competing industries or who have skills relevant to those industries would most likely suffer declines. For those whose income declines or who lose their jobs, the impact can be quite large if their skill set becomes obsolete.

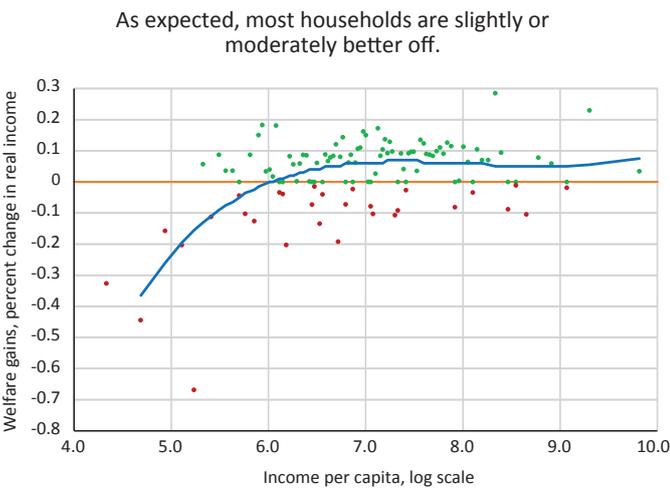
The precise impact would depend on the nature of trade liberalization and the country's comparative advantage patterns, but in general the immediate impact on consumption is positive and small, while the immediate impact on income is heterogeneous and often unknown. After all, people often have one job, but they consume many goods. For example, if a country stops producing apparel because of having comparative advantage in other products, and imports all apparel from abroad, most consumers would enjoy slightly lower overall prices as the price of clothing in the consumption basket declines. But specific individuals would severely suffer from income loss if they were employed in the apparel industry. Therefore, immediate gains would be spread thinly across all consumers, while immediate losses would be concentrated on certain workers.

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Acknowledgements: The author thanks Norman Loayza, Young Eun Kim, Tobias Pfütze, Izzati Razak, Bill Maloney, Aart Kraay, Ryan Hahn, Bob Rijkers, Caglar Ozden, Guido Porto, Eunhee Lee, Paulo Bastos, Gladys Lopez-Acevedo, Raymond Robertson, and Daniel Samaan for their useful comments and suggestions.

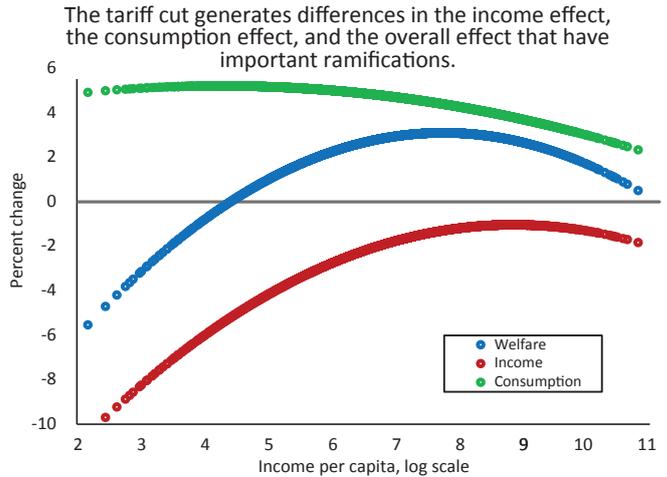
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Figure 1. Distribution of Winners and Losers in One Sample Country (Ghana) after a Tariff Cut for One Agricultural Staple (Rice)



Source: Author's simulations based on Artuc et al. 2020.
Note: Solid blue line shows average gains, red dots show percentile of households with losses, green dots show percentile of households with gains.

Figure 2. Effect on Household Welfare in 54 Sample Countries after an Overall Unilateral Cut in Agricultural Tariffs



Source: Author's simulations based on Artuc et al. 2020.
Note: The figure presents polynomial fitted curves on points representing income and consumption effect for all households from all countries. The change in welfare is equal to the sum of the changes in income and consumption.

