THE UNITED STATES INTERNATIONAL TRADE COMMISSION

In the Matter of: 

ACADEMIC SYMPOSIUM: 
THE IMPACT OF TRADE ON U.S. WORKERS: DISTRIBUTIONAL AND OTHER EFFECTS

Tuesday,
April 5, 2022
Remote Meeting
U.S. International Trade Commission
500 E Street, S.W.
Washington, D.C.

The symposium commenced, pursuant to notice, at 9:07 a.m., before the Commissioners of the United States International Trade Commission, the Honorable JASON E. KEARNS, Chairman, presiding.

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COMMISSIONER RHONDA K. SCHMIDTLEIN
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DR. RIVERA: Good morning. We are so excited to be here. I wanted to welcome each and every one of you and thank you for making time out of your very busy schedules to be on these panels, to participate in this conversation we're having today.

As many of you know, it is part of a larger project delivered to one of our clients, the U.S. Trade Representative, and the process of getting us here was complex and intense and went through hundreds of papers, created dozens of concordances to ensure we had the best configuration of papers and the best that represented the question that we're trying to get at: what is indeed the impact of distribution effects of trade and trade policy on U.S. workers, particularly in underserved communities.

I wanted to ask my team to show themselves on screen and wave. Caroline Peters, Christopher Montgomery, Huyen Nguyen, Jean Yuan, Elli Nesbitt, and Sam Goodman. They've been working very hard, and without their help, we couldn't have gotten this done.

I wanted to remind each of the panelists that this is a public forum, and so although it's not being recorded, everything you say will be recorded in a transcript, and that will be available to the public. So, in the interest of
time, I just wanted to thank you again for coming today, and
I'm turning to Chair Jason Kearns who will have a few words
to say.

CHAIR KEARNS: Great, thank you very much, Sandra.
Good morning, everyone. I'm Jason Kearns, Chair of the U.S.
International Trade Commission. I'd like to welcome you to
the Commission's academic symposium concerning the
distributional effects of trade and trade policy on U.S.
workers.

This symposium is an opportunity to learn more
about ongoing academic research and to discuss future
research directions. I would like to thank the team at the
Commission who organized this symposium. As Sandra
described, a lot of work went into getting us where we are
today. I would also like to thank all of the moderators,
panelists, and observers for your participation.

I want to spend a few minutes to describe the
Commission and to put this historic distributional effects
investigation in perspective. I'll outline the objectives of
the symposium and convey a few of the things that arose in
the public roundtables that the ITC recently convened. Then,
I'll welcome out keynote speaker, MIT Professor David Autor.

The Commission is an independent agency. It is not
part of the President's administration, and it is not part of
Congress. We are also non-partisan; no more than three of
the six commissioners can come from the same political party.

We provide the President, the U.S. Trade Representative, and Congress with independent analysis and information on matters relating to international trade, and that brings us to why we're here today.

The U.S. Trade Representative, Katherine Tai, asked us to gather input on how international trade affects U.S. workers differently by skill, wage and salary level, gender, race, ethnicity, age, and income level, especially as it affects underrepresented and underserved communities.

This symposium is designed to discuss the results of existing analysis, identify the best ways to deploy promising methodologies, identify gaps in the data, and map out future research directions. The ultimate goal is to inform policymakers at USTR.

The proceedings will be summarized in a written report, as Sandra mentioned, to be delivered in October of this year. Ambassador Tai recently stated that our investigation will be a pillar of U.S. trade policy going forward. Longer-term, this work will shape the ITC's analysis in future investigations.

This includes assessments of the economic effect of prospective free trade agreements, those for which negotiations have not begun. Academic research generally is foundational to the ITC's economic analysis. We need to look
no further than the China shock research led by our keynote speaker, which helped unlock a pathway toward a more durable consensus on U.S. trade policy by providing a more complete picture of worker outcomes.

If we don't know what the effects of trade are, decisionmakers simply cannot craft good trade policy. The study on distributional effects recognizes that the effects of trade and trade policy on U.S. workers may differ by demographic group, which could be a result both of how the policy itself is designed, as well as how these groups are situated, or their starting points in the labor market.

This study is about trade impacts, and it does not call for us to generate potential policy solutions. In our seven roundtables, we heard about the difficulties that manufacturing workers, particularly racial minorities, women, and older workers face in transitioning to new jobs after losing jobs due to trade, and the inability of service sector work jobs they do find to support families.

For example, a steelworker in Detroit last week told us how workers in Black communities where the jobs were lost couldn't afford to buy a car and pay for car insurance to get a job in a more affluent suburb where some factory jobs were created.

That one common-sense insight may help economic modelers think through the transition costs and frictions and
the time horizons in our economic models of trade. We heard about how factory closures can affect the entire community, not just those who are directly affected, giving rise to a host of social ills.

We're reminded of the need to examine every channel by which trade has positive effects on workers, such as allowing small business to export, and every channel by which it has negative effects, such as how the threat of offshoring can limit the bargaining power of workers. We already need researchers to step in and tell us how widespread these phenomenon are.

And now it is my privilege and great pleasure to introduce our keynote speaker, David Autor. Dr. Autor is the Ford Professor of the MIT Department of Economics, co-director of the NBER Labor Studies Program, and co-leader of both the MIT Future Task Force and the J-PAL Worker Prosperity Initiative.

His research explores the labor market impacts of technological change and globalizations. Many of you are likely to know him well, so I won't list all of his numerous publications and awards. What I find noteworthy are Dr. Autor's early-career explorations. After jobs in a hospital and a computer software consultancy, he graduated from Tufts University with a degree in Psychology and decided to teach computer skills to underprivileged children.
He enrolled in Harvard's Kennedy School of Government, my Alma Mater, where he took his first economics class while earning a Ph.D. in public policy before ultimately joining the economics faculty at MIT. Dr. Autor went on to lead and collaborate on some of the most important research studies on the effects of trade on workers, which likely benefitted from his real-world experience.

A 2017 profile by the International Monetary Fund's bi-monthly magazine stated that Dr. Autor's research on labor markets was "imbued with respect for the dignity of work, sympathy for the disadvantaged, and concern for the damage that unemployment inflicts on families and communities.

I couldn't have said it better myself. Welcome, Dr. Autor. We are very grateful to have you here, and the floor is yours.

DR. AUTOR: Thank you very much for that far too generous introduction. I'm already blushing. Let me see if I can share my slides. I'm hoping it's going to work. Oh, great. I'm going to assume you're all seeing that.

MALE VOICE: We sure can. Thank you.

DR. AUTOR: Excellent. Well, I'm honored to be here. I think it's terrific that the ITC is undertaking this mission to sort of consider the distributional consequences of trade. Let me say, I'm not a trade economist, I'm a labor economist, and I view my work as just sort of helping to set
some of the agenda for understanding the labor market impacts.

There are many people who are doing incredibly important work in this area that's actually far more sophisticated than the work I'm doing, but I hope that the work that I've done, and especially in collaboration with my co-authors Gordon Hanson and David Dorn and a slew of others helps to give a big picture of the phenomena that we need to understand better.

So, I'm going to speak about the enduring consequences of the China trade shock. So, many things I'll be reviewing are highly familiar to you. So, China's historic rise to the world manufacturing power is a remarkable human achievement and really one of the best things that's happened to human welfare in at least a millennium, creating the world middle class.

And so, it has been a remarkably positive element, but it has had distributional consequences which are quite substantial, particularly for the United States, as well as some other high-income countries.

There was a historic fall in U.S. manufacturing employment between 1999 and 2007 after China joined the World Trade Organization, and it's important to understand that although U.S. manufacturing has been in decline as a share of employment since the end of the second World War, it
actually, numerically, was relatively stable, losing only 2 million jobs between 1979 and 1999.

And then, the collapse was remarkably fast and highly concentrated in time and in space, and that's part of what made it so consequential. China's rise, of course, was catalyzed primarily by internal reforms in China having to do with reposition under Deng Xiaoping, and those internal reforms, it's important to recognize, are now in retreat.

The Chinese state has been taking back control, recentralizing, reallocating resources from the private sector to state-owned enterprises. This has been going on for quite a while until you can actually see the China trade shock in kind of three different acts. From 1991 to 2000, you can think of the period of initiation, really taking places corresponding developments in China.

From 2001 to 2010 is just the intensification corresponding to China's gaining (technical interference) most-favored-nation trading status.

(Technical interruption.)

FEMALE VOICE: We can't hear you.

MALE VOICE: Are you there, doctor?

DR. AUTOR: Yes, I'm here.

MALE VOICE: We lost you for one second.

DR. AUTOR: Okay. I think it's because I moved a little window off the screen.
MALE VOICE: Oh, okay.

DR. AUTOR: It's important to recognize the China shock is not over in the sense that China is where it is, but the period of intensification has ended. Things have stabilized. So, we really have been in a different era for more than a decade now.

So let's see if I can keep this going. Okay, great. So, I want to speak on three points: what do we learn from labor market adjustments; why were the impacts so persistent; and then a little bit on the welfare gains, as was emphasized in traction as we should not lose sight of the gains from trade, even when thinking about the distributional consequences.

So, the case for free trade is well-known to all of us. Trade allows countries to specialize in the goods in which they're most productive, and so free trade among consenting nations should raise GDP in all of them, and that remains true.

The rub is that there are winners and losers. What's true for the welfare of a country in the aggregate does not necessarily apply for all citizens in a country, and trade normally creates winners and losers, something that's also been well understood for a long time, although I think trade policy sort of lost sight of that fact.

It yields diffuse benefits and concentrated costs,
and why is not pareto improving? This is a review for all of you. Trade necessitates reallocation in workers and jobs. Workers will be displaced from career jobs. It may require new location, new occupation, and it's particularly true, and this is something that recently occurs to be emphasized, when there's a large trade deficit.

Because trade deficits, although we're taught in traditional trade classes not to pay any attention to them, they do affect the amount of reallocation. If you have a large trade deficit in manufacturing suddenly and you want to maintain full employment, it means you're going to have to reallocate labor from manufacturing to non-manufacturing, and that's a slow, costly process, as the data now tell us.

In addition, of course, trade permanently alters skill demands, in addition to their frictional adjustments. It will typically, when we're talking about integration with less developed countries, it'll raise demand for high-skill workers, industrialize economies, reduce demand for low-skill workers.

And so, even as trade grows the pie modestly, it can shrink some slices substantially. So, we understand all that in theory. What about in practice? Well, the big picture is that manufacturing-intensive locations, the United States -- and this is a picture of the 722 commuting zones in the U.S. -- saw substantial falls in employment population.

And unfortunately -- so, these were manufacturing areas where manufacturing employment declined, and we did not see a swift reallocation of labor into non-manufacturing. In fact, the decline in manufacturing, at least in the initial years, was matched almost one-for-one by increasing unemployment and non-participation.

In many papers, Gordon Hanson, David Dorn and I have tried to explore how that relates to the China shock by estimating a simple regression model of changes in sum outcome, typically employment depopulation or manufacturing employment, as a function of time, a number of covariates, and then the China trade shock, which we look at as import penetration.

And rather than using the observed change in import penetration, which is an endogenous variable that may be affected both by domestic supply and demand factors, as well as international factors, we try to isolate exogenous variation in China's growing comparative advantage by looking at the change simultaneously of Chinese exports in 391 product categories to seven other high-income economies, including Switzerland, Italy, Germany, and so on.

The idea being, if we see simultaneously all these other high-income countries switching from, let's say, Japanese to Chinese tennis shoes or, you know, materials, or
dolls, or toys, or electronics, we think of that not as reflecting China's rising productivity, falling trade costs, reduced trade barriers, and more competitive pricing that allows it to gain market share in all these activities.

We project those changes into the U.S. data and others -- we use the covariates between the changes in these other high-income countries and the simultaneous changes in the United States -- we view that as the "shock" component, and then we project that down to the labor market level as a function of the initial industry specialization of U.S. commuting zones in those activities.

So, a commuting zone is more exposed to the China trade shock not only if it has more manufacturing, per se, but even conditional on that level of manufacturing initially, if it's the mix of manufacturing activities within that commuting zone are the ones where China is gaining comparative advantage, where its exports are growing to the rest of the world.

 Typically, those are going to be labor-intensive manufacturing areas, in shoes, textiles, commodity furniture, assembly, dolls, toys, typically along the south Atlantic and deep South.

 So, I think I said everything's on a slide, so in terms of time, let me keep moving. Importantly, what does this look like? This shows a simple relationship between
1991 to 2016 of manufacturing employment per population as a function of exposure to the China trade shock.

Now, at some level, this figure should be highly unsurprising. We know that, you know, a large trade imbalance in manufactured goods means a decline in U.S. manufacturing employment.

The question of interest is not whether manufacturing declines but what happens to the workers and the places where those declines occur. Do they quickly reallocate into other equally good activities, or does that impact remain locally concentrated and not resolve itself quickly?

What we find is that employment-to-population rates fall at about the same rate as does manufacturing employment, even over a long period of time. So, this shows you for nearly three decades. Here's the same, excuse me, figures just concentrating on the period from 2000 forward.

In all cases, we see a decline in manufacturing without a concomitant movement into non-manufacturing, meaning the net effect on employment appears highly persistent.

Just to give a few additional details, the employment losses are concentrated in the initial years of the shock. So, this shows you the effect on employment population for 2002 to 2007, now add to 2012, and then to
2018. And as far as we see, all of the initial "damage" occurs early, but there's no obvious rebound.

It seems to stick in place. When we first wrote the series of papers about the China trade shock, our data only extended through 2007. In fact, our first paper was published in 2013, and so it was very hard to tell whether we were learning about the short-term consequences of the trade shock or the steady-state because the trade shock was still unfolding.

But really things have stabilized since 2010. And so, you might've thought, well once the kind of momentum of the shock ends, we would see a quick rebound, and that has not occurred. As far as we can tell, most of that initial shock has kind of led to just persistent declines in employment rather than quick reallocation in those places.

Just to give you a little bit more texture, this just shows you a figure of where the trade shock was most concentrated. The darker colors correspond to greater levels of exposure, and you get a sense of what were the places that were most exposed. They were in furniture and fixtures, they were in yarn-spinning, poultry slaughtering, et cetera.

And just to give you a couple of examples, so here's Martinsville, Virginia. In 1990, 45 percent of adults were working in manufacturing. By 2016, that was 13.4 percent. In the same time, the employment-to-population
ratio fell from 73 percent to 53 percent. Government transfers per capita rose by a couple hundred percent.

Or, take West hickory, famous furniture manufacturing city, the share of adults working in manufacturing fell from 34 percent to 15 percent over the course of 25 years, and the fraction of adults in the labor force who were employed fell by 20 percent, from 55 percent to 43 percent.

So, why do I give these examples? Because they underscore that these trade shocks that we think of as a national phenomenon have an extremely localized texture, the reason being, one, as we all know, manufacturing's far more geographically concentrated than most service activities like, you know, healthcare and restaurants and grocery stores.

But also, even beyond the overall concentration of manufacturing, places that manufacture are specialized. So, an impact on commodity furniture production in the United States is really going to be most felt in a few places, West Hickory being one of them. So, these shocks that affect consumers nationally reverberate to employment quite locally.

Let me talk just a tiny bit more about the distributional consequences. So, if we look at the effect on employment, we break out these effects into three groups: non-college men, college men, non-college women, and college
women. You can see that the manufacturing losses are largest among non-college-educated workers.

In fact, they're slightly larger among women than men, but the impacts on employment-to-population are persistent among non-college men. And so, the brunt or the failure to accommodate or, you know, successfully adjust to this change is felt most strongly among men without college degrees which, of course, are the majority of men.

We also see a larger drop in the relative wages of men below the median of the earnings distribution at the 25th percentile, at the median. And we see these same effects kind of reverberate out into other demographic and household outcomes beyond earnings.

So, for example, in areas that are most exposed to the China trade shock, we see a fall in the fraction of women who are married, mostly, by the way, as a function of reduction in entrance into marriage, and also a fall in the fraction of women living with spouses -- much more likely to be living in some other non-traditional arrangement, and a concomitant rise in the fraction of children living in poverty.

I mention these outcomes not for the sake of drama but simply to underscore that the consequences of these shocks to the kind of economic foundations of places go beyond employment and even earnings to changes in the social
organization of the lives of adults and children, and that's part of the reason that they are so salient.

Oh, I realize I'm running low on time, so let me quickly cover these two other points. Why are these impacts so persistent? There are really five explanations that we consider in the Brookings paper. One is the shock never really ended. So, let me just review these quickly.

It just reallocated. There's no evidence of that. It's not the case that other countries have filled-in where the China trade shock has slowed. Another would be labor market regulations. This doesn't seem to be likely.

A third, which I think Kadee Russ and, you know, Kyle Handley will speak about, is places with lower human capital we're less adaptive; I think that's certainly correct. There's some element of specialization, but let me address a final point that I think is really important.

I think there's a view that maybe there's something uniquely dysfunctional about the U.S. labor market that just made it unlikely to adjust successfully whether other countries would've done better.

I don't think that's true. There's a nice piece of paper by Dorn and Levell that looks at, across the OECD, the changes in net Chinese imports, using our same instrumentation strategy and the changes in manufacturing employment.
And basically we see that countries that were more exposed to the shock did see larger declines in manufacturing. So, the U.S. is not an outlier in this. And I will further underscore that one cannot disentangle, or should not think separately, about the gains and losses from trade. This is again from the Dorn and Levell paper.

This shows you changes in Chinese import exposure at the product level, and this shows you changes in prices. This is using data from the U.K. where they have really good data. So, you can see that, indeed, where exposure was greatest, prices fell the most. Simultaneously, where exposure was greatest, employment fell the most.

So, the gains to consumers from lower prices really are inseparable from the losses to workers in the sectors that produced those import-competing goods. So, let me just end by just saying a word about welfare.

So, the important thing that a lot of our work has focused on and the work that I've done in Dorn and Hanson and Acemoglu and Brendan M. Price is that the trade shock had highly uneven effects on incomes per capita across commuting zones.

Now, it is well understood, our analysis measures relative effects -- the relative gains or losses in commuting zones relative to the average. So, that makes you ask, well what's the average? If we see, you know, these negative
numbers and positive numbers, how do we normalize that; what's the intercept?

According to most conventional estimates, the welfare gains per capita from these trade shocks are meaningful but small, on the order of a fifth of a percentage point, and that's because we don't do that much trading, actually, as a country.

And so what this suggests, looking at this figure and comparing the distribution of outcomes relative to the average gain, is that a substantial fraction -- not the majority, but a substantial fraction of U.S. citizens were living in commuting zones where welfare fell in absolute terms, that the loss in income per capita was not compensated by the increase in purchasing power.

So, the nation as a whole was made wealthier, but a substantial number of people were made poorer in absolute terms. So, let me just conclude.

So, the scarring effects of the China shock were startlingly pronounced. I think all of us were startled by how enduring those effects were. Why was that so? The scale of the shock, it was concentrated in space and in time, it was concentrated on regions without highly-skilled labor, which may lead to, slow the adjustment process or be correlated with slower adjustment, and there were some underappreciated barriers to labor mobility.
One of the shocking findings in literature is there's been very little population reallocation in response to the shock. The social consequences extended beyond the labor market, in terms of numerous signs of social distress, marriage, household structure and health, and also magnification of political polarization along cultural fault-lines. The China trade shock was one catalyst among many that contributed to some of the political polarization that we see.

Looking forward, it's worth asking whether economic remedies can relieve these social and cultural pressures. I'm of the view that the effects are not reversible very readily and certainly cannot be addressed simply by compensation, with the traditional economic remedy.

But I do think, looking forward, better economic and social protections could help to mitigate future potential harms of very rapid integration, that integration has aggregate benefits, but the costs are highly concentrated and uneven, and being aware of that, I think will help contribute to better policy. Let me stop.

MR. SECRETARY: Thank you so much, Dr. Autor. We appreciate you being here today. A lot of information to absorb. Before we jump directly into our panels, I want to remind all our panelists that you will be timed. You will see the time clock that will count down from your time. When
you have one minute remaining, you'll hear a bell. When your
time has expired, you'll have a bell. And everybody will get
their time as it has been allocated to them. Again, we
appreciate all of you being here.

And with that, we will now turn to our first panel
concerning Distributional Effects of Trade and Trade Policy
on U.S. Workers by Education and Skill Levels. This panel
will be moderated by Dr. Kadee Russ of the University of
California, Davis.

Welcome, Dr. Russ. Please begin when you're ready.

DR. RUSS: Good morning, Secretary Bishop. Good
morning, everyone. Thanks so much for having me here as a
part of this very important discussion today. So, I'm here
to look at the China shock through a product-cycle approach.
So, the paper is the product cycle and the shifting landscape
of U.S. manufacturing. It's joint work with Katherine
Eriksson, Jay C. Shambaugh, and Minfei Xu.

So, we ask the question what makes a place and its
workers vulnerable to a trade shock, as David Autor was just
describing for us just a minute ago, and Autor, Dorn, and
Hanson showed that trade shocks can cause very large
displacements in labor markets.

We wanted to ask if there's anything special about
the places that are hit hardest in these cases, and our
answer is that where local industries are in the product
cycle seems to matter for the resilience of the labor market. So, the basic intuition is that trade shocks can accelerate long-term secular trends characterized by Vernon's product cycle, and this was formalized by R. Vernon in 1979, later by Grossman and Helpman.

So, if we want to think well what does the product look like in the U.S. context, Vernon says that it involves a process of innovation, standardization, and movement of industries to low-wage areas. Klepper in the IO literature thinks of it as innovation -- so, innovation being when products spawn, then entry of new producers, and then a shake-out, and then maturity of an industry.

Ed Leamer, another trade economist, describes it as innovation, standardization, and then globalization of an industry or product. So, you can see that all of these are overlapping, whether we're thinking about it from a trade point of view, an IO point of view. Klepper's work has also been introduced into regional studies in economic history.

So, I'm going to look for a moment just at the story of the product cycle within one place, and I'm going to take the example of Leamer's own home town, which was also my father's home town, and that's Binghamton Endicott, Broome County, New York.

And so, originally we would see cigars being produced in this area. So, locally the cigar industry took
root in the 1880s, and it has spread out from New York City, and then the cigar industry died out due to a shift to preferences for cigarettes and the automation of cigarette production in the 1920s.

Shoes moved in from the cities where they were concentrated in artisanal production. They moved upstate New York in Endicott as production standardized in the 20th Century. And so, by the 1940s, you saw Endicott Johnson Shoes producing 52 million pairs per year until the industry moved out in the 1950s and '60s.

So, when the shoe titan George Johnson convinced local entrepreneur Thomas Watson to build an R&D facility for international business machines in Endicott during the Great Depression, then we saw the introduction of computer production in the area.

So, when I would go visit my grandfather, I would see old tobacco barns and I would see abandoned shoe factories. I would also see my grandfather, who worked for IBM for 40 years, after George Johnson convinced Thomas Watson to set up shop there.

Now, in 1981, IBM introduced the personal computer, which was more easily standardized than mainframe computers, and by 1991, U.S. imports of computers and parts began to exceed exports nationally. Manufacturing jobs were then outpaced by services as a share of local employment.
That's what the product cycle looks like inside one place. What does the product cycle look like across places? Manufacturing employment, as David Autor said, has been declining as a share of U.S. employment for decades, but these declines have been very uneven across the country. Vernon shows these manufacturing shifts, and here it is from 1910 to 1940, 1960, 1990, as a share of commuting zone employment, reflects movement away from high-innovation, high-wage areas to areas with lower innovative capacity and lower wages.

In our findings, what we see is that the effects of import competition on local labor markets are worse where simultaneously we see industries already are aging out of place and education levels are lowest. So, these two things together create these large negative shocks to local employment rates.

If we think about the China shock, it's really a natural laboratory to investigate the product cycle in U.S. labor markets. So, Autor, Dorn, and Hanson argue it was an exogenous shock, and we agree. It comprised goods whose production already was concentrated in large plants, moving away from areas in the U.S. with high historical patent activity, and facing competition from low-wage countries.

We can examine other kinds of shocks too, but we know that this shock identifies industries at a late stage of
the product cycle by all of the definitions that I showed you earlier.

So, we can see the product cycle movement for China shock industries as well. This is a heat map of exposure to the industries that were involved in the surge of imports from China in 1991 to 2007 but weighted by local labor market shares in 1910, 1940, 1960, and 1990.

And you can see that if the China shock had hit related industries in 1910, it would've hit the Northeast. In 1940, it would've hit the whole manufacturing belt. 1960, the effects would been a bit more spread out. By the 1990s, these industries had moved out of the places where they originally spawned and into primarily the southeastern part of the United States.

There's something special about these labor markets. These labor markets have lower levels of patents per capita, so if we take the correlation of this historical exposure to the China shock to patents per capita, we see originally it was quite tightly correlated to local innovative capacity, but by 1990, right, when the shock was beginning, the places were no longer correlated with innovative capacity.

And in fact, the places that were hit, whereas in 1910 they might've been on average higher-wage places than the rest of the country, by 1990, these places had lower
wages. So, these were labor markets with less innovative capacity and generally lower wages, somewhat higher unemployment rates, as well.

What we do is construct product cycle indicators. We construct a moving-in variable by marking the quintile of counties where the employment-share-weighted industry exposure to the China shock increased the most between 1960 and 1980 -- so, this is before the shock hit -- and we mark the quintile of counties where these China shock industries were moving out the most between 1960 and 1980.

So, moving out really indicates that aging out that was occurring before the China shock hit in China shock industries. And what we find is that a shock hitting late in the product cycle -- so, in the moving out counties -- is associated with worse employment effects.

So, here we have the Autor, Dorn, and Hanson China shock, and this is just replicating their result from the 2013 paper using their replication package, regressed on the share of unemployed. And then what we do is add-in these moving-in and moving-out variables interactive with the shock.

When we started this research, we thought the places that were throwing themselves in the way of the shock prior to it hitting would be hardest hit. So, we expected some amplification of the shock in these places. In fact, we
see that did not happen. Instead, where we see the amplification of the shock and an absorption of some of it is in these places where industries already had been moving out. Now, we can combine this also with some characteristics of workers in their area -- what was their level of education, were they high-wage or low-wage, and we do see that having a college degree seems to have cushioned the shock somewhat. Having high wages seems to have made the effects a little bit worse.

But if we go to the moving-out variable, what's really remarkable is this is the only specification. We threw so many different things at this replication package. I mean, we threw tractor adoption in 1940. I mean, everything we could think of to try to understand what was special about these places.

This is the only set of variables that absorbed the significance of this Autor, Dorn, and Hanson China shock results. So, not knocking it down but unpacking it, what we see is that the significance seems to be concentrated in those places where industries already were moving out, and we have the low fraction of high school degrees -- so, a high rate of high school dropout.

So, that seems to be associated with more severe impacts on unemployment shares and on separation from the labor force. In contrast, the Japan shock hit industries...
earlier in the product cycle, and Charles Kapershin (phonetic) Schwartz and Ateechi Shuron (phonetic), they find that the Japan shock did not have a large aggregate impact on employment, lower educated workers and African Americans were hit hardest, but in aggregate, they didn't find a big impact, and we think this is because it was hitting industries earlier in the product cycle.

So, in conclusion, a shock can hit early or late-stage industries in the product cycle. When it hits late-stage industries, late adopters like in the southeast are more exposed to the shock overall, and therefore they're going to have the largest overall impact.

However, early adopters have more severe increases in joblessness conditional on the size of the shock. This may indicate a disorderly unwinding, as trade shocks accelerate industry movement that already was taking place, especially in areas with less-educated workers, perhaps less innovative capacity.

We see less of an employment effect in existing literature when a shock hits early-stage industries, and in the paper we show you some evidence that the Japan shock industries seemed to be early-stage industries compared to China shock industries.

I think, so, Secretary Bishop, has my time run out, or do you have a minute?
MR. SECRETARY: You have about 19 seconds left.

DR. RUSS: Okay. We might ask why it matters now. We have some work in progress thinking about how the China shock basically short-circuited the U.S. domestic product cycle, such that places that produce late-stage products are getting less of a chance to engage in production as it shifts overseas. Some areas are able to innovate out, but combined with technology shocks like automation, this has contributed to a more entrenched regional income unemployment gap pattern across the country. Thank you.

MR. MONTGOMERY: So, I'll go ahead and hop-in, and I'll pass the baton over to Shubi Agarwal from University of Florida. So, Shubhi, you now have 12 minutes.

MR. SECRETARY: Shubi, you're on mute.

M. AGARWAL: Thank you. I'm sorry. As already introduced by Secretary Bishop, I'm Shubhi Agarwal from University of Florida, and I'm really happy to be presenting here in this academic symposium on my paper on U.S. exports, local labor markets, and wage inequality.

So, for the sake of time, so three research questions here, which is do U.S. exports reduce unemployment and increase labor force participation by creating jobs in the manufacturing sector and the local labor markets, and how do U.S. exports affect these different labor market outcomes for different skill levels at local labor market level, if
U.S. exports contributes to wage inequality by paying more wages to high-skilled workers.

So, what I find is that export expansion leads to more job for high-skilled workers, either in terms of quality education or private and recent experience, they were significantly reducing the unemployment rate and non-participation rate among these high-skilled workers as it contributes inequality by paying higher wages to these high-skilled workers.

So, before describing the empirical strategy which has been used in this analysis, I say that I am using commuting zones, Autor, et al., a unit to represent a local labor market, because it's a cluster of counties which represents ties between employer and employee.

So, following this through spirit of Feenstra et al. of 2017, I actually have presented here a commuting zone global export exposure measure, which is estimated here as a weighted average of the annual change in the U.S. manufacturing exports to the world over the time period "t" normalized by initial industrial shipments for the starting year, like I said, 1991 in my analysis, weighted by the share of initial industry employment in a commuting zone, which implies that this variation in this global export exposure measure here actually stems from the radiation in this initial industrial employment structure.
And as already been said by Dr. Autor in the beginning, these predictive measures are subject to endogeneity and will create edification issues. So, to address this endogeneity problems related to them, the edification here is achieved using a two-stage instrument of variable strategy.

And the instrument for this commuting zone export exposure here excludes the fixed effects of predicted U.S. export expansion. It's constructed in a very similar way by taking a weighted average of the predicted U.S. export exposure over the time period "t", again weighted by the share of initial industrial employment in the commuting zone.

And this predicted U.S. exports here is actually computed by regressing the actual U.S. exports over the predicted U.S. exports, controlling for the sector and time-fixed effects to account for any mismeasurement error that may arise while aggregating it to the commuting zone level.

And here, for the sake of time, I will just briefly describe that this predicted use exports, the SIC, or the industrial level is estimated by using the structural equation derived by Feenstra et al. where U.S. exports actually is based on the tariff that the U.S. exporters face, the demand for imports by all other exporters except from United States, the tariff that all other exports except from
United States they face, as well as the distance between the
United States and the importing country here.

And this term here, this fixed effect which
represents the product variety and the time-fixed effects
actually includes some U.S. marginal cost of production,
reflecting the U.S. supply shock, and hence why estimating
this predicted value is excluded to prevent the instrument
from being contaminated by the U.S. supply shocks.

So, the validity of this instrument here, the
predicted U.S. export expansion that I just described,
actually relies on the assumption that both U.S. exporters as
well as the competitor selling the same foreign market,
assimilates both to the overall export that is driven by the
reductions in tariff over this time horizon which I am using,
which is 1991 to 2011.

And also that any correlated foreign demand shocks
between U.S. domestic demand shocks and foreign demand
shocks, any correlation between them are controlled for by
the use of fixed effects. And accordingly, any correlation
with the U.S. supply shock actually has been taken care of in
the export equation here itself, which is actually estimating
this predicted value, we are excluding these fixed effects so
that you know the instrument is prevented from contaminated
by the U.S. supply shocks here.

I followed the spirit of Autor, Dorn, and Hanson,
2013 as a way to look to 2016 as using the import exposure from China to control for the imports, while estimating the effects of exports for my purpose of analysis, and I use import exposure from China which is, again, a weighted average using the Bartik formula of the annual change in the U.S. imports from China normalized by the initial domestic absorption, weighted by the initial industry share in a commuting zone.

And the instrumentation for the import exposure from China is actually the import exposure for eight other high-income countries, and again, the validity of this instrument relies on the assumption that these high-income countries, these other high-income countries, annual United States (phonetic) are similar to China shock, which is again driven by the supply shock in China related to factors that are specific to China itself, providing exogeneity.

The industry import demand shocks here are uncorrelated between these eight countries and the United States. So again, for the empirical, the sample that I'm using here is actually the 722 commuting zones covering the U.S. mainland, stacked over the two time periods, 1991 to 1999, and 1999 to 2011.

And I'm using a reduced form regression where I'm regressing the annual change in the local labor market outcomes here on the import exposure from China, as well as
the global export exposure measure here, controlling for the
time-fixed effects, as well as the region-fixed effects, and
also controlling for the labor-specific and the demographic
composition for the commuting zones.

So, like for example, the initial share of
manufacturing employment, or like the percentage of
poorly-educated population or share of employment in routine
occupations and so on. And the data that I am using here is
data for creating the dependent variables representing the
different labor market outcomes that I'll be describing soon,
whereas the independent variables are all taken from 2017.

So, coming to sharing (phonetic) -- so sorry about
it. So, this table here represents here the impact of import
and export exposure on the annual log changes in the
different labor market outcomes, such as the number of
employed workers, employed workers in manufacturing, employed
workers in non-manufacturing, unemployed workers, unemployed
workers who were previously employed in the manufacturing
sector, unemployed workers in the other sector, which might
be workers who were previously employed in a
non-manufacturing sector or first-time jobseekers, or five
(phonetic) years or earlier and the workers who are not in
the labor force.

And what we find is that, related to imports, I
find that it's consistent with the literature, creating a
sharp decline in the manufacturing employment, increasing
unemployment and labor force non-participation.

But exports, which is my variable of interest here,
is actually able to reduce unemployment significantly by
creating jobs in the manufacturing sector, and this
significant reduction in unemployment is actually accounted
for by the reduction in unemployment for workers who were
previously employed in the manufacturing sector.

So, we can say that exports is actually creating
employment for workers with prior and relevant recent
experience in the manufacturing sector. I have also here the
first-stage results for the instrumency. Actually, we can
see that if I consider the structural critical value of 10
percent level, the predicted use export exposure measure I'm
using is kind of a weak instrument, but in hands to be
interpreted with caution.

But the thing is that, like, basically following
the economic intuition, this is the best instrument that I
have. Going to this table here which I have, it's like a
similar table, but it actually shows how the impact of import
and export exposure on the annual changes of the share of
these different labor market outcomes that I just described
before in the previous table are the share of the working-age
population.

And what I find is that actually the export
exposure significantly reduces unemployment for the period 1991 to 2011 by either creating job -- as well as reduces the labor force non-participation rate for high school workers, in terms of quality education or in terms of experience in the form of prior, recent, and relevant experience in the manufacturing sector.

So, this shows that, you know, that actually exports is able to create jobs for high-skilled workers in terms of quality education or in terms of experience. I also see that exports is actually promoting overall wages. It has a significant positive impact on overall wages, and that significant positive effect is seen both in the manufacturing as well as in the non-manufacturing sector.

If I go to the manufacturing sector, I can see that this significant increase in the manufacturing wages due to the export is accounted for people without a quality education, and this can be accounted for by both experienced workers that we just described before who have relevant and prior experience in the manufacturing sector.

So, this demand for those workers is the one that's putting upward pressure on the wages of the manufacturing wages. And here in the non-manufacturing wages is due to the indirect effect of the demand for high-skilled workers in the manufacturing sector.

So, overall I can summarize the results as that the
export expansion actually generated more jobs for
college-educated workers and non-college-educated workers
with prior, relevant, and recent experience in the
manufacturing sector, thereby significantly reducing the
unemployment rate, as well as the labor force
non-participation rate, as well as contributing to wage
inequality by paying higher wages to these high-skilled
workers and which could lead to some effective trade policies
concerning export expansion.

So, this is all I have, and I would like to say
thank you. And I think I'm at my time limit.

MR. MONTGOMERY: Thank you very much, Shubhi, right
on time. So, I'll go ahead and I'll pass it along to Ann
Harrison from University of California Berkeley, and you now
have 12 minutes.

DR. HARRISON: Thank you. Can you hear me?