In a recent project, Artuc et al. (2020), develop tools to analyze the impact of unilateral tariff reduction on households by identifying the impact on consumption and income channels separately for 54 low-income and middle-income countries, with a special focus on agricultural production. They construct a harmonized data set and web-based simulation tool for policy makers, which they make available publicly online. Based on their simulation tool, one can zero in on the effects of particular goods in particular countries. Figure 1, for example, examines the case of rice in Ghana. Short-run simulations conducted using their web-based tool show that most households would be slightly or moderately better off, while some households would be severely worse off (see figure 1). Because almost all Ghanaian households consume rice but only a small percentage of households rely on rice production, the results are not surprising.

Then, a more interesting question follows: "How would all households in all 54 countries in the sample be affected if agriculture tariffs were unilaterally removed?" The partial equilibrium simulation for short run impacts are illustrated in figure 2. The figure shows that for most households the income effect is negative (red curve); the consumption effect is positive (green curve); and the overall impact is positive (blue curve). The positive effect (green curve) is more or less flat, meaning all households are equally better off through the consumption channel, while the negative effect (red curve) is angled, indicating that there is a great heterogeneity in the income channel. The curvature of these different channels may seem unimportant at first, but it is the source of a very severe misconception, as explained in the next section.

Identification of Winner and Losers from International Trade

Although economists often use sophisticated statistical and mathematical models in economics, the main intuition behind the scientific method has been unchanged for centuries. While Sir Francis Bacon is often considered the father of the scientific method, its roots were established by Middle Eastern philosophers during the Middle Ages, such as Alhazen. The intuition is quite simple. Researchers divide the sample into groups: one control group and at least one treatment group, and then look at how each group is affected. In the natural sciences and experimental economics, this process is implemented by actually grouping subjects. In most fields of economics, however, the process is implemented by economists using computers to group economic observations in data using complex statistical methods, rather than grouping subjects in real life. The methods are always explained by equations rather than plain

English, so they might be difficult for nonexperts to understand. However, the main intuition is quite the same: Group observations based on their affiliation to the variable of interest and compare the relative outcomes. It should be noted that the results are almost always relative; absolute results are rare in empirical economics and results are often derived through quantification of theoretical models and by using simulations.

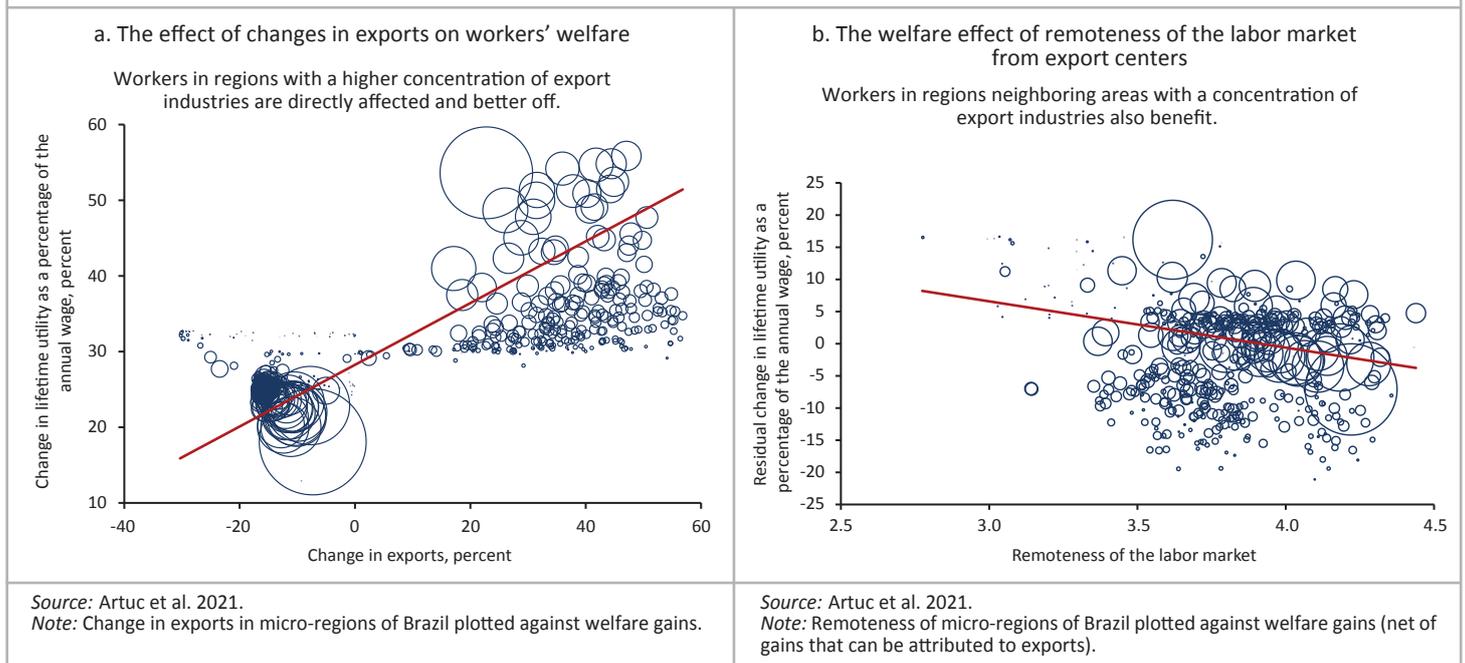
To calculate the impact of international trade on workers, economists must divide the population of interest into groups following the same logic. For the income effects, the division is simple: Consider workers in the exporting, import competing, and nontraded industries. By comparing the workers in traded industries to workers in nontraded industries, economists can calculate the relative impact of trade on workers' income.