MR. MONTGOMERY: Yep.

DR. HARRISON: I just have to figure out how to
share my screen.

MR. SECRETARY: There's a share button at the
bottom of your screen.

DR. HARRISON: Can you see my screen?

MR. SECRETARY: Not yet. When you click "share",
it should ask you which program you want to share. Do you
see that?
DR. HARRISON: Yeah.

MR. SECRETARY: Then you select that, then you click "share" at the bottom right-hand corner.

DR. HARRISON: Okay, I did that. "Choose what to share." It's not working. Let me just give it one more -- how do you do this? Okay. I click on screen, and then it says choose what to share, entire screen window or Chrome tab. How do I do this?

MR. SECRETARY: Say those to me one more time.

DR. HARRISON: Entire screen window or Chrome tab, which one do I share?

MR. SECRETARY: I think it would be a Chrome tab.

DR. HARRISON: Oh, would it? Okay.

MR. SECRETARY: Well --

MR. MONTGOMERY: I would recommend the entire screen if you have your --

MR. SECRETARY: Yes. Is your program up already?

DR. HARRISON: Yeah, but it's not working.

MR. SECRETARY: Chris, how about if you just go ahead and share for her.

DR. HARRISON: Yeah.

MR. SECRETARY: And if you would just, you know, let him know when he should advance to the next one, that would be awesome.

DR. HARRISON: Sure. Okay. Sounds good. Thank
you.

MR. SECRETARY: Great. Thank you.

DR. HARRISON: I don't see the slides. Oh, now I see them maybe. Okay. Can you make that a little bit bigger, the main slide, the main --

MR. SECRETARY: Yeah. Chris, what we're seeing right now is the first slide, but then we see the next slide.

DR. HARRISON: Yeah. Just keep this to the main slide. That would be great.

MR. MONTGOMERY: I've got you. Let me try and -- sorry about that.

MR. SECRETARY: That's okay. It may be under display settings.

MR. MONTGOMERY: Yeah. How's that?

MR. SECRETARY: No. It's still doing it. There we go.

DR. HARRISON: Oh, great. You did it. Thank you. Okay. So thanks so much, everybody. I really appreciate this opportunity to speak today. We can go to the next slide.

So the research questions that I'm asking are essentially what's the impact of both trade and offshoring on wages. So the focus here will be primarily on earnings and not so much on labor demand.

And then the question that we also try to
understand is why, when you look at the effects of trade on wages, a lot of the previous literature show minimal effects. We also very briefly will discuss the effects on labor demand, but the focus today will be primarily on the effects on wages, and I'll be summarizing the results of two papers. If you'd like to look at those, one is a paper that appeared in 2014 in The Review of Economics and Statistics. And then another one is a paper that appeared in a book that I wrote with Lionel Fontagné called The Factory-Free Economy, where we generally look at mass general trends and the effects of offshoring on different outcomes and a lot of kind of French authors and American authors who work in this space. And in that book, we extended the earlier restat paper to include more recent data, and we also looked at the effects specifically of offshoring for places like China and India.

So, just to motivate this work, the top panel shows you what's happened to employment in manufacturing, which is the darker line, and services, and if we just go to -- if you see all workers, you see not surprisingly the dark line in the top left-hand panel shows a decline, massive decline, in employment in manufacturing at the same time what we're seeing is a big increase in services employment.

Until 10 years ago, until 20 years ago, what you saw was that most of this decline in occupations occurred in
routine occupations, so you see that second top panel decline. But then non-routine occupations over many years, over 10 years, were going up, but then, between 2000 and 2010, post China trade shock, you see that even non-routine occupations lost significantly a number of workers in non-routine occupations while services employment continued to increase across all occupations.

The important part of this paper has to do with the bottom part of this panel where you see wages. Now what you see is there's a big gap between manufacturing wages, which is the darker line, and service wages, which are below that, and that gap persists. In fact, it persists over the entire period. So what we're going to really focus on is what happens to workers when they move from manufacturing and non-manufacturing, and as you can see from these broad numbers, non-manufacturing wages are on average lower, and that's where a lot of the wage decline will happen.

So what that means is, if you just look at cross-industry regressions, you're missing a really -- in fact, the critical aspect of what happened to wages in manufacturing workers is because they actually left manufacturing. And so that's the big a-ha of these papers is that you need to see workers. You can't use cross-industry regressions to capture the effects on wages.

Okay. So a preview of the results across these two
papers, if you try to understand the impact on wages of import competition and offshoring, we're going to compare the effects of those two forms of globalization on wages. If you do a cross-industry analysis, what we find is very little impact, and, of course, we have to use individual level data to measure the effects on wages since wages vary across individuals.

However, if we change that and create an occupational level measure of exposure, which is the primary contribution of these papers, how do you get an occupation level measure of exposure, you see significant effects on wages of different measures of globalization.

There's a lot of heterogeneity, however. So, for example, lower wage country employment in offshoring negatively effects U.S. wages, but if American firms are moving to Paris or to France, my country of birth, in fact, that's associated with higher U.S. wages.

The mechanism is something that we talk a lot about in these papers. We look -- we see large wage declines for workers who leave manufacturing, and we're going to show you that in the individual level data. We have that rotating CPS data. When workers leave manufacturing, they lose earnings, but when they then have to switch occupations, they lose even more earnings.

Okay. So now let's start with the empirical
strategy  Let's go to the next one. So what most people do is they do a cross-industry analysis, and we're going to argue that that is not very helpful if you're trying to look at the effects on wages. In fact, if you just saw the previous paper, you saw that -- it was a great paper, but when it looked at the effects on wages, the wages were the effect of import penetration, or competition was insignificant at the industry level.

So how do we do -- this is what most people are doing. You're looking at the effects of wages at an individual level. You have this measure G where we lag at one period, and that could be an industry level measure of either import penetration or offshoring, and we're going to look at the effects of that, controlling for other factors, such as technological change, other kinds of effects.

So that would be a more standard approach. We are not going to use an IV approach. We're going to simply lag the measure of globalization to address endogeneity concerns.

So let's go to the next slide. So the contribution of these papers is to use a different approach to measuring exposure to globalization, what we call an occupational exposure to globalization.

How do you measure that? It's essentially weighted by -- so what you're going to do is you're going to have an occupational measure where the weight is the total number of
workers in occupation K and industry J, and the numerator, and the total number of workers across all industries and occupation K, and then you're going to get an occupation-specific import penetration measure where you look at imports in sector J measured by how many workers in that occupation actually work in sector J.

So, intuitively, you can have a situation where you have a lot of import penetration, but no workers actually in a particular occupation are exposed to import penetration, like teachers, for example. Or you could have an occupation like shoe leather workers where all of those workers are in import-impacted sectors.

So both of those factors are going to matter. The weight is going to be set at the beginning of the sample period to avoid endogeneity concerns. So that's our occupational level approach.

I'm not going to talk about the data, I don't have any time, but we basically use the CPS, and we have the -- we're going to use measures that follow the same worker over time. We're going to combine that with industry level measures of offshoring and import penetration.

So here's the big a-ha moment. If you do a standard approach to looking at the impact, which is the first four columns, if you're trying to look at the impact across industries on wage outcomes, that's the first four
columns. What you can see is the impact of either offshoring or exporting or importing, generally insignificant when you use a cross-industry measure to capture the effects of globalization on wages.

The last four columns are kind of the major contribution of the paper. What you see is, if you use an occupation-specific exposure of either offshoring or import penetration or exporting, you start to see significant effects, and the biggest effects are for the most routine workers.

So, just if we stick with the second column, which is the most routine workers, we have that minus point of 682. What we see is that if a firm has a lot of employees in a low-income country, that negatively affects routine workers in the United States; however, if those workers are actually in a high-income country, it positively affects the wages of workers in the United States' coefficient of .04.

Interestingly, the effects of import penetration and export activity are 10 times bigger. So what we're seeing is exporting, as we saw in the last paper, positively affects wage outcomes across occupations, it's .7, and import penetration negatively affects wage outcome. So, again, you have this heterogeneity, but you see significant effects if you use occupation measures.

So why is it, what's going on that's so important
about using the occupation as the measure of trade exposure
and not the industry? Well, we're going to argue that most
of the activities occurring because the big impact is workers
leaving an occupation or leaving an industry and moving to
services. So you can see that in this where we follow the
same worker over time using the CPS. The panel A, if you see
workers that switch industry, there's no significant impact
on their wages.

Okay, I have one minute left. If you see workers
that leave manufacturing, panel B, their wages go down when
they leave manufacturing by 2 percent. If they leave
manufacturing and are forced to switch occupation because
that occupation is heavily exposed to import competition, you
get an impact which is even larger.

Okay. In the restat paper, we have an IV strategy,
which I don't have time to go into, but you can look at that.

Okay. So now let me just conclude. So we're
really focusing on wages, but we also looked at labor demand.
On wages, there's little impact at the industry level but
large wage effects among occupations.

I didn't have time to talk about heterogeneity;
however, we do see bigger effects in the later period. We
see bigger effects on less educated workers, and the new
concept here is occupational exposure, international
competition, and quantitatively the effects of trade swamp
offshoring, and the mechanism is workers are moving out of manufacturing into lower-paid service jobs.

I didn't have time to talk about labor demand or labor force participation. I'll leave that for another day.

Thank you so much.

MR. MONTGOMERY: Great. Thank you so much. So, hopefully, at this point in time, I've stopped sharing my screen, so I'm going to pass it over to Eunhee Lee from University of Maryland. You now have 12 minutes.

DR. LEE: Okay. Can you see my screen?

MR. MONTGOMERY: Yes.

DR. LEE: Okay. Great. So thanks very much for organizing this symposium on such an important topic and for inviting me to participate.

All right. So what is the effect of globalization on inequality? Well, yeah, this question is something that many of us have studied so far, and we now have a lot of empirical evidence regarding this question.

And in terms of the conceptual framework to study the effect of trade on inequality, existing models typically consider trade shops as a pure labor demand shop while holding labor supply exogenously effects.

But, in this paper, I'm proposing a new structural general retractable model with endogenous labor supply. So, to be more specific, I model worker level comparative
advantage based on workers' heterogeneous productivities for industries and occupations.

So, following the intuition of the Row model from labor, workers endogenously soared into the industry and the occupation based on their comparative advantage. And, moreover, I'm going to take occupational level labor reallocation very seriously, and I'm very glad that I'm presenting right after Dr. Harrison because she made a partial case why we should look at the occupation dimension.

So, to reiterate that point one more time, this is from the U.S. data, and if you look at the employment pattern of workers with different levels of education across industries, there's some difference between skill groups that actually appear to look quite similar because this is determined mostly by the relative size of industries rather than worker characteristics.

But, if you look at the type of occupations, workers from different education groups show very different patterns. In other words, what workers actually do within an industry should matter when we quantify the effects of trade on inequality between skill groups.

And the framework I introduce can give a comprehensive picture of interaction between trade, labor reallocation, and inequality, and this quantitative retractable model can serve as a convenient toolkit for
various policy-related counterfactual exercises. Then I used this framework to quantify the effects of trade between educational group inequality for 33 countries, including the U.S., for the time period between 2000 and 2007, where I find that the actual change in trade costs between 2000 and 2007, that alone increased the skill premium by .3 percent in the U.S. Then I show that it is important to incorporate the role of worker level comparator advantage when we study the effect of trade on inequality.

And, lastly, I find that trade can account for about one-third of the actual decline in the U.S. manufacturing employment share and about 20 percent of the actual decline in the employment share of routine occupations in the U.S.

So now let me talk about the basic structure of my framework really quickly. So the key feature of this model is to link two types of comparator advantages through a generical Row framework.

So the first type of comparator advantage is defined across countries, and it is characterized in a standard way following Eaton and Kortum 2002, and, obviously, this will determine import and export patterns across countries.

And the other type of comparator advantage I introduced to the model is defined across workers within a
country, but to be more specific, I assume that workers are heterogeneous in terms of their industry- and occupation-specific productivities, though each worker draws their productivities from a Freshet distribution, and this distribution depends on worker's skill level.

In other words, it is possible that better educated workers on average have a comparative advantage in many general occupations in the service sector while less educated workers on average have a comparator advantage in routine occupations in the manufacturing sector.

So let me explain how these two types of comparator advantages are actually linked in the model with this diagram for a simpler version of the model with two skill groups, two industries, and two occupations.

First, each worker is assigned to a particular type based on her education attainment, for example, college graduate or non-college graduate. Then each worker draws her productivity for each pair of industry and occupation and observes the wage for each occupation in each industry.

So, with the information on their productivity and market level wage in hand, workers endogenously sort into the industry occupation here, and the sorting pattern will be different between different skill groups because they have different comparator advantages.

Then producers use labor for production, and
consumers consume those products, and, obviously, some of the
products, some of the production, is exported, and consumers
consume imported goods as well, and depending on what happens
in this red part of the diagram, which is about trade, the
equilibrium wage will be determined at the general premium
wage of the model, and that would, again, affect workers'
soaring patterns across industries and occupations.

So this is basically what's happening in my model. And I can derive clues for solutions for the equilibrium
labor allocation and the average wage per worker type, which
make quantification of the model very convenient.

So the intuition here is quite simple. So the
model tells you that workers are more likely to choose the
industry and occupation they have a comparator advantage for,
so that's the intuition behind this equation.

And from the second equation, what this question
tells you is that the average wage of the worker group
depends on the group's comparator advantage pattern. So, for
example, if a certain educational group has a comparator
advantage for relatively high-paying industry and occupation,
their average wage should be relatively higher.

And, as the next step, I take this model two data,
so using this model, I quantify the effect of actual changes
in trade costs between 2000 and 2007 on inequality between
educational group. So I calibrate the model for 33
countries, including the U.S., five worker types based on educational attainment for other than industries, and five occupation groups for 2000 as the base year.

So then, basically, I shopped the model with the actual changes in trade costs between 2000 and 2007 and sold the model numerically for a counterfactual exercise.

So now let me briefly summarize the counterfactual results. First, the average welfare of each education group can be measured by the average real income of that group according to this model. Then the counterfactual exercise shows that changes in trade costs between 2000 and 2007 increased the average welfare of better educated workers disproportionately more in most advanced economies.

So, in the U.S., for example, trade increased the average welfare of workers with advanced degrees about .5 percent, but it actually even decreased the welfare of high school dropouts.

And, similarly, if I measure inequality between education groups with the skill premium, which is defined as the wage premium of college graduates over non-college graduates, trade increased inequality in most OECD countries, which are marked in green on this figure, including the U.S.

And if I compare these numbers to the actual changes in the skill premium from data during the same time period, then the changes in trade costs alone explain about
13 percent of the actual change in the skill premium, which is quite substantial. This framework can be also used to show the labor reallocation patterns in response to changes in trade environment. For example, here, I picked two worker types for a comparison, high school graduates and workers with advanced degrees in the U.S., and these are four industries, and these are five occupation groups starting from low skill manual service occupations, some routine occupations in the middle, and managers and professionals.

So, in response to changes in trade costs between 2000 and 2007, actually, both types of workers moved from non-service industries, from manufacturing in particular, to service industries.

So, if you just look at industry level labor reallocation, there's actually not much difference between skill groups. But, if you look at occupations, high school graduates moved to the service industry to take low skill manual jobs, while workers with advanced degrees become managers and professionals in the service industry.

So this occupation level labor reallocation should be a very important factor behind the differential effect of trade on workers with different skill levels. Then I can aggregate that table across skill groups to the industry level or to the occupation level. This model shows that
trade contributed to labor reallocation from manufacturing, manufacturing to services, and it also contributed to so-called job polarization, which is represented by this contraction of the employment share for middle skilled and routine occupations in the U.S.

So now, to summarize what I have in this paper, I propose a new quantifiable generical gram trade level which focuses on worker level comparator advantage and labor reallocation as the main channel through which trade affects inequality between educational groups, and this framework can be used as a conventional toolkit, a convenient toolkit, to experiment with various types of trade shops, including changes in trade costs, as I discussed today, or changes in a particular country's productivity which affects that country's export capability.

So, for example, the reason why we care about the China shock is not just because they joined the WTO in 2001 but also because their productivity has increased due to various reforms, which affected their export capability. So my framework can be also used to assess the effects of such productivity shocks on inequality in many other countries.

And an obviously but a very important policy implication we can draw from this paper is that it is important to facilitate labor reallocation to mitigate the effect of trade on inequality. So, for example, a labor
market policy which makes it easier for workers to upgrade their skills can reduce the welfare gap between high skill and low skill workers caused by international trade.

So that's pretty much what I have today, and thank you very much for listening.

MR. MONTGOMERY: Great. Thank you very much for your presentation. So then I'll go ahead and I'll pass it off to Kyle Handley from University of California, and you now have 12 minutes.

DR. HANDLEY: Okay. Thanks a lot for having me at the symposium today. I'm going to present some joint work with Nick Blum at Stanford and Andre Kurmann at Drexel and Phil Luck at University of Colorado looking at the impact of Chinese trade on U.S. employment.

There are kind of two facts and a question here, much of which we've already discussed today. One is that there was this spectacular rise in imports from China, which we refer to as the China shock, that has this large negative effect on U.S. manufacturing employment, but there's also been a substantial reorganization in production and employment towards non-manufacturing, and that is related to something else that I think we're all aware of, which is that a lot of U.S. companies are now designing things, marketing things and doing, you know, warehousing and things like that in the United States but then outsourcing the production to
China and other countries in Asia.

And so these things are obviously related, and part of what I'm going to talk about today is basically which firms and which parts of the country were able to adapt to that shock better or worse.

So we're going to reassess the impact of the China shock. We're going to use a similar estimation strategy to the existing literature, but we're going to use Census Bureau microdata to improve data accuracy and measure the restructuring of employment within and across plants, sectors, and geography.

So there's three key results I want to highlight, and I'll go through them in my limited amount of time here, but one is that there's a negative effect on manufacturing jobs, which we've already seen, but that's offset by positive growth in non-manufacturing jobs or jobs in services.

There's a big reorganization within large importing firms towards services, and in particular, something that we can see in the data, which we refer to as industry switching, and that accounts for a large part of these negative manufacturing effects.

The last thing I'm going to talk about is this tale of high versus low human capital areas. In areas with high human capital, so this is going to be mostly the U.S. coasts, so we're talking about California on the West Coast and then
on the East Coast primarily, you know, not necessarily the south, but New England, New York, and some of the Mid-Atlantic, those areas have smaller manufacturing job losses, much of which are offset by non-manufacturing gains and no losses in earnings. If we look at lower human capital areas, which also got hit by this China shock, that's where the big effects are and that's where the adaptation is not as good.

So I'm not going to dwell on this slide here, but I'm just going to mention that the data that we're using is Census Bureau microdata. It's administrative data, and the primary source of data is the longitudinal business database, and what we see there is at the establishment level job. We're basically counting jobs. It's not necessarily employment. It's the number of jobs at an establishment, and we know precisely what the North American Industrial Classification System, or NAICS, code is for these establishments.

If we look at import exposure from China, and this is just the same graph or same plot that you would see in the Autor, Dorn, & Hanson papers, it's obviously heavy in the West, in the U.S. South, and on the coasts, but what's interesting here is if you -- sorry, if you back up and say, well, where do people actually live, 75 percent of the U.S. population lives in the largest 124 commuting zones, and,
again, you see, like, what pops out. You've got the Bay Area in California, you've got areas in the Pacific Northwest, you've got the upper Midwest, New England, and then parts of the Mid-Atlantic.

So these areas are basically -- and this is not a population -- this is not telling me where people live. These are the areas where 75 percent of the population lives, and you can see they got hit pretty hard in many cases by the China shock, which is the darker red or darker orange areas.

And so, when we run regressions on this, this is my point I want to make here, is that we're basically picking up with this estimation strategy sort of what's going on in these places where most people are. There's lots of stories that you can tell about what's going on in the rest of the country, but those are not places where there are a lot of people actually living.

So what we do is we decompose employment growth into its manufacturing and services component. We're going to use this growth rate from Davis, Haltiwanger, Schuh that allows us to, you know, have this additive decomposition of total commuting zone employment growth into its manufacturing component and its non-manufacturing component. Notice these have the same denominator. This is roughly equivalent to long changes but not exactly, but it's close enough.

If we run a regression where we look at the China
shock in terms of import penetration on that growth rate and we decompose it into manufacturing employment growth and non-manufacturing employment growth, you can see that, indeed, there is a negative effect on manufacturing, but it's offset by non-manufacturing employment growth and substantially so, to the point that total commuting zone employment from the period 1992 to 2012 actually goes up.

And so what I'm going to do for the rest of the talk here is kind of drill into, like, what's going on here and where these non-manufacturing versus manufacturing losses or gains are coming from.

So, if we want to compare to the Autor, Dorn & Hanson results, we have to use slightly different growth rates. We're going to look at the manufacturing only growth rate and then the non-manufacturing growth rate, and these things are no longer an additive decomposition, so I can't add them up the way I did on the previous slide, but we can run the same regressions using the Census microdata, and what we're doing here in this first block is basically I'm showing you Autor, Dorn & Hanson's result from their 2013 paper.

We replicate that pretty closely using the Census microdata but not exactly, and the reason for that is just that there's imputation in the county business patterns that's the public use data that's going to be a little bit different than what we see. In addition, Autor, Dorn &
Hanson are using the American Community Survey for some of the latter years, and we're actually counting the number of jobs. And so it's not exactly the same, but it's pretty close.

Where you start to see big differences is when you switch to trying to estimate these regressions on a NAICS basis instead of a SIC basis, and when we do that, we still get this negative effect on manufacturing, but the non-manufacturing effect turns around, and we see if we go to different differences where we use the Census years when we think the data is higher quality, we also start to see these non-manufacturing effects pop out if we go to 2012 or if we use all the five-year differences.

And the point that I want to make here, I think, is critical for people that are studying this particular shock or any sort of thing with imports and exports and what's going on with firms, and that's that this NAICS versus SIC is important, and the reason for that is that the SIC basically stops in 1987, that's the last time it was updated, so this is like fax machines, the internet doesn't exist, there is no specific code for semiconductors, a bunch of emerging high-tech industries and service industries are not in there in SIC, and NAICS is designed to correct that, and it starts coming into force in the U.S. data in 1997.

And so everything I'm going to show you going
forward here is going to use NAICS, and when you do that, you will get different answers on any of these China shock papers or other things where you're looking at, you know, big shocks. And so I want to encourage researchers that are doing work in this area to kind of make sure that we're not living in the past and projecting SIC too far forward in time because the NAICS basis really matters, and you can see that here in this chart.

So what's going on here? So there's this within firm reorganization that's happening, and so we're going to decompose job growth even further and look at job creation, destruction, and continuing firms from the entry and exited firms and then this other component here which we call switching in and out, and what that is is that there are some establishments in the data that between, you know, five-year increments in the economic census they change their industry code, and it turns out that matters quite a bit.

So, if we look at where the job losses are coming from in manufacturing, some of them are coming from job destruction in continuing establishments. Most of it is coming from the exit of establishments. So we have manufacturing plants that basically just die when we see them one year in the data and then we look five years later and they're gone.

But a non-trivial component actually comes from
manufacturing establishments that did not die, but they
switched their industry code between the economic census.
And so these are firms that said, you know, say, in 1992 that
we're a manufacturer, and then, by 2002, they're doing
something else. And so, when they fill out their Census
form, they say, actually, we're not a manufacturer, we're a
warehouse firm, or -- sorry, a warehousing establishment or
in research and development, and we're managing things.

And we can see that when we look at the data, like, where does this switch out come from. A lot of it is going
into professional and technical services, that's R&D, and
some of it is going into NAICS 55, which is management. The
rest of it is made up by wholesale.

And this is exactly what you would expect to see as
an industry sort of reorganizes itself around the China
shock. But what's important to note here is that these
establishments, they did not go out of business, they did not
die. The jobs are still there. They were just recoded into
a different code, and most of it is coming from NAICS 33 and
going into these other sectors.

If we look at what these firms are actually doing, a lot of it is from firms that are expanding in the
non-manufacturing sector, in large part, what we just saw in
the previous slide. These are coming from importers, and
this is coming from large firms.
So the last thing I'm going to cover here in my limited time that I have left is, like, what's actually going on regionally here because that's a large part of what this symposium is about, and if we look at commuting zones with above versus below median share of population with a college degree, this is what the map looks like.

And if you think about what I showed you before, which is that, you know, where is this shock really big, a lot of it is on the coasts, some of it is in the upper Midwest, and when we break up the data and we say, well, what happened in these high human capital commuting zones versus low human capital commuting zones, we can see that manufacturing employment in the high human capital commuting zones declined but not by merely as much as it did in the low human capital commuting zones. And if we look at non-manufacturing employment in high human capital commuting zones, it actually goes up, whereas it goes down in the low human capital commuting zones.

And what you can see, I think, in this low human capital, you know, sort of result here is, in large part, these are maybe the commuting zones, as David Autor was talking about earlier, like West Hickory, North Carolina, where, you know, the plant goes out of business and the town dies, so there are no service jobs because the town has died.

But, if you go and you look at, you know, the East
Coast and the West Coast, all these other changes are happening, this reorganization, and there are service sector non-manufacturing jobs to be had, and I think that's part of what we see coming out of this chart.

If we then look at earnings, again, a similar story here. In high human capital areas, manufacturing earnings actually go up, non-manufacturing earnings go up. That's not the case in these low human capital areas.

So, if we look at the switching in and out of non-manufacturing, a lot of it is coming from these high human capital zones instead of low human capital.

And I'm out of time here, so let me just jump ahead a little bit and just conclude with this. To some extent, I think the point of our paper is a somewhat revisionist story of the China shock. The good is that there's this offsetting positive effect on services jobs in high human capital areas.

The bad is the negative effect on manufacturing jobs in low human capital areas, but the debatable part is that on average there's no negative effect on local jobs but a negative effect on resident employment, and these large manufacturing firms do not seem to suffer, but they may be a factor behind the rise of these super star firms and regional inequality, and, you know, that's obviously a problem that's difficult to deal with from a policy standpoint.

Thanks a lot. I'm sorry for going over time a
MR. MONTGOMERY: Thank you, Kyle, and thank everyone that participated and presented so far. I think I speak for most of the audience in saying we're off to a great start, and your presentations have been very informative and exciting.

So, at this point, I'll pass the baton over to Kadee Russ to lead a moderated discussed. In order to get back on schedule, we're going to try and stick to about 18 minutes. For those in the audience, if you have any questions for this panel, feel free to send an email to de@usitc.gov. Staff will be monitoring those emails, those questions, and try and send them over to Kadee.

Thank you, and, Kadee, you can go ahead.

DR. RUSS: Thank you.

So, as Chris said, I'll currently be monitoring the chat in case we get questions from the audience. But I'd love to start out just asking our amazing panel, and it's really an honor to be here with you guys, so it looks like we have this set of papers that thinks very seriously about wage inequality stemming from import competition and offshoring, about regional inequality stemming from these phenomena.

How does your research speak to the distributional effects of trade on workers in underserved communities or groups or geographic areas? Would anyone like to comment on
this? I know people are shy to go first.

Okay. I'm going to go first then. So I think what our paper does is kind of expand the group of areas that we might think of as underserved or vulnerable, that these places where industries already have been aging out are vulnerable, whereas previously I had thought of the areas that sustain the biggest gross shock from the surge of imports from China as the most vulnerable. I hadn't understood these areas that originally had been places where products or industries spawned but no longer were as especially vulnerable.

So I'm wondering if there are insights about -- so, Eunhee, you had really interesting thoughts about how policy might be able to confront the wage inequality in your paper. Does that policy need to target different groups of workers differently, for instance?

DR. LEE: Yes. So one of the policy implications I can draw from my framework is that it is very important to be able to move workers across industries and especially across occupations. So, if they are displaced, they should be able to find a better job, so at least a job that gives a similar characteristic or even -- it'll be even greater if they can find a better job.

So I think the labor market policy is very important to be able to mitigate the potentially negative
impact of import competition, and if I have to use the
framework that I shared today to speak about the effect of
trade on regional inequality, it is a little bit difficult to
use the framework I shared today because the relationship
between workers' education and their industry- and
occupation-specific skill is straightforward but is
relatively difficult to argue that everyone from particular
geographic areas has that particular industry- and
occupation-specific skill.

So, in that sense, the framework I share today is a
little bit difficult to the regional inequality, but I have
other papers that studied the distributional effects of trade
on workers across geographic regions focusing specifically on
mobility frustrations that workers face. So, going back to
my earlier point about the role of labor market policy to
facilitate labor reallocation, that paper also argues that it
is important to have well-designed labor market policy to be
able to reallocate workers across a space and sectors.

DR. RUSS: That's really interesting. It seems to
touch also on what David Autor said in the beginning that we
just don't see this fluid labor market mobility that a lot of
us older people when we were trained in PhDs were expected to
have. Ann?

DR. HARRISON: Yeah, thanks, thanks so much for
doing this. I just want to emphasize this difference, right.
So let's say you're a machine operator, right, so that's your occupation. I think the point is that it's very easy to move across industries as a machine operator, but if suddenly your occupation is eliminated because suddenly this can be done through artificial intelligence or robots and you actually have to switch occupations, then you have a real problem. So there's this enormous stickiness in moving across occupations, and so I think that's what this whole literature really highlights. And so one implication is that, you know, as jobs are moving out of manufacturing and into services and some occupations are being eliminated, that's really where the hit is.

And so our book was called The Factory-Free Economy because what we're visualizing is all these firms, as we just heard in Kyle's paper, all these firms are basically moving from manufacturing into services, so they no longer have any factories, and those are lower-paying jobs, and that's where a lot of the hit is coming from.

So one implication is you really want to target lower skilled service jobs. So, even if the net impact on employment is zero, the hit is huge in terms of lost earnings. And so you really want to target those parts of the economy where workers are unskilled in the service sector. That's where the big hit has happened.

DR. RUSS: And that really gets back to Eunhee's
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work too because, Eunhee, you showed this really interesting divergence in wages for people switching into the service sector because some go into the lower wage service production jobs basically and others go in as managers if they're higher educated.

DR. HARRISON: Yeah, so education is so critical, right, and, basically, our problem is that about a third of our labor force gets a college degree, and that's just way too low to be able to compete, right. I mean, young people -- I mean, our numbers are much lower than many other countries. So we really need to target service sector, low skill, routine jobs.

DR. RUSS: Shubhi, let me just ask you for a quick minute, and we'll go to Kyle. So, Eunhee, you said that export expansion also seems to favor high skilled workers over low skilled workers. So is there a double whammy here in import competition and export expansion in terms of wage inequality?

DR. LEE: Yeah, so I think import competition and export expansion -- so, if there is -- so I think overall they should have reverse sides, so, basically, the direction could be different, but I think the mechanism should be similar because, at the end of the day, what happens is the occupation specificity of skill.

So I think, in terms of the relationship between
skill and occupation, the task that is required at its occupation, that link is much stronger compared to the link between industry-specific task and worker skill. So that's the reason why it is so important to look at occupations I mentioned and in terms of policy that it's important to target certain type of workers in certain type of occupations.

DR. RUSS: A really helpful insight. Thank you.

Kyle?

DR. HANDLEY: Thanks. Yeah, I wanted to comment a little bit on, you know, Ann's point about education and just this difficulty in switching into these service sector industries, and I think, I mean, you can see some of this in our paper, but I think, in large part, like, the only tool, policy tool, that we have to deal with that -- I shouldn't say the only tool. One of the only tools we have is Trade Adjustment Assistance, which is a program that's, like, chronically underfunded and, you know, most of the firms that apply for it are not necessarily going to get it, and it's meant to try and retrain the workers, but a lot of them, like, never got the training because their firm didn't get trade adjustment assistance, and if we had more programs like that that were targeted locally or to specific regions or parts of regions rather than, you know, a completely federalized program, we might have a better shot at trying to
to, like, take these workers who are displaced and maybe even keep them where they are and help them, you know, find new jobs and get the new skills that they would need.

DR. RUSS: Okay. Thank you. And then I have a question for you, Kyle, from John McLaren, putting the screws on you a little bit here. So can you clarify how it's possible that there's no negative effect on jobs measured from the firm side, he's assuming, but a negative effect on employment measured on the worker side? Should I assume that one of those two is mis-measured?

DR. HANDLEY: Sorry, so can you repeat the question again so I can make sure I give you the right answer?

DR. RUSS: So he says can you clarify how it's possible that there's no negative effect on jobs, he's assuming that's measured from the firm side, but a negative effect on employment, he's assuming that's measured from the worker or perhaps CZ side? So should I assume that one of those two is mis-measured or that these are measuring different things?

DR. HANDLEY: Okay. I think I understand the question. So, yeah, so in the aggregate, we find no negative effect on jobs, and so we're counting, to put it bluntly, we're just counting bodies and the number of workers at establishments from administrative data.

A lot of people can have two jobs, so they might
get counted twice. If I go to the American Community Survey and you ask people if they're working or not, you know, they'll say yes or no, but they may not -- you know, we're not counting jobs, and we're actually just asking what's your status.

And so you could get different answers if you look at administrative data, especially the microdata that we're using, or when you look at county business patterns, which is put out by the Census Bureau and uses that same administrative data, then you'll get if you go to the current employment survey or the American Community Survey or other tools -- I shouldn't say tools, other data sources, in large part, because some of those other surveys, especially when you dig into the regional data, there's a ton of imputation going on, you know, there are surveys, it is not a census. And so you're definitely going to get different answers.

And I would say the administrative data that we're using is not mis-measured. It's exactly what was reported on Form 941 in March 11 of the year that the data was collected. And so that data is accurate to the extent that, you know, they filled out their forms for the IRS properly.

When you go to survey data, you can obviously get different answers, especially if you try to take these nationally representative surveys and then say what's happening in all these different, you know, commuting zones...
or counties or different regions. So that's the best answer I have for that.

DR. RUSS: Thank you. So all three of you just now, and I suspect Shubhi would concur, are emphasizing the importance of measuring services employment and services activity in order to fully understand impacts of trade and trade policy on U.S. labor markets.

Do you have any thoughts on, you know, data related to employment and production and services or services trade and how this may present challenges or opportunities in the future to continue drilling deeper into this?

DR. HARRISON: Well, I can just reiterate what we already heard, which is that one of the chapters in the book on The Factory-Free Economy, one of those chapters shows how so many companies have been reclassified.

So, for example, let's just take a great example of IBM. IBM used to be a manufacturing company; it's now classified as a services companies. So that just reiterates that if you just look within industry, you're going to actually miss a lot of what's going on.

But I also want to say that -- and this is something that I think we really need to think about in terms of distributional consequences. So Kyle pointed out and the graphs I showed you reinforced that point that on net, employment hasn't declined. What's happened is manufacturing
employment has declined and services employment has gone up; however, and this is a big however, those are not such good jobs. The wages that these workers are getting when they switch from manufacturing to services goes down, right.

And so, you know, it's really important to think about as America's manufacturing base shrinks, just because it's being replaced by other jobs, those jobs are not as good. And so the classification -- you know, if you don't take into account this change in classification as IBM and other companies shift from being manufacturing companies to services companies, the average wage that they're paying the same worker who switches jobs goes down, and that's something that really needs to be thought about from an income and distributional perspective.

DR. RUSS: In terms of trends in trade that may continue to affect the U.S. labor force, we're seeing increasing trade in services. And I know for the Bureau of Economic Analysis, especially under Ray Mataloni, and I know we all miss him, that was a big priority to improve data on trade and services.

Do you foresee issues with import competition in services affecting these workers who have already had the big shift from manufacturing to services? Hard to tell, isn't it? Yeah, I think it's a big unanswered question. So, let me just take the last two minutes then to the broader picture
of other unanswered questions.

So, this one, you know, possible trade in services and import competition from services I think is going to be a big unanswered question. But are there other questions related to the distributional effects of trade and trade policy across U.S. workers of different skill and education levels that remain unanswered and should be considered in future research, including any data or methodological issues?

So, let me start with Ann, and then I'll go to each person individually. We've got about 30 seconds each.

DR. HARRISON: Oh, great question. Well, I really do think that we should be spending more time thinking about the incomes of workers. And so, we use the CPS data, and it had a very limited window to look at the same worker over time.

So, if we had a richer subset of the CPS data which allowed us to look at the same worker over time more than just two periods, we could do a much deeper analysis.