However, the division for consumption effects is not clear because almost everybody consumes traded goods. Therefore, it is very difficult to identify the immediate consumption effects, which are often positive, while it is easier to identify the immediate income effects, which can be either positive, negative, or neutral. The logic is simple: When we consider the immediate direct effect, the gains are distributed thinly across the population, while the losses are concentrated. Alternatively, it could be theoretically possible to identify the changes in welfare over time, but big trade shocks often coincide with other shocks, such as technological progress, making identification through time-series convoluted. As a result, thinly distributed positive effects make it practically impossible for both researchers and policy makers to identify the gains from trade. This identification challenge can also shape public opinion about international trade negatively and feed into public opposition of trade liberalization policies. Put differently, because the gains from trade are often not concentrated, they are easily overlooked by both public and researchers. The public faces the same identification challenges as the econometricians when they form their opinions based on their own observations. Further misconceptions and confusion may also stem from the identification challenges surrounding the effects of labor mobility, which also generates winners and losers. These are discussed next.

Labor Mobility and International Trade

Although relatively easier to identify than consumption effects, income effects can only be identified in certain special situations when it is difficult to take full advantage of trade liberalization due to large frictions. In fact, labor mobility frictions and distributional effects of trade are deeply connected: Imagine a world where workers can switch industries

Figure 3. The Widespread Impact of International Trade on Workers' Welfare in Brazil



instantaneously without any costs. In this utopian world, wage would be equal in all industries because workers would move from one to the other until all wages are equal everywhere. Moreover, workers' initial industries would be inconsequential. If workers in the import-competing sectors lose their jobs because of trade liberalization, they would find new jobs in exporting sectors immediately. In this scenario, the economy could adjust to any shock. Gains from trade would be maximized due to the lack of frictions and workers would not be split in their attitude toward free trade based on their industries. This thought experiment illustrates why it is crucial to consider labor mobility to calculate the distributional effects of trade.

The first research paper on labor market frictions in the empirical international trade literature was by Artuc, Chaudhuri, and McLaren (2010). They estimate labor mobility costs and show how labor mobility shapes the distributional effects of international trade in the United States. Following their intuition, in successive papers, labor and trade economists have considered regions (or commuting zones in the United States) and grouped workers based in their location to identify the impact of trade on workers (Autor et al. 2013; Kovak 2013; Dix-Carneiro and Kovak 2017; Hakobyan and McLaren 2016). Because export and import-competing industries are clustered in different locations and workers cannot move across locations easily, the impact of international trade on workers usually depends on the workers' initial geographical location.