DR. RUSS: Okay, so longer time periods for individual workers tracking -- thank you. And Lee?

MS. LEE: Yeah, we talked a lot about the role of labor mobility and occupation, and for this type of question, we need, yeah, basically detailed matching employer-employee data. So, having access to that data will be good. In that sense, the LH database from the census is good, but the key
drawback of that database is that it does not have
information about workers' occupations.

So, that really limits our ability to tackle this
question in the context of the U.S. labor market. So, I
think having occupation information and matching
employer-employee data will help us better understand this
issue.

DR. RUSS: Okay, thank you -- so, detail on worker
occupation that can be matched with employers and other --
wow, okay, thanks, that's helpful. Kyle?

DR. HANDLEY: Hi, thanks. Yeah, I mean, I think
there's a lot more we could do on data. I agree with Yun He
that the LH database that the census has put together is
important for trying to track workers over time.

There are a lot of efforts afoot, one of which I've
been involved in, to try and make some of these datasets
public use. Fariha Kamal is going to talk about that more
tomorrow, along with a number of people from different
agencies.

And I think there's a lot of data out there that's
being created that I think is going to help answer these
questions, and also, you know, we should always be trying to
find new ways to put, you know, these data sets together.

DR. RUSS: Thank you. And Ann, you had a comment
and we don't want to lose it. I've been given special
permission to invite your comment. And then Shubhi? Did we lose Shubhi?

M. AGARWAL: No, I'm here.

DR. RUSS: Do you have any last words?

M. AGARWAL: Just I'll actually say that I input all the work economists here present, and I would say that I actually agree on that point, that there's a symmetry between data sets, because that is what I'm using.

I'm using the CPS data, but if we go to the CBP data, the BLS data, if you want to tally similar results, it might be because of the data issues, like the BLS. Like, it actually has a limitation that, at the state level, it is really working well.

Like, based on my results, it is completely my personal opinion here, but when you go down to the country level, the BLS data doesn't work that well, from my research. So, you know, actually it's like data limitations at times, and also, you know, the way the symmetry in the data. The more data available, the more research questions are something that we all can answer.

So, I completely agree, and that is what, like, my current research is based on. Like, the paper, like, the last two papers, that is actually what I'm working on for my current research as well, so, yeah. Occupational exposure is really a good point that I actually picked up, like,
occupational measure of trade exposure.

And those occupations actually is the one where we can look at, like the one you said, the service industries and the change (phonetic) shocks and how they are working, something that can be explored further.

DR. RUSS: Okay, well we have the right audience for this message, so thank you all so much for sharing these insights. I'm going to turn it back over to Chris.

MR. MONTGOMERY: Thank you so much for all the participants in this first panel. It's, again, been a great start, and as a member of the audience, I found it extremely insightful and am super grateful for you all joining us this morning, particularly the folks that got up very early from the West Coast, and it's great for you guys to be here.

At this point in time, I'll advocate that we take a six-minute break in order to try and get back on schedule for the next session.

(Whereupon, a brief break was taken.)

MR. SECRETARY: Thank you so much for joining us today and I will turn the floor over to you. Thank you.

DR. TEBALDI: Thank you very much. Good morning to everybody, and thanks for joining us for this second panel. We have four great presentations, and I think I have seen the slide decks, and really useful insights to this discussion, and hopefully we can end the discussion on really important
conclusions and recommendations for all the people that will be joining this panel discussion today.

We are running behind the curve, so we're going to use the few minutes we've got here on my end to actually start the work. As I said, we have four presentations. I will announce it as we go.

The first speaker is Dr. Timothy Bond from Purdue University. Dr. Bond, are you ready to proceed?

DR. BOND: Yeah, I can go ahead.

DR. TEBALDI: Great. So, we're going to start. Each presentation will last about 15 minutes, and questions will take place at the end. So, please send our questions to the email that was provided. I'll do the best I can to pick the best questions for this panel to discuss. And so, without further ado, so Dr. Bond, you have the floor for your presentation. Thank you.

DR. BOND: All right. Well thank you for having me here today. This is a paper that is co-authored with my former (technical interference) down at the University of Notre Dame, Mary Kate Batistich, Racial Progress and Japanese Trade in the '70s and '80s.

I think it's probably easiest just to motivate this with a couple of figures to start off with here. So, coming out of the civil rights movement, this is a figure of the ratio of black men to white mens' earnings.
So, coming out of the civil rights movement, what we saw was that black men were making tremendous progress at closing a lot of racial disparities, but there was a sharp change in the mid-1970s in that we actually saw black men fall further behind whites, and this pattern continued through the 1980s.

We look at that in wages, we look at this as employment rates; you can see that black men's employment declined throughout the 1970s and the 1980s. Where in particular do we see these changes?

Well, one particularly interesting and important industry here, if we're looking at black men's progress in the 1960s with the manufacturing industry, so the dashed line here was the share of black men employed in manufacturing, you can see that black men dramatically rose their role in manufacturing in the late-1960s before falling off in the 1970s and 1980s.

And so, our question is whether or not these changes could be explained by the large influx in trade and manufactured goods going from Japan in the late-1970s and the early-1980s.

And so again, I'll just show you the figure here, which you can see this is the trade coming in from Japan, and we really see a takeoff in trade during the 1970s and especially during the 1980s before leveling off in the
late-1980s, coming from Japan.

And so, the patterns are especially suspicious here. They really do match-up with what we saw going on in terms of racial disparities in 1970s and 1980s. So what we're going to do here is basically adopt the Autor Dorn and Hanson framework to look at variation and exposure to import competition across local labor markets to see whether or not increased competition from Japan can explain the drop in black manufacturing employment and other labor force outcomes that we see.

And so we do find is that increased competition from Japan leads to a large drop in black manufacturing, and almost all the workers who are displaced in manufacturing leave the labor force altogether, which is a very bad outcome.

But you don't actually find evidence that there was any negative effects on white workers, and what appears to be the driving force here was that there was an increase in demand for skill in manufacturing in sectors that were most hit by the Japanese trade shock.

And so, what do we see to support this? I'm going to show you if I have time, but the losses that we saw are concentrated mostly on low-education workers and also for blacks who are born in the South.

For the manufacturing industry, we saw a shift to
employment of more engineers and more educated production workers, and I won't have time to show you this today, but the most exposed industries, the ones that faced the most competition from Japan, responded by increasing their capital labor ratio and saw higher value added per worker.

So, why is it that black manufacturing workers were especially vulnerable to these changes? Well, in 1960, 60 percent of black manufacturing workers had less than a high school degree compared to 38 percent of whites.

Among production workers, black workers had a half-year less education than whites, and when you look at the dynamics leading into this was the great migration, so more than half of our northern manufacturing workers who were black were actually recent migrants who were educated in the Jim Crow era South, and so there was a big schooling disparity in terms of quality.

We're going to look at whether or not there's evidence that there was an impact driven by differences in unionization, any disparate effects related to prejudice, or difference in spatial mismatch did manufacturing jobs leave inner cities where black workers disproportionately lived, and we don't find evidence to support any of these hypotheses.

So, let me just dive into it because we only have a short amount of time, we used a lot of data here to try to

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get to this question, a lot of older data -- so, 1960s and
1970s accounting business patterns data, trade data coming
from U.N. COMTRADE in the '70s and 1980s. The census is
going to be where we get our labor market outcomes from.

Both manufacturing and non-manufacturing males
(phonetic), particularly because we're concerned in
differences in labor force participation across race and how
those may change over time. And when we look at our sample
here, we're looking at commuting zones as our measure of
local labor markets, and we're going to restrict to 358
observations (phonetic), so about half of the local labor
markets in the United States are going to be in our sample.

And these are just the local labor markets at 500
working-age black males in 1970 and 1990. So, I'll show you
some figures in a little bit that'll make you perhaps not be
so concerned about what's going on with our sample selection.

Our measured import competition is going to be the
standard measure from the Autor Dorn and Hanson framework,
which is imports per workers. And so the way that we measure
this is basically we're going to take -- the fundamental
thing is that imports are measured at the industry level, and
our industries are divided across commuting zones. So,
different local labor markets have different shares of
industries.

We're going to take the imports that are coming in

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at the national level and divide them across the industries based on the proportion of industries that are located in each commuting zone. So, if Detroit has 20 percent of the automobile industry, then 20 percent of the automobile industry's imports are going to be assigned to Detroit, and so on and so forth.

Our measure's going to be 1970 to 1990. This is more or less a time period of convenience because the census is measured in 1970 and 1990. Ideally, we'd like to probably do something between 1975 and 1985, but we don't have great data for looking at those particular time points.

In terms of what the average black worker was exposed to, actually less than the average white worker on this measure. The average black worker was exposed to $1395 in import competition, whereas the average white worker was exposed to $1583. And comparing this to China in more recent times, it's about 50 percent of what we saw for China, if my memory's correct.

All right. We're going to adopt the Autor Dorn and Hanson variable framework (phonetic), and essentially what this means is that we're going to use, for identification purposes, we're doing to use the predicted exposure that you would have received based on Japan's exports of their country.

So, our main concern is that Japan's exporting to
the United States not because they're very good at producing automobiles but because something happened to the American automobile industry that would've led to a downturn regardless.

And so the idea's that we're seeing exports that are going from Japan to Australia that doesn't have anything to do with what's going on in the American automobile industry. That's all on new technology from Japan as they get more competitive in the global market.

And so, we're using those exports to Australia, Denmark, Finland, New Zealand, Spain, and Switzerland. We're landing our labor shares for the measure in 1962, so that's going to predate Japan's big export expansion.

The edification for this, or the theory that we're relying on is a recent paper by Borusyak Hull and Jaravel for 2022 just published a couple months ago, and the idea is that these shocks, Japan's shocks, are randomly assigned across industries.

I won't have time to show you this today, but we see very little evidence that there's a correlation between your exposure to Japan and pre trends in your local labor market, the characteristics of the industries that received these shocks, trends going on in these industries once we control for a small number of local labor market variables.

All right, so here's my maps. This is the exposure
of intensity of competition between Japan and the United States after adjusting for the size of manufacturing share. And so what you can see -- I don't think this will be surprising to the people who are aware of what's going on in Europe, and the big concentrations in the upper Midwest in Indiana, Ohio, and Michigan and Illinois, and up into Buffalo and New York.

But there's also some exposure across the country. If you look at Southern California was highly exposed; parts of Southern Florida were highly exposed. In our main analysis, we're going to include region-fixed effects. What we're going to be doing is identifying differences within the Midwest in the exposure, whether or not black workers were more harmed in the Midwest in areas that had more exposure.

Now, I told you we were going to drop about half of our commuting zones. These really are commuting zones that have very low populations in general. They have critically-low black populations, but we're not losing a lot of the population of the United States when we drop down to these 358 commuting zones.

What we're left with is almost the entire upper Midwest, almost all the South, Southern California, and up through the mid-Atlantic and New England, except for Maine, New Hampshire, and Vermont. So, it's a fairly large sample of the United States in the end.
All right, so just a regression analysis. Left hand side variable, changes in outcomes by race. Right hand-side variable is going to be the change in imports exposure with a bunch of screenings on level controls to account for any sort of differences in commuting certain level characteristics.

All right. This is our first stand-on-me (phonetic) result. This is sort of mimicking what we would've seen if we had done just what Autor Dorn and Hanson did. In the baseline column one, an increase in imports from exposure from Japan – left hand-side merely is the change from 1970 to 1990 in the number of manufacturing workers.

So, the manufacturing plant per working age population in the commuting zone, and so we just ran a regression of imports from Japan on manufacturing employment. You would see a large increase in manufacturing employment in the most exposed commuting zones.

In column three, we throw in our full set of community zone controls, and what you can see is most of what's going on is actually that the areas that were most exposed to Japan had a higher percentage of their employment and routine occupations, and there's like a skilled like change going on.

But what's really interesting for our analysis is columns four and columns five. So, there's no aggregate
effect on manufacturing. Columns four and columns five are breaking it down by race, and what we see is that there's a large decrease in black manufacturing workers and almost no effect on white manufacturing workers in the aggregate.

And that sort of, you know, poses to figure out what exactly is going on here, why is it that black workers are being more negatively affected than white workers by this trade shock when there's no real big effects in the aggregate?

And so here we're going to break things down by different employment outcomes, and so basically everybody has to be in one of these categories. Either you're working in manufacturing, you're working in non-manufacturing, you're unemployed, or you're out of the labor force. Column four is not in the labor force.

White workers, nothing happens to white workers in response to the trade shock. For black workers, we see a sharp decrease in manufacturing employment that I showed you on the previous slide, and the question is what happens to these workers?

We don't see much evidence for reemployment in non-manufacturing that would've been, like, a softening of the blow if they found employment in other sectors. Nothing's really going on in unemployment, either. The big movement is movement of manufacturing workers out of the
labor force.

So, this is consistent with the trends we see, that we saw one of the biggest negative trends we see in this era is a decrease in black men's labor force participation.

That's probably the most damaging effect because unemployment in the United States is a short-term phenomenon whereas displacement is an indication of a disconnect from the labor force. And so, the effects here are about as bad as we would expect. Everybody who's displaced is leaving the labor force altogether in the long-run, more or less.

All right. So, summary here, one thing was comparing this to is what are the comparisons of our effects relative to Autor Dorn and Hanson. So, basically the effects on black workers that we see are about the same size are to what Autor, Dorn and Hanson find on China for all workers.

So, for China, Autor Dorn and Hanson finds the effect of that manufacturing share is -0.5, and labor force participation is 0.43. We find black workers -0.67 for manufacturing and 0.5 on non-labor force participation. The magnitudes are very comparable, and they're robust to a whole bunch of things that I list here that I don't really have time to go through.

So, why is it that black manufacturing workers were harmed so much by the trade shock? Our four hypotheses here is that the first is that there was skill upgrade in
manufacturing. What I mean here is a change in the demand
for skill, that low-skill black workers are going to be
replaced by higher-skill white workers, on the aggregate.

Second hypothesis is going to be migratory response
of jobs. So, you have inner-city factories may close with
older technology and reopen in the suburbs, which would have
better access to white workers.

Third hypothesis would be a labor unions that
shielded white workers from job loss more than black workers,
and then our last hypothesis is that prejudiced employers
were facing competition from Japan and decided to lay off
their black workers rather than their white workers.

So, my focus here in my limited amount of time is
going to be showing you the effects I see. And so, I have
three panels here, the effects on high school dropouts, high
school graduated, and the college educated. College educated
is anybody who has more than 12 years of education in the
census.

And so, what you can see here is that, first of
all, among high school dropouts, you see statistically
significant negative effects on both black workers and white
workers. The effects on black workers are much more severe,
but we do find evidence that white workers who were laid-off
who are high school dropouts lost their jobs in manufacturing
as well.
The difference between black workers and white workers among our high school dropouts is the high school dropouts seem to have done a better job of finding reemployment. Our black workers who are displaced end up in non-labor-force participation.

Among our high school graduates, we actually see smaller but still negative effects on manufacturing employment. We don't find statistically significant effects for black workers in manufacturing employment, but we do see statistically significant effects on their non-labor-force participation. That's surely suggestive that black high school graduates were harmed as well by the changes of the trade shock.

And among our white workers, we do see a statistically significant and negative effect on manufacturing employment. Among our college educated workers, I can only measure this for white workers just because we don't have enough black college educated workers in the 1970s to really build a sample here, but we don't see any negative effects, anything slightly positive for white workers who are college educated.

So, the big picture here is that our lowest skilled workers are the ones who are harmed the most here. This Southern-born blacks versus Northern-born blacks was kind of striking. So, Northern-born black workers we would expect to
have lower education quality than South where we would've had segregated schools for most of their education.

And what we see here is that our Southern-born black workers are the ones who are really being harmed here, with negative effects in manufacturing employment and positive effects on non-labor-force participation, and our Northern-born workers are not seeing the same negative effects among black workers.

Let me quickly show you this here. What I wanted to point about what was going on in manufacturing employment in general, we're seeing an increase in the number of college educated workers in manufacturing, an increase in engineers, an increase in college educated production workers. I'm just going to skip through this.

The other hypothesis we don't find evidence for, to the extent we can measure unionization prejudice or spatial mismatch, we do see some evidence that there's more negative effects on black reemployment in more segregated cities, suggesting there might be something going on with segregation having a role to play in our negative effects.

When it comes to employment incomes and earnings and family outcomes, we see negative effects as well. So, just to summarize here, we find causal evidence that stalled progress in 1970s and 1980s could be attributed to import competition from Japan.
This is a particularly vulnerable time for black workers because they just made all this progress in the 1960s in manufacturing, and you wonder, if they had been able to sustain that progress, would we have seen better inter-generational effects in the longer term. So, thank you guys for your time.

DR. TEBALDI: Thank you very much, Dr. Bond, for staying on time. We really appreciate it. Let's move to our second presentation by Dr. Frederick Felipe Benguría from the University of Kentucky. Freddy?

DR. BENGURIA: Thanks very much. I was unmuting, and now I'm going to share my slides. Okay. Do you see the slides, or should I press CTRL+L so you can see full-screen?

DR. TEBALDI: Yeah, we can see it, but perhaps bigger would be better.

DR. BENGURIA: Okay, hold on.

(Pause.)

Now we're good?

DR. TEBALDI: Excellent.

DR. BENGURIA: Okay. Well, thanks very much to the organizers and to everyone who has presented so far. It's been really interesting to me.

So, I'm happy to talk about this paper in which the goal is to look at the local labor market employment effect of NAFTA, which is a big part of recent and not-so-recent
U.S. trade policy, and with an emphasis on the distributional effects that NAFTA has had on different types of workers. So, this paper really builds on previous work that has been described earlier today and that we're going to see later today. And so, the two key questions are the following.

First, what say on NAFTA on local employment outcomes? There's been recent and very good work mostly focusing on the wage effects of NAFTA, but I think there's space to know more about the employment effects.

So, I'm going to be asking how the effect on total employment, manufacturing and non-manufacturing employment, unemployment, labor force participation, and employment in abstract versus routine tests -- so, all these margins of adjustments, once workers are hit by the initial shock to the manufacturing sector.

Second, how does this impact different groups, right, both in terms of the direct shock to the manufacturing sector and to the later adjustment that these workers find towards non-manufacturing, unemployment, and so on.

So, in particular I'm going to look at gender and race, which is what I'm going to emphasize the most. As well in the paper I also look at age in high- versus low-human-capital regions, and so on.

So, as a motivation -- and I'm going to show you
some data later - since that NAFTA, in the sectors that faced
a lot of tariff liberalization were, for example, sectors in
North and South Carolina that had a lot of apparel and
textile mills, and those were industries in which there's a
huge fraction of women employed, and also regions in which
the non-white population is fairly large.

So, at the start of this project, it was
interesting to read a lot of examples of the effect that
NAFTA had on these communities, for example, North Carolina,
not the big cities, but semi-rural places, and that was very
interesting.

So, the empirical approach building on the previous
literature is going to take advantage of region operation and
exposure to both U.S. and Mexican tariffs. Half the effect
of NAFTA is due to the U.S. tariff liberalization, but the
other half of the story has to do with Mexican tariff
liberalization that implied more opportunities for U.S.
exports and different commuting zones.

In line with what has been said earlier today, a
different exposure to both the shocks, and then the variation
in exposure is going to be driven by different initial
industrial composition in 1990 within the manufacturing
sectors, some regions that we see manufacturing specialized
in apparel and other regions that could be specialized in
vehicles and many other things.
So, this is not comprehensive, but as I said, my work really builds, and I've learned a lot from important work that has looked at NAFTA and on the China shock. So, in terms of the regional effects of NAFTA, we knew very little before the work of John McLaren, who mostly look at the wage effects, right, and there's also ongoing contemporaneous -- a recent paper by Consencio looking at total employment but mostly focusing on political effects, which is very interesting as well.

And of course the literature on the China shock, methodologically, we're going to follow that very closely, and all my regressions are going to be controlling for the effect of the China shock. So, every single regression in the paper controls for that. That's a very big shock during the time period I look at, which is 1990 to 2000.

But what I'm going to try to argue is that, on top of that, you know, we use very disaggregate tariff-level data and, sort of, the same controls that the literature has used. NAFTA had an impact in addition to that large shock, right?

There's also work on NAFTA based on general equilibrium models to look at the sort of general equilibrium, the average effect. I'm going to be talking about relative effects. And there's other important work in the U.S. and other countries looking across local labor markets.
So, I build on all of that, right? So, I'm going to be very brief in terms of methodology and data, and I'm just going to focus a lot on my results. But basically, I used the 1990 and 2000 population census. I'm thinking of looking further in time, but in the current version of the paper, it's 1990 to 2000.

In fact, most of the tariff liberalization in NAFTA was done by 2000. So there was a gradual tariff liberalization starting in 1994, but really it was just the initial years where most of it happened.

So I'm going to look across 722 commuting zones in the U.S., and I'm going to use broad level tariffs that come from the work of Ramales (phonetic) in the case of the U.S., and I have digitized the Mexican tariff scale across 5,000 different products that are then, you know, aggregated to industries to measure the impact of the second half of the theory, which is the fact that Mexico lowered its tariffs towards the U.S.

So, for the segment motivation, here is a graph with exposure to U.S. tariff cuts, right, and maybe as you have expected, most of the heavy impact is on the east of the country and especially I would say the south Atlantic, you know, also parts of the U.S. throughout the Midwest are darker, but a lot in what we would call the south Atlantic region, which manufactures a lot of apparel, furniture, and
so on. And then this is exposure to Mexican tariff liberalization. So these regions would have opportunities as, you know, Mexican tariffs fall, there are now opportunities to export more to Mexico.

And so you can notice that there is a large sort of correlation because that comes from the large industry-level correlation as well, but the correlation's not perfect, so we're not able to see the impact of both things.

Also, as a final piece of motivation, here is a table with the sectors that are most exposed to U.S. tariff cuts, so they see protection, you know, go away with NAFTA.

And so, if you look at the first two, for example, apparel and textile mill products and then leather products, first, in the second column, you see that these are sectors with a large fraction of women employed, very large fraction of women employed in these sectors and, second, fractions of non-white workers that are also larger than average, right? So the results that I'm going to show later are no surprise, you know, given the initial sorting of workers across industries in the initial period.

Going on to my results, as I said, I'm going to be very brief in terms of the methodology, but you can look at the paper. But, basically, regional tariffs, Region I, our weighted averages of the tariffs of each industry, \( J \), across almost 400 manufacturing industries, and I actually used
several different measures of these tariffs that treat non-treaty groups differently or that take a different approach towards thinking about revealed comparative advantage based on the literature. So, basically, I'm showing one here, but the approach in the paper is just use every possible measure, and the results don't change that much. So they're pretty robust to that.

And I estimate the following regression here in the second equation in which the changing employment in manufacturing or later, the change in our outcomes, employment outcomes, at the aggregated to a commuting zone level are a function of the tariff change, of the U.S. tariff change that's a weighted average applied to each commuting zone and the Mexican tariff change, controlling for the same controls in the kind of foundational paper by Autor et al. in 2014, 2013, and controlling for the China shock, and the results are robust to where they weren't instruments in the China shock as well, which is what I do in my baseline results.

So I'm going to go through the main findings, first, sort of, like, the overall findings, looking at the population overall without distinguishing by race and gender and other features.

So, first, there's a decline in manufacturing employment such that going from the 75th percentile of
exposure to the 25th percentile of exposure on U.S. tariffs, associated to a .15 percentage point decline in manufacturing employment to population ratios.

There's not a significant employment of non-manufacturing overall, so these people are not escaping to non-manufacturing on average, but if you break down non-manufacturing, non-manufacturing is very diverse.

And so, if you look at low-skill non-manufacturing industries, such as construction and retail and wholesale trade, there you're going to see a significant increase. So workers that move out of manufacturing can go to low-skill non-manufacturing if you break it down.

So there is a decline in total employment such so that 75th to 25th percentile point difference is associated to .1 percentage point fall in employment to population. There's a small increase in unemployment, so it's statistically significant, but the magnitude is very small, and I don't see a statistically significant change in labor force non-participation, nor in population, which is pretty consistent with the literature.

I also see that the second half of the story for which I brought in sort of newly digitized data for one doesn't produce statistically significant results in many outcomes. I mean, the sign, you know, is there it might bring opportunities in the sense that Mexican tariff caps
could imply more manufacturing jobs in the U.S., but these results are not statistically significant from theory, right? So what I want to emphasize, you know, given the topic of recession, is the results by race, and there's not much of this in the literature aside from the sort of really interesting papers in this session, right? And so, I mean, there's some results regarding the breakdowns by race in terms of non-labor-market outcomes in the literature, but there's still, I think, more to be said about race, right? So I see that the direct shock on manufacturing is similar for white and non-white workers. However, this falling total employment is much larger, about three times larger, for non-white workers, and the reason is that then it has to be with the adjustment process, right? So both types of workers reduced their employment in manufacturing to the same amount, but it seems that white workers can find more opportunities in, like, non-manufacturing, and non-white workers don't find that, right? So I also find super large differences by gender, which is in contrast to the China shock, especially when you consider the China shock in both 1990 to 2000 and 2000 to 2007, but during the '90s and due to U.S. tariff liberalization, the impact is very large for women and not statistically significant for men. So there's a big
difference there.

I was also going to mention that the impacts by race and gender are even there when you consider only, like, non-college workers. So it's not entirely driven by the fact that, you know, different groups can have different educational attainment.

Finally -- I mean not finally, but I'm going to be brief here. I see that most of the impact is driven by non-college workers. Differently than in the overall sample, there's more labor force non-participation for non-college workers, and I also see that the impact is heavily concentrated in low human capital regions of the U.S., splitting the sample in the way that Bloom and Hanby and Crewman split it, like high and low human capital regions.

Finally, I find a result for costs, and I see a reallocation, an increase in employment in abstract tasks and a decline in employment in routine production tasks, which is in line with what has been shown for the China shock. However, I see a lot of heterogeneity here in the sense that abstract employment increases for male and college workers. However, the fall in routine employment is concentrated in female and non-college workers. So there's also the opportunities and the threats, I would say, are not received equally by the same groups of people, right?

So, to sum up, U.S. tariff liberalization brings a
decline in manufacturing employment, in total employment, an increase in unemployment beyond the China shock, controlling for that, and it's concentrated among non-college female and non-white individuals in low human capital regions. And as has been said before, these are relative. We're not throwing out the average effect here that has been mentioned before in today's conference. So thanks very much, and I appreciate the chance to talk about this work here.

DR. TEBALDI: Thank you very much, Dr. Benguira. As announced, we're going to hold off on questions until the end.

Now we're going to move to our third presenter, Dr. William Spriggs from AFL-CIO/Howard University.

Dr. Benguria, can you please take down your presentation? Thank you.

So, Dr. Spriggs, please, you have the floor. You can load your presentation so you can start.

DR. SPRIGGS: Thank you. So I want to thank the ITC for organizing this conference and pulling all these papers together in one spot so we can all make some comparisons. This is work that was done by Nyanya Browne, Bethel Cole-Smith, these are two graduate students at Howard University, Patrick Mason, who is at Florida State University, and myself.

We're going to follow strictly the model of Autor
Dorn, et cetera, et al. We're going to actually duplicate the Acemoglu version of that paper. We're looking at the share of workers in the U.S. exposed sector that is exposed to the effects of China trade and the --

MR. SECRETARY: Doctor, could I interrupt you for one moment? We're not seeing your slides. Are you sharing slides?

DR. SPRIGGS: Yes, I am. My share screen is on.

MR. SECRETARY: Okay. Did you select the program that you wanted to share and then click Share? Yep, here it comes. Super.

DR. SPRIGGS: All right. Sorry. I apologize.

MR. SECRETARY: No problem. Thank you so much.

DR. SPRIGGS: Let me go back to the first slide.

MR. SECRETARY: That's great. Thank you so much.

DR. SPRIGGS: Yeah. Well, thank you for correcting me. I didn't see the extra Share button. Different platforms. So, again, this is work with Nyanya Browne and Bethel-Cole Smith. These are two graduate students at Howard. Patrick Mason's a professor at Florida State University.

We're going to pretty much follow the Autor Dorn and Acemoglu procedure in looking at China trade penetration. We're looking at the share of workers who are in the exposed sector, that is, exposed to the China trade shock. This is
from the Autor Dorn work, again, retracing for you that the share of workers in that exposed sector declined.

And the work that had been done before, Acemoglu and Autor Dorn, had used the business patterns. We're going to use the QWI so that we can look at workplace dynamics within the commute zone, and that gives us a picture of black workers in particular that we're going to look at compared to what's true for all workers, the darker kind of mauve here are the share of black workers in the exposed sector. You see it declines slightly from the initial shock from 1999 to 2007. The real decline takes place after, when we go all the way out to 2011. The share of black workers in the non-exposed tradable goods sector, that middle bar, you see goes up.

And so some of those is an initial shift of black workers into the non-exposed tradeable sector, and this is what we would predict, that if we rearrange workers, if we're losing jobs, we're going to rearrange workers, the black workers and all workers are going to go to the next best alternative, this non-exposed tradeable sector.

And then we have the final sector, which is the share of black workers in the non-exposed, non-tradeable sector, which increases dramatically from '99 to 2007 but then dips down.

That orange dot and the orange line is representing
the share of black workers not on payroll. So we're not
going to be looking at unemployment, but we're using the QWI
to get payroll data. This is the share of black workers not
on payroll, and you see that that number explodes.
This we interpret as the effects of job market
competition and racial competition, where black workers have
to have a certain level of concentration in order to protect
their jobs, but once they lose that equilibrium, then we are
engaged now in a zero-sum game, one in which black workers
tend to lose.
We're looking at those commute zones that have a
large enough number of black workers for us to give reliable
numbers, and this is in 1999 the share of black workers in
the exposed sector to China trade, and as you can see, oddly
dominate it, as was the case with the NAFTA data, to those
who are in the Southcentral part of the U.S.; again, North
Carolina, South Carolina, Virginia are the dominant areas.
And these are areas with not only a high percentage
of black workers, but also a high percentage of black workers
live in this region. So it has vast importance for black
numbers at the national levels when you look at this.
This is just a reminder of what the answers look
like from the Acemoglu paper, showing that there was an
impact on overall employment from the import shock even when
you control within the geographic census division. So that's
sort of within sort of a human capital zone, if you wish, or within kind of a manufacturing area regionally, and that it was most intense for those who were in the exposed sector when you do it in the columns four, five, and six, where we're looking at sectoral employment.

This is giving you what happens if you switch. So this is their findings using business data patterns. We're just switching databases. We're going to use the QWI instead of their labor market measure, and the coefficients really don't change all that much. So just the reaffirmation that their results are not dependent on their specific measure of the labor market. You could switch the data sets, as we did, and you will get answers that look virtually the same. There's very little difference in terms of the results.

Now we're narrowing down because now we're looking at their results for all workers but only in those commute zones where there are large numbers of black workers present so that we can then make comparisons to what happens to black workers. And the overall employment effects that we saw that have been significant in the work don't show up as significant when we narrow it down only to these commute zones, but their basic findings in columns four, five, and six, when you look at this from the sectoral employment perspective, do look similar, and you see a sort of similar impact, the big effect being on -- negative effect,
significant effect, on workers' employment in the commute zone in the affected industries and not as big as those in the non-exposed tradeable sector, though there's the positive switch that we talked about before, workers switching from the exposed zone to the non-exposed zone.

Now our results going forward are going to be using this same data set but using the QWI to look at what happens with black workers. Now, here, you see that the coefficients get bigger. There is a bigger decline for black workers from exposure. There's a slightly -- and I'll go back so you can see -- there's a bigger decline within the exposed sector, about the same coefficient of a gain and a switch to the next sector.

And while it was significant for everybody even within a census division, it's not quite as true for black -- it's not true for black workers, who still remain significant. The difference for blacks is across census divisions, not within census divisions.

But, if you look at column two, about the same effect for blacks in employment in the import exposure, that coefficient -1.24 versus 1.25 for blacks, so about the same. But that's looking across the census divisions.

The coefficients are significantly different, though, for blacks if you do a wall test. So the difference that you're looking at here for overall black employment,
particularly if you're looking at the final result, which is column eight, column seven and eight, what happens to overall black employment over that initial shock period, 2000 to 2007? That, and, again, taking you back, it wasn't significant overall in these for blacks and larger.

What about black earnings? Well, here, we see that black earnings are negatively affected within the immediate, and we use the QWI information on workers' earnings to then make this a monthly nominal earnings report that we analyzed.

We see a significant decline in the commute zone for those who are most exposed, but then the transfer over to the next best, even in the next best industry, we see in the non-exposed tradeable goods sector that black earnings fall significantly. And so the impact for black workers is not just the job loss but that those who are able to hold on who are still in the exposed industries, that their wages are being suppressed.

The QWI lets us look at another issue, which is hiring view. The QWI lets us look at all sorts of labor market dynamics, but one of the dynamics we were really concerned about is the ability of blacks to switch out of industries and to look at their ability to get hired. We know that from the initial shock we then had a very big expansion from the Great Recession. So what we're looking at in this regression is, is there lasting impact from the
exposure on the course of the expansion? Do black workers find it harder in those places where the exposure was greatest?

And we do find that the black hiring rate, even controlling for manufacturing share at the baseline, that the black hiring rate going forward in the recovery in which we know that black workers eventually by 2019 were doing quite well, those areas where the exposure was greatest were the recovery of black jobs.

And then just so that, you know, the point about this really being no different across sectors, these are the coefficients on the different census sectors. Again, some of the sectors did far worse, the South Atlantic doing worse, the west northcentral doing worse compared to New England, which is sort of our default group.

And then looking within sector, again, a lot of this is that each of the individual census divisions had very negative effects so that a lot of the story is across census sectors, not so much within census sectors for black workers, but a significant decline in wages, the tumbling effect of turning the job market into a zero-sum game because there's a loss in employment overall, is to the detriment of black workers. It ignites a zero-sum game in which we are returning from. We're moving from an equilibrium that black workers had reached to one in which they are now forced to
compete and, in that competition, get pushed out of the
market.

DR. TEBALDI: Thank you very much for your
presentation. We are right on time, and that's greatly
appreciated. Well, the next speaker is myself. I have a
brief presentation. I think it would actually be better, now
seeing the other papers, that it had been presented at the
beginning, but I'll do my best here to be brief and get us
all moving to the end so we can have a discussion. So give
me a moment.

(Pause.)

DR. TEBALDI: Just to confirm, you can see my
presentation, so we can proceed?

MR. SECRETARY: Yes, we sure can, Doctor. Thank
you.

DR. TEBALDI: Thank you very much.

So my work is, I would say, very descriptive in
nature. A lot of the research we see that we talked about
today, we take the data and we aggregate that by sector or
industry or some measure of geography and then look to what
happens, and I wanted to stay with the microdata and extract
some very basic descriptive stats to help with the discussion
about how trade exposure, both imports and exports, changes
compensation and the wage gap for minorities and by gender.

So that's kind of the goal of this exercise, and
the motivation is very much aligned to what we have seen today. We see a very large wage gap for minorities across sectors of the economy. We know that international trade does impact the labor market, and depending where workers are employed, if a sector is more export-oriented or import-oriented, we should see changes in that wage gap.

And that's where I want to position this work. This is research in progress, and a lot of this will likely be revised, but some of the results are really robust to some controls, actually quite a few changes in controls, you see how the outcomes of these change by the end of the analysis.

So, again, the goal is to use microdata, and you basically take the opposite approach to what we have seen here in terms of using data. I present some very basic descriptive stats and then use regression to control for the factors that should affect productivity and see how the wage gap by race and ethnicity changes as we deploy additional controls to a base commensurate-type regression.

The data here is to some degree similar to what others have used in their presentations. I'm using CPS, the Current Population Survey. There is a way to have the NAICS industry codes match to the CPS industry classification. I take that, combine it with data from the Department of Commerce for both imports and exports. Also, employment from the BLS, and the process allows actually to do a matching
here where I take data from 87 tradeable sectors, get a measure of trade intensity, both imports and exports, and take those measures to the microdata rather than doing it the other way around.

Also, for presentation purposes, I created another classification of industry for 19 sectors just to allow to present it more visually than just regression. And the data here is the most recent data available out there, but to allow for the kind of work I'm doing here, only one year of data would imply that we have just a few observations, the microdata for some sectors, some issues with robustness.