More recently Artuc et al. (2021) have used data from Brazil, covering from 2003 to 2015, to show that the impact of international trade on workers can spill over across regions and industries. They look at export growth in Brazil and show that workers in regions with a higher concentration of export industries are directly affected and better off (figure 3, panel a). But the growth of exports can also have positive spillovers on workers who are in other regions because workers can move across regions (albeit slowly and subject to large frictions). Therefore, workers who are closer to the regions experiencing a surge in exports are more likely to be better off, even after discounting the direct effects, because moving to those regions is easier for them (figure 3, panel b). Based on overwhelming evidence from the literature, it is clear that labor mobility is an important determinant of the impact of trade on workers (Dix-Carneiro 2014; Caliendo, Dvorkin, and Parro 2019). In fact, without frictions, all workers would be affected in the same way—all better off or all worse off—so there would not be any spatial or sectoral distributional effect to speak of.

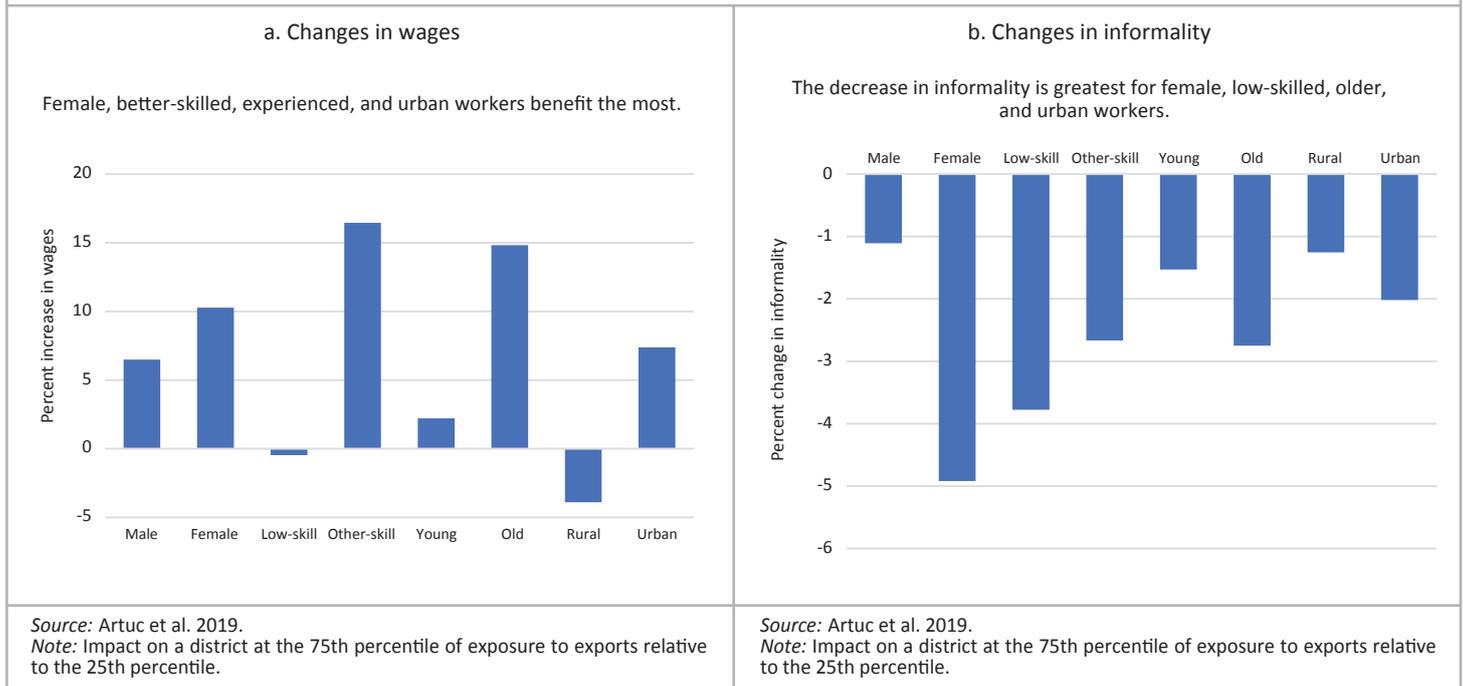
Now, consider the utopian scenario, where workers are perfectly mobile across industries and regions. It would be impossible to differentiate between wages in the import-competing sectors and exporting sectors because wages would always be equal everywhere due to perfect labor mobility. Then, measuring the impact of trade on workers based on recent popular methods, such as Autor, Dorn, and Hanson's (2013) local labor markets approach would not work because workers' industry or region would not matter. Therefore, researchers often use labor market frictions to capture income effects. However, this introduces a bias, as Artuc et al. (2021) show. In situations with low frictions, researchers will have a hard time identifying income effects scientifically based on data; they can only speculate and make educated guesses, unless high-frequency time-series data are available. Thus, due to the nature of identification and the scientific method, researchers and policy makers can expect to see more scientific research papers on income effects when labor market frictions are high and thus income effects are less likely to be favorable. Because of this identification challenge, international trade is destined to be perceived as more harmful (or less helpful) than the reality when economists use common empirical methods, such as the recent local labor markets approach. The identification challenge regarding the gains from trade is not a pure econometric or technical problem; it is also a policy design and political economy problem.