So I did run regressions using data from 2016 to 2021. It's a pooled data set from the CPS with controls for inflation to adjust wages through this period of time, and also keep in mind that the CPS asks about compensation earnings from the previous year, so we had to do the proper match to link compensation and how trade is changing through that period of time.

So the key measures are very similar to what others have used today. I have both exports intensity. That's the share of exports in a particular sector at a point in time over the employment, full-time employment in that sector, also at the same industry and point in time, and the same match for imports, so, again, both exports intensity and imports intensity is part of the work.
And also, to allow for some visuals, I created an index of trade intensity that goes basically from zero to one. If the sector is non-tradeable, the index will generate a number of zero, and given the normalization used, the sector with the highest trade exposure, either through exports or imports, would have a number of 1 in this data set, again, part of the multiple metrics I use in this exercise.

So I'm going to start with a few very basic stats to help us see what's going on here. In the Y-axis, I have the hourly wage here but in relative terms for a selected minority compared to white workers. I also broke down the sample by gender, so, here, we see the relative wages of black females by sectors of the economy. And you see here that in all sectors, black males, they earn less than white males. But, on the X-axis on the graph on the left, I have imports intensity. That's this index of imports per worker, and the chart on the right side has exports intensity.

So the takeaway from these basic descriptive stats is, well, there is a very large wage gap for black workers, males, compared to white males, but as we relate that to imports and exports intensity, it seems that there is no strong relationship there or correlation.

The same is done for black females compared to wages of males, again, a very large wage gap across all of
these industries in this data set, including some non-tradeable sectors. So all of the blue are tradeable sectors, manufacturing subsectors, but also having non-tradeable sectors here in this chart, and we see a slightly downward-sloping correlation here for import intensity and the relative wage that we see for workers, but a weak, very weak correlation here.

And, again, as part of this exercise, if you take all the people of color compared to white, here, we see things changing but likely because of one particular sector or a couple of sectors driving this correlation line here, and, actually, regression helps to address that.

But, when you look for export intensity, we also don't see a strong correlation between the wage gap or the relative wages of people of color, excluding blacks from that category here, and trade intensity.

Finally, as part of these just descriptive stats, the same for ethnicity with Hispanics. Now we see in this case some negative correlation between the intensity, the imports intensity and the wage gap. So it seems that in some sectors, as imports intensity increases, the wage gap between Hispanic males and non-Hispanic males would be actually -- would be increasing. We don't see that happening for industries where we see export intensity increasing.

So, basically, the exercise is the same for
Hispanic females, but the point here is there is a large wage gap, but the relationship between the wage gap by sectors and trade intensity, either imports or exports, is quite weak on these diagrams for the data we have.

So what happens when you control for education and other variables of interest that could be related to productivity? Does that change? And to answer that question, I use very basic regression measures, a regression model. Again, the idea here is not to test for causality but just document what we see out there in the data.

This basic regression is a very large table. I will not go over that, but here's some results for consideration. So the regressions are run for females and males, so I don't pool them together. What we find is, given all of these controls for productivity-related factors, if we see exports intensity increasing, what we also see is that the wages often tends to respond in a positive manner, very consistent with the literature.

When we look for that relation for male, we see the same thing, but the coefficient is smaller. So it seems that females were employed in industries where export intensity is increasing. Holding imports intensity constant as a control, they see a larger benefit from export orientation.

On the other hand, holding exports intensity constant as a control in the model and allowing imports...
intensity to change, both males and females experience a negative effect, and the coefficients are about the same size. I think the message here is an increase in imports penetration seems to have a negative effect on wages, and that would, of course, impact the wage gap for these groups. And export orientation is important. So this is part of the full picture. So trade can be good and bad and goes back to -- model of how the labor market adjusts to trade.

So the final piece of this exercise is to bring interaction terms. I won't go over this table, but here is what matters. So the interaction terms bring together both the intensity of trade, either imports or exports, and done with that we identify either the ethnicity or the race of the individuals in the data set.

As such, with ethnicity, Hispanic versus non-Hispanic, I know this is big, big masses, so X is the coefficient on exports intensity, M is the coefficient on imports intensity, and H is done for Hispanics. What the data shows is that because interaction term is negative for, for instance, exports intensity in the Hispanic dummy, Hispanic workers, actually, they seem to have a negative premium associated with the increased intensity of trade here through export intensity. So they benefit less from export orientation than non-Hispanic workers.
We don't find that effect to be significant for import penetration or exports. The interaction term is not significant in this case for females. We see the same relationship for males too.

So the bottom line here is there is no differential effect from import penetration in Hispanics in this regression here than the premium that would happen otherwise, but we see a change in the premium that would take place for those employed in industries that are more export-oriented and a negative premium for that, and this is controlling for human capital and other variables.

The paper, to some degree, is not interesting because some of the values are not statistically significant, and after many, many runs, the interaction terms between race -- I used black, Asians, and other people of color as a category, so we have three types of controls for people of color there -- none of the coefficients are statistically significant in these interaction terms for females.

There is, for export orientation, the same for males. In only one case that we see a change in the coefficient in import intensity for black men, and that actually demands some additional work because the coefficient is actually quite -- I mean the significance of the coefficient is unstable depending on some controls. But, in general, there is weak evidence that trade intensity seems to
not affect this or cause the wage gap to increase or decrease when you control for other factors in this model.

In terms of robustness, a few charts with some selection bias that's present in the model because we don't observe the wages for workers who are in the labor force but are not employed. I used a true Heckman three-stage regression to check for that. Regressions are here. Results are very similar, no changes, quite a few other regressions with controls for region for state and other controls without major changes in outcomes.

So the bottom line here is it's clear that trade intensity does impact wages. That's consistent with the huge literature. Export intensity is positively related to wages. It seems the benefit is largely rooted to women, but imports intensity is negatively related to wages in general, controlling for other factors, and the effect's about the same for men and women, I mean the size of the coefficient.

The evidence that there are wage differentials by race is really weak in these data and exercise, very hard to argue that trade itself is a fundamental cause of those wage gaps. It seems that other factors, including human capital, should be driving it, and that's to some degree consistent with the discussion we have seen today.

The final piece is the wage of Hispanic workers compared to non-Hispanic workers seems to be affected by
trade either through a decreased premium for those employed in export-oriented sectors, but we see that the effect is about the same for those employed in import-oriented industries, controlling for export orientation.

So there is a lot to unpack here. I think the work is just starting on this front with these data. The analysis is static. We need to bring a time dimension here, extend the panel, perhaps build a second panel that allows to control for time-varying effects.

Part-time regression may be another step to handle some issues on non-linearity in the model, and I think the big issue here is about labor force participation given that we have the microdata. We can leverage that to actually assess if what's happening here is that the wage gap itself is not being affected that much, but it may be changing how workers decide to either enter or leave the labor force because of what's happening with international trade.

That's what I have for our discussion here, so let me go back to the presentation, just confirming that I no longer have my slide deck there?

MR. SECRETARY: Yes, I turned that off for you, Doctor, and you now have a 20-minute period for questions.

DR. TEBALDI: Thank you very much. So we have time for a discussion. I think questions will be sent to our colleagues through the email that was provided to you. We
have, again, about 20 minutes. Any questions coming our way?

I'm going to point to a few things for the panel to

talk about. The first one is, I think, more of a provocation

than anything else. So, as we heard throughout this morning,

it seems that international trade to some degree affects the

minorities in general, either wages or labor force

participation or, in general, labor market outcomes.

And many people jump to the conclusion that

international trade is bad for minorities. So my question

is, is that kind of thought process wrong or right, and why

so? So I put that to every member of the panel to comment on

that. I could call names, but I would prefer -- yes, Dr.

Spriggs, please jump in.

DR. SPRIGGS: The issue isn't whether trade is good

or bad. It's the nature of the trade or that the nature of

the trade is good or bad and whether our policy responses are

adequate. That's what the issue is. And the issue is that

it needs to recognize that there are structures in place that

do disadvantage particularly black workers, and black workers
do face a harder time anytime there's a shock to the labor

market.

In this case, you know, I presented research where

we looked at China. We know from COVID a similar thing, that

while the initial shock to black workers was about on par

with everyone else, likely worse only because black
unemployment was already higher, the ripple effect after that becomes the issue.

This century, the China trade shock does look different than the Japanese trade shock only because, as your work showed and you shared, Dr. Tebaldi, is that, you know, human capital differences in this century aren't enough to explain things the way that they did in the case of the Japanese trade shock, which came right on the heels of the civil rights movement and a much less educated black workforce.

So there are implications, as we saw from COVID, where black workers have a harder time recovering, and so you have to anticipate that local labor markets have real frictions to them, they are real frictions -- I think that's the point of this research in general looking at the distributional effects, is that frictions in the labor market are real, and general equilibrium models don't properly model those frictions or the complexity of those frictions.

And in the case of black workers, those frictions include that they will be the last hired as the process smooths out, they will face a much different kind of competition in the face of a zero-sum game, and I think that that is what's key here, not that trade is bad, but the way we did the policies, not anticipating the effects of the policies, assuming a rosy day that there were going to be an
equal number of jobs at the end of the day within our commute zone, assuming that there would be an equal number of high-wage jobs remaining in the commute zone, and this is just a reallocation of workers from one high-wage job to others in high-wage jobs, that's not how it works. And so it will have differential impacts once you understand the frictions in our labor markets.

DR. TEBALDI: Thank you. Other members of the panel?

DR. BOND: So I agree with almost everything that Dr. Spriggs said, that it's not surprising that you would see black workers being more harmed by trade shocks because you see it throughout every shock, recessions and things like that, that black workers seem to be harmed for many of the reasons that Dr. Spriggs said.

I think, you know, echoing what he had said, one thing, though, that our analysis can pick up is the benefits of trade we can't see because we're only looking at the competition effects; we're not seeing the benefits of lower prices of goods and things like that at the consumer end.

And to the extent that that would ameliorate the labor market effects, I would be surprised if on net that there was not a distributional effect that would've had a negative effect on black workers and redistribute it towards other workers, but it is something that we can't pick up in
our analysis.

I think one of the key things is being cognizant of these distributional effects and taking bigger policy steps that are going to try to make -- because I think there's broad agreement that the net benefits of trade are positive, but they can be unequal, and we don't want general policies that are going to take away from a disadvantaged group and give more to an advantaged group. It's understanding that, understanding that our trade policies may have been doing that and think about the right way that we can try to redistribute back to that disadvantaged group so that everybody does gain from these policies.

DR. TEBALDI: Thank you, Dr. Bond.

Dr. Benguria, yes, please, jump in. You're on mute. You're muted.

DR. BENGURIA: Okay. Yeah. So I think that there's lots of different trade shocks. Some are bigger than other and more important than others, and as we have all shown in our research, you know, they create winners and losers, and oftentimes, you know, black workers or non-white workers, you know, have been, at least in relative terms, you know, lost from these shocks, and that's what several papers are showing.

So I don't feel I can answer the big question here, but just as food for thought, I would add that, you know,
when there's lots of shocks that hit the labor market, trade shocks but also monetary policy shocks, financial crises, and many other things, one approach would be to try to look carefully for the losers due to each policy and try to compensate.

Another approach would be to say, look, we need, like, a safety net here. We need a safety net so that, you know, we have these policies that can potentially benefit the country as a whole, they can potentially, you know, create disadvantages or relative disadvantages or absolute disadvantages, I don't know. We need some sort of safety net so that no one falls behind.

So I just think these are two different approaches. So one is try to look very carefully for each policy, and I think that's really important, but they are, you know, going to the policy part of this, you know, what kind of safety net, you know, is needed? Because there's so many shocks, you know, and so on.

DR. TEBALDI: Thank you very much.

Well, I have a question here addressed to Dr. Spriggs. "Professor Spriggs, when I see that a particular group has a bigger loss from import competition, my question is, does that group have larger switching costs that prevent those workers from adapting quickly to avoid the blunt of the shock? Is there any way to test whether this is the case for
black workers, or should I interpret the cause as something else, for instance, different composition of skills, et cetera? Thank you. Dr. John McLaren from University of Virginia."

DR. SPRIGGS: No, we should take the totality of information we have on the experience of black workers to understand that discrimination is a real thing and black workers in particular will face that as a friction. It is a real friction. The COVID crisis, I think, should have driven that home for everyone. All of a sudden out of nowhere, totally out of the blue, we shocked the labor market. Black workers did not lose jobs in a different proportion than anyone else, but black workers found it the hardest to re-enter the labor market.

And that was across the board. I mean, you know, for most of this COVID recovery, the unemployment rate for white high school dropouts has been well below the unemployment rate for black workers. And, normally, the white high school dropout unemployment rate is the black unemployment rate. It's not that white high school dropouts have an advantage. They normally are the same when it comes to the overall unemployment rate for black workers.

And so shocks to the labor market are going to have this issue that will come up, that if the shock creates a zero-sum game, as happens within commute zones, the loss of
jobs within the commute zone creates a zero-sum game now because there are fewer job opportunities and there are fewer good job opportunities, which intensifies the competition for what's left.

So it means that, going forward, we have to be cognizant of that and think, well, how can we keep it from being a zero-sum game? How can we anticipate that not only do you need trade adjustment assistance for the workers who can document direct impact, but how do we compensate the community? How do we think about that commute zone so that we can increase job opportunities in that commute zone so that we won't have a zero-sum game and we won't have as intense a race that makes it harder for black workers?

That's the kind of thinking that we need to have in place, I believe.

DR. TEBALDI: Thank you. Do the other members of the panel want to comment on that too?

(No response.)

DR. TEBALDI: All right. Well, we have another question from Dr. Kadee Russ from U.C. Davis. She cites research that trade exposure helped narrow the racial gap in the U.S. by about 1.4 percent points between 1983 and 1993.

"Also, another research claim in 2010 document a similar decrease in wage discount suffered by immigrants in Germany. Do the members of the panel feel the result
overturn, align with, or underscore the need for further empirical exploration of these results? Should we also be controlling for occupation, in addition to industry, as suggested by participants in the earlier panel?"

Who wants to jump in first? Dr. Bond, Dr. Benguria?

DR. BOND: So I guess the question being do we need more exploration of these topics, I completely agree. You know, whether you should be accounting for occupation or not, I think it depends on the research question. I mean, I'd have to think about this harder, but if we're thinking about that there is movement within a commuting zone across industries and across occupations to suggest that the commuting zone is the right level that you should be looking at.

But, you know, I can think of a different -- I mean, this is part of the problem with looking just within industries or just within commuting zones. If you're just looking within industries -- in fact, I saw this in our paper; it's in an appendix somewhere -- that a lot of the problems that we saw for black workers was not -- suggested evidence was not direct exposure to competition that industries are facing, it's that white workers who were facing competition in their industries moved industries, displacing black workers there.
And so that's why, you know, I think it's important to look at it from different dimensions. I'm not 100 percent sure that we should focus just on occupations or just on industries, but I'm certainly open to thinking about that.

DR. TEBALDI: Thank you. Anybody else? Yes, Dr. Benguria?

DR. BENGURIA: Yeah, so I think that my reading of the literature and based on my own work in our context, occupations are a very important source of trade exposure. Sometimes they can be more important than the industry in which you work at.

But, I mean, if you want to look at all these sources of trade exposure and you're concerned with the impact that trade has on different, you know, racial groups or ethnicities in the population, which I think we're all concerned with, one limitation is that, you know, minorities are disadvantaged because of the nature of the data.

So, for example, if, you know, by the definition of "minority", you have a smaller fraction of a population, and then you want to look at geographic exposure, you know, and you look at the census of population, where you have small samples of the population, and then you also want to look at occupational exposure, it's difficult just because of the data, it's difficult to look at the impact that trade or other shocks have on minorities.
So I think that that's one of the reasons why we don't have as much research on this as we would like. So, if you had, you know, a 100-person sample that's obviously not publicly available because of confidentiality and so on, maybe there would have been much more research on the impact of trade on different minorities.

But, with the existing data that's publicly available and widely used, you can only do so many sort of, like, split samples, you know, to look at different groups.

DR. TEBALDI: Thank you. Dr. Spriggs has got a comment.

DR. SPRIGGS: Well, we switched the analysis to the QWI because it is a richer data source. Unfortunately, we don't get to see occupation, and that does create an issue. It would let you aggregate beyond looking only at commute zones if that's what you chose to do, but it gives you a very nice picture if you want to look at the racial groups that are identified within the QWI. So it remains a rich way of doing things that we can't do with a lot of databases we have looked at before.

I'm not convinced there's some data that would show that the net effect of trade was a narrowing of wage gaps because the black wage gap has remained fairly constant. I don't know it's as useful a way of looking at it when you look at it from the individual model because it really
becomes more an issue of job competition and concentrations of workers in different areas. I think that is a preferred model of understanding how race operates within the economy.

So I'm all for, as Dr. Bond said, you know, let's have as much research as possible. I'm skeptical that the net effect of trade was a positive thing, both because Dr. Bond's work is very convincing for me about what I know happened in the auto industry and the steel industry in the '70s, and the work that we've done is very convincing for me, what has happened in this century and the work that Dr. Benguria has done on NAFTA, the three major trade effects.

I think what was very telling from Dr. Benguria's work is that export promotion doesn't have anywhere near the same kind of significant impacts as import competition has had.

DR. TEBALDI: Well, just to expand on this discussion, could you think of any other major data gaps that we should close to help advance research on international trade and the impacts on minorities in general? Dr. Bond, do you want to comment on that?

DR. BOND: I was thinking mostly from a historical perspective because the data I'm most familiar with is in the '60s, '70s, and '80s, and it's really hard to get -- what can't I see? I can't see detailed industry by race. I can't see detailed industry by occupation. And that's the big gap.
that we've been constantly trying to overcome. 

In more recent years, I think we've started to get better data that's been matching industries' occupations and races, but, certainly, if I had a time machine, there's a lot of data I'd like to go back and collect in the '60s, '70s, and '80s. That's such a critical time period. We look at the trends in racial disparities. We don't have much going on both in time and in depth.

DR. TEBALDI: Great. Thank you.

DR. SPRIGGS: I would concur with that. I mean, the bad thing is we don't get to see a period that people, I guess some people would say was a bad period because the United States had higher tariffs and didn't compete with other countries during that period of the '50s and '60s when U.S. manufacturing expanded and expanded in a way that absorbed a whole lot of black workers. Is it the case that export orientation in that period with higher tariffs and protection into flow rates competition, in fact, helped black workers? It might be the case. That might be possible.