The Difficulties in Identifying and Compensating the Losers

Identifying the impact of globalization on workers based on their location has become by far the most popular method in the international trade literature in the last decade. In a recent work, Artuc et al. (2019) show that the rapid export growth in India increased wages of workers in districts that are specialized in exporting industries. The wage increase is especially high for skilled and experienced workers, as shown in figure 4, panel a. Another impact of exports is the decrease in informality, as illustrated in panel b. While the impact of exports is favorable for most worker types, the positive impact comes from the increase in wages for skilled and older (more experienced) workers, and from the reduction in informality for unskilled and younger (inexperienced) workers.

Unlike Artuc et al. (2019), most recent papers in the literature focus on imports rather than exports, which is why they tend to identify losses. In their seminal work, Autor et al. (2013) look at the impact of growth of China's export on US workers. They find that \$1 worth of exports cause a

Figure 4. Changes in Wages and Informality for Different Types of Workers as Exports Increase in India



4-cent income loss for workers, on average. Note that, as discussed in the beginning of the Brief, the calculations are only possible for the income channel, and the positive impact of increasing exports is often ignored. Therefore, the calculations are the upper bound for income loss; the change in income could well be positive on average, in reality.

After taking the number of workers and the amount of imports from China into account, the total loss for workers in the United States due to trade with China is calculated to be less than \$21.5 billion per year, which is less than 0.1 percent of US GDP. To put that number in context, Bill Gates has noted that he had paid \$10 billion in taxes and would happily double that amount (Martin 2018). His contribution alone could compensate almost all losses. Of course, developing nations face severe budget constraints and it may not be possible for them to fund such levels of compensation. But the loss of workers from trade on average is not as large as one would expect. The major problem is the concentration of losses in some locations or skill groups, and the lack of identification methods and compensation mechanisms.

Conclusion

This Brief identifies three misconceptions surrounding the distributional effects of international trade literature. First, the gains from international trade are often distributed thinly across the population while the losses are concentrated. Because they are not concentrated, gains from trade are easily overlooked by both public and researchers, and losses may be

overstated. Second, recent popular empirical methods for identifying the distributional effect of trade, such as the local labor markets approach, can only be implemented when labor market frictions are large. However, this methodological limitation introduces a bias. The gains from trade are suppressed in the case of large labor market frictions and research cannot identify the cases with highest potential gains. Third, compensating the losers from international trade could be economically feasible, but the correct identification and measurement of losses is extremely challenging.

To design an effective and sustainable trade policy, policy makers often seek public support. However, the misconceptions summarized in this Brief make it difficult for the public and policy makers to reach an unbiased understanding about the impact of international trade on workers. One possible solution proposed in the literature is gradual liberalization of trade policy as opposed to “shock therapy,” which can smooth the concentration of losses and make unanimous support feasible (Artuc, Chaudhuri, and McLaren 2008). Although recent evidence shows that it might be possible to compensate losses from globalization, identifying those who lose is an extremely challenging task. Precisely targeting safety nets based on industry of employment, such as the approach taken by the US Trade Adjustment Assistance Program, cannot be effective in the face of the mobility of workers across industries. Instead, more inclusive labor market policies, such as the “flexicurity” model of Denmark, have more potential in light of recent research (Artuc et al. 2021).

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