But, unfortunately, as Dr. Bond said, we don't have the kind of time picture for that period unfortunately.

DR. TEBALDI: Well, thank you very much. We're running out of time. I think this is a good time to call it the end of this panel. Thanks to all of the speakers. It was a great discussion. Thanks to all of those who stayed
with us throughout this long morning. I greatly appreciated your participation and I throw it back to the organizers. Thank you.

MR. MONTGOMERY: Any comments from the organizers?

MR. GOODMAN: I just wanted to thank all of our engaged panel here. This has been a very productive session. We greatly enjoyed the discussion and presentations we've heard. So, on behalf of the USITC staff, thank you again to all of you. I'll turn it over to Bill Bishop as we go into lunch.

DR. TEBALDI: Excellent. Thanks, everybody.

MR. SECRETARY: Thank you. Thank you so much, Doctor, and all of the other members of this panel. We appreciate it so much.

We will go ahead and take a lunch break now. We're going to break until 1:30. So, if everybody could please be sure to be back at 1:30, we'll continue with our symposium. Probably three or four minutes before 1:30 I'm going to go ahead and give my Webex tips again for everybody just to remind those who have not joined us until later in the day how to navigate Webex a little bit better for you.

So, with that, we'll go ahead and start the time clock for 53 minutes and we will see you all back here shortly. Thank you so much.

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(Whereupon, at 12:40 p.m., the symposium in the above-entitled matter recessed, to reconvene at 1:30 p.m. this same day, Tuesday, April 5, 2022.)
MR. SECRETARY: This panel is going to be moderated by Dr. Felipe Benguria with the University of Kentucky.

Welcome, Doctor. Thank you so much for joining us today, and I will go ahead and give you the floor. Thank you.

DR. BENGURIA: Thanks very much to USITC again. So I'm going introduce our panel on the gender effects of trade and trade policy. I'll start by thanking all our panelists and presenters. So we have six presentations on this panel, so 12 minutes for each one, and then 15 minutes approximately for questions and answers.

So, without further ado, I'd like to introduce Ross Hallren and Stephanie Fortune-Taylor at Amazon and USITC respectively with their paper on "Worker-level Responses to a High-Value Labor Content Rules Requirement."

So if you can please go ahead and share your slides. I'm not sure who is -- it seems like Ross Hallren is going to be presenting.

DR. HALLREN: I sure am. Thank you so much. Can you see my slides okay and hear me okay?

MR. SECRETARY: We sure can, Ross. Thank you.

DR. HALLREN: Wonderful, thank you so much.

Well, thank you for that kind introduction. So my
name is Ross Hallren. I'm a senior economist at Amazon, formerly of the U.S. International Trade Commission, and today I'll be presenting my co-work, my joint work with Stephanie Fortune-Taylor, who is of the Office of Economics. Our presentation is titled "Worker-level Response to the USMCA High Wage Labor Value Content Rule."

This presentation comes with the standard caveat that it doesn't represent the views of the International Trade Commission, its Commissioners, or Amazon.com. And with that, let's get started.

So, before we start really talking about the High Wage Labor Value content rule and about its effect on labor, we need to understand the background of NAFTA and its successor agreement, USMCA.

So, as we all know here, the USITC is seen as one of the leading sources of information about the effect, the high-level impacts of NAFTA on the U.S. economy, and what they've consistently concluded is that NAFTA has had at most a small aggregate effect on wages, employment, and GDP growth in the United States.

In a 2003 study, the USITC found that NAFTA caused GDP for the United States to be between 0.1 and 0.5 percent higher than it would have been in the counterfactual case without NAFTA. It also concluded in 2016 that there was no increase in aggregate employment and essentially no effect on
real wages.

And if the aggregate results were the same as the disaggregated results, then really trade, you know, new trade agreements, TPP, USMCA, wouldn't really have figured as salient political issues. However, we know that that isn't the case and that's not what happened.

In fact, what the literature has really reflected, and this has been an important update in our understanding about the effect of free trade agreements, is that aggregate results mask significant negative effects on employment and wages for some industries, regions, and demographic groups. The literature found that in 1990 to 2000 that wage growth for blue collar workers, in particular, those without high school degrees, was statistically significantly lower than for the counterfactual group. But, if we were to look at college graduates, the literature determined that there's been on statistically significant impact of NAFTA on those individuals. So we see that there's this heterogeneity between, across educational attainment.

Again, if we look at wage growth, but now we look at differences between men versus women, we find that NAFTA had a statistically significant and negative impact on the growth rate of wage growth for women versus men and, interestingly, for married women versus single women. And if we go beyond just wage growth and we look at manufacturing
employment for men versus women, we find that there have been larger declines in manufacturing employment for women than for men.

So what we've concluded, what we've really learned, the update in our understanding of the effect of free trade agreements on the economy is that labor adjustment is heterogeneous across industries, regions, and demographic groups.

And to some extent, this is not surprising. We know that there is geographic concentration of industries. We know that industries are impacted asymmetrically with the result of new free trade agreements, and because their distribution isn't uniform across the country, we would expect that certain regions would be impacted more than others.

Additionally, because we know that there's variation in the demographic makeup of the people who work in different industries, then because some industries are affected more than others, we expect that certain demographic groups are going to be affected more than others. By demographics, we can think of it broadly by ethnicity, think of it in terms of gender, and, of course, we can think about it in terms of educational attainment.

And it's with those heterogeneous effects in mind that the negotiators for the USMCA agreement went to the
table, and one of the fruits of their negotiations was, of course, the High Wage Labor Value Content Rule. And what the High Wage Labor Value Content Rule does is it conditions preferential tariff treatment for autos on an average wage benchmark. Specifically, it says that 40 to 45 percent of a vehicle's value must be produced at a facility where the hourly base rate is $16 per hour or its national equivalent.

In broad terms, what this does is it forces firms in different countries to compete primarily on productivity and less so on an advantage they might gain by locating themselves in a country where the general cost level is lower than say in the United States.

Moreover, this rule creates three options by which a firm can adjust based on the rule. So, one, you can raise the wages to satisfy the High Wage Labor Value Content rule. Two, you can do nothing to wages but instead pay the higher tariff, and in the ideal case, the tariff will be set up such that Option 1 and Option 2 are equivalent in terms of the cost basis, in terms of the effect of the agreement on the cost of production. And the third option is to onshore production to the country where an automobile is to be sold.

So we can think of this as localizing production or onshore or reonshoring of production.

The text of the rule was finalized and announced to the public in a joint statement by the three parties on
September 30, 2018. And I want you to keep this date in mind because what my co-author and I argue is this becomes the time when all sort of uncertainty about this rule and its inclusion in the free trade agreement go away and that the U.S. Government and the governments of Mexico and Canada are credibly bound to this kind of a regime going forward.

Like most provisions in free trade agreements, the Labor Value Content rule comes in in stages. For private vehicles, the rule starts at 30 percent on July 1, 2020, goes up to 33 percent, 36 percent, and finally at 40 percent on July 1, 2023.

For light and heavy trucks, the Labor Value Content rule, there was no requirement and it fully phased in at once, it will fully phase in in one step on July 1, 2023, and the rule will be 45 percent.

So the High Wage Labor Value rule is designed to ameliorate the shocks of trade liberalization to the specific segments of the labor force that have historically, at least in terms of NAFTA, were most impacted by foreign competition. And what my co-author and I attempt to ask is, does the rule have the desired effect after promulgation but before enforcement?

And this is a common I wouldn't say economist trick, but this is a common identification strategy whenever you are in sort of the early phase-in part of an agreement
before you have enough data to really figure out what the long-term impact is of a new trade regime.

At the time that USMCA was announced, USTR was saying that, you know, over the course of five years, the first five years of the agreement, that the number of auto workers in the United States would increase by 76,000. And so, you know, we don't have -- we're not five years out of the agreement, so we need to just say okay, at the time when all the uncertainty around the new rules went away and the governments were credibly bound, was there an effect of just the rule's existence or its announcement on the labor force? So this is very much an intention to treat design.

So using current population survey data for 2016 to 2020 in a difference and difference model, we're going to estimate the effect of the rule's announcement, that is to say, the intention to treat effect of USMCA, specifically, the High Wage Labor Value Content rule.

So looking at the timeline below, just to give you a better sense of what we're talking about, the rule is announced in a joint statement in September of 2018. USMCA signed into law on January 29, 2020, and the phase-in starts on January 1, 2020. So, in that period of September 30, 2018, to July 1, 2020, that's our intention to treat period. So that's the period we're going to be estimating.

So we're estimating the intention to treat effect
of the High Wage Labor Value Content rule on auto production workers by type of worker, gender, and ethnicity. And I'm not going to show you all the results today. I'm just going to show you the results that are statistically significant, and we find that we get a statistically significant result only when the key treatment group are female workers.

So, if we just look at the effect of female versus male workers, we find that there's no statistically significant effect in terms of intention to treat from the promulgation of the rule.

Now, when we compare female production workers, so this is auto production workers, when we compare female production workers versus male production workers -- so male production workers are the counterfactual for female -- we find that the effect of just the announcement of the rule is that wage growth for women declines by 21.6 percent relative to men.

Now what we need to keep in mind is that over this period auto production wages are going up. So they went up by 6.6 percent. So this negative number really means that on average, the growth for women was 21.6 percent lower than their counterfactual male counterparts. So we're really saying that female wages grew slower over this period.

And when we drill down even deeper and we explore our triple difference specification and we're comparing...
female auto production workers versus all other workers, we find that the intention to treat effect is statistically significant and minus 35.5 percent.

What we find sort of interesting is that we don't see a statistically significant effect of the announcement of the High Wage Labor Value Content rule by ethnicity. So black versus non-black, we don't see an effect there for any of our specifications.

And, additionally, we don't see a statistically significant effect of the announcement of the rule on the number of hours worked. So we're just seeing a change in wage growth, but we're not seeing a change in the numbers of hours worked.

And we go into the paper in some detail and we opine about what are the causes that are going on, and we think it's some kind of a realignment of the underlying sort of composition, the wage level composition of the female workers in our sample. We see a bunching up of female workers going from below $16 an hour to $16 an hour but some trimming at the top of the sample, and we want to do additional work to find out what's going on there.

So, in the last 90 seconds of my presentation, I'll just mention what are the future lines of research. So we intend to exploit the newly added one-year CPS panel to study labor force transition over the High Wage Labor Value Content
announcement period for female production workers. Again, we want to deep dive into the data, do some additional analysis and really figure out what's going on in the female sample that's driving this result.

Second, we want to investigate why we are observing an effect by gender but not an effect by ethnicity.

Third, we want to extend our work to consider the wage effects once the High Wage Labor Value Content rule enters into force, so we want to investigate the treatment effect of the agreement, not just the intention to treat effect.

And, finally, we want to investigate potential causal mechanisms. We want to figure out why it appears both in our study and in previous literature why female workers are more impacted by free trade agreements, or another way to think about it might be why female workers, it appears that they're less able to avoid the negative consequences of labor market adjustment that result from free trade agreements.

And with that, I will close out my presentation and Stephanie Fortune-Taylor will be representing our paper in Q&A. Thank you very much.

DR. BENGURIA: Well, that was great. Thank you very much, Ross and Stephanie.

The next paper is by Masha Brussevich of the IMF and it's titled "Does Trade Liberalization Narrow the Gender
Wage Gap? The Role of Sectoral Mobility." So thanks very much, Masha, for being with us. I already see your slides, so the floor is yours.

DR. BRUSSEVICH: Hi, everybody. Thank you so much for the opportunity to present in the symposium.

Before I start, a quick disclaimer that all the views expressed here are mine, and they do not represent the views of the IMF, the executive board, or management.

Okay. So this paper examines the link between import competition from developing countries, declining manufacturing employment, and gender wage inequality in the United States. It investigates whether import competition impacts male and female workers differently, and specifically it asks does import competition narrow the gender wage gap, and if so, what is the role of intersectoral reallocation in response to this trade shock.

So I begin by laying out a few salient facts. They motivate the question and the modeling choices.

First, I show that males are predominantly employed in the goods-producing sector, including manufacturing. Men's labor share in the import containing goods sector is about 76 percent, whereas it's only 46 percent in services and is not in services like education and healthcare, for example. The numbers can be as low as 28 to 21 percent.

Secondly, I show that women on average are more
likely to exit the manufacturing sector into the service industry, and the probability of women switching from manufacturing sector to high wage services like finance and professional and business services has been consistently higher than male probability over time. And the transition probability of men exiting from manufacturing to low-wage services like wholesale and retail services has been increasing at a higher rate than for women.

So this suggests that male and female workers face different barriers to entry into the service sector, and, additionally, probability of exiting the labor force or becoming unemployed has been decreasing faster for women than for men originating in the manufacturing industries. And that's consistent with just overall rising female hours and labor force participation in this timeframe.

And then thirdly, I show that local labor markets experience a larger import composition shock via a sharper decline in the gender wage gap. And I follow the Autor Dorn Hanson methodology that we all heard a lot about this morning to construct a measure of import/exporter based on the geographic area size of the manufacturing sector. And my reduced foreign estimates imply that an increase in imports from China per worker from about $370 to about $3,000 from 1990 to 2007 corresponds to about 1.2 percentage point increase in female to male wage ratio or about 11 percent of
the overall decline in the gender wage gap during this period.

So I also showed that as opposed to an increase in the relative female wages within sectors, import competition affects relative wages between sectors. So this means that manufacturing sector wages declined and service sector wages would rise in this timeframe.

And paired with the other two salient facts, it was very important to analyze how men and women adjust to import competition shock and whether there are gender differences in the intersectoral mobility costs and resulting labor allocation patterns in response to trade shock.

So, to uncover these mechanisms, I consider a trade model with phenomic labor adjustments for trade shocks that extends the work of Artuis Chegory and John McClaren, who will be presenting later in the session. And this model, labor allocation between sectors, is costly and the costs vary by gender and across sectors.

And the model leads to a structural estimation framework that allows me to estimate these mobility costs, and then I use these mobility cost estimates and other calculated parameters in a small economy study to simulate a trade shock and then study these transitional dynamics of trade liberalization and its effect on the gender inequality in both wages and welfare gain.
So, in the model, workers make their switching decision based on wages and other non-pecuniary payoffs that are associated with each sector. And within this theoretical framework, I propose a methodology to estimate transitional costs based on the intersectoral class distance measure. And the structural estimation framework allows me to derive a whole matrix of bilateral switching costs and also costs of exiting non-employment. And this has not been previously done, at least in the context of similar models.

All right. So just a quick layout of the model. Here, workers can move across multiple market sectors and residual sectors which consist of all unemployed and moderately employed individuals. The value of working in a given sector depends on the geographic -- it depends on that sector's wages plus worker-specific non-pecuniary preference shocks, and that could be, for example, a preference for a good geographic area that the sector is concentrated in.

And based on the distribution, obviously, there's quite a shock. Each worker decides to switch to a different sector or remain in the current sector for the next period, and if a worker decides to switch, he must pay a cost fee which is common to all workers, and then given the distribution assumptions on the dissipated syncratic shock, which is the double distribution, we can derive the number of workers moving from Sector I to Sector J relative to the
number of stayers in Sector I, and it is a function of the sectoral value differential as well as the common ability class C and the shock on dispersion parameter I knew.

So, next, this class specified as a function of the distance between sectors in the past eight, which is a measure of how different the task that each sector uses. This parameter delta is analysis of city labor quotes with respect to the task difference. The switching cost also depends on the degree of geographic concentration of a sector, how and other barriers like licensing requirements that are not explained by these task differences. And the costs again vary by gender and across each sector pair.

And so I derive an equivalent of a gravity equation of intersectoral worker flows and used it to back out the mobility costs, and I estimate the gravity equation using for some student maximum likelihood estimator, and to measure worker flows across sectors, I used March Current Population Survey data, and to measure the task differences, I used the ONET data.

Okay. So, as I mentioned, I derived the entire matrix of mobility costs, but here I want to share the average minimum and maximum entry costs for a given sector and gender. And so my estimate suggests that women face higher switching costs to many manufacturing industries while men face considerably higher costs when switching to higher
wage services, and that includes, as I mentioned, finance, but also education and healthcare, where women are overrepresented.

So, for example, sectoral entry costs range from about 60 percent of an annual average wage for women switching into wholesale and retail services in the transportation sector to about four years for non-wages; for men, switching into information services from food and entertainment industry, for example.

And, overall, it's costlier for males to enter the education and health industries, which are both female labor-intensive sectors, as I mentioned. And more interestingly, it is also costlier for men to enter finance and professional services, which have been experiencing higher wage growth in the past couple of decades. And I also find that whereas the cost to enter that employment is not shown here, but on average, it is costlier to exit back into the productive sectors.

Okay. So how does this all tie in with gender wage inequality? I used these cost estimates in a general equilibrium setting to simulate the trade shocks and study the transitional dynamics that follow it.

And import competition shock, here, it's going to be a model of a drop in manufacturing costs, prices, and I compare my results for states with different sizes of
manufacturing sector and run counterfactuals to determine how much these heterogeneous switching costs and uneven gender -- contribute to the decline in the gender wage gap.

And so what I find is that welfare gains and real wage changes on average are positive, mainly due to changes in the price index as the manufacturing plants close. In levels, wage gains are higher than welfare gains for both male and female workers, implying that a portion of the wage gains is directed to mobility costs that workers face when switching sectors. And real wage gains are about a percent and a half higher for women in the short run and about two percent higher in the long run, and that translates to that one percent decline in the overall gender wage gap. That is consistent with my other findings. And differences in welfare gains are also larger for women by about 1.3 percent.

So I show that heterogeneous mobility costs do not allow for wage equalization in the short run. So higher barriers to entry into your services would not let men dilute wages in the service sector. But, in the long run, these costs have just an overall smaller impact on wages.

Also, heterogeneous mobility costs account for about 7 percent of the long run gender differences in welfare gain from trade. And so the -- effect is morphing in the short and long run, and not only men experience a drop in manufacturing wages, but as more of them enter services,
their wage crisis is less than for women.

And then finally, I compare the effect of the size of the trade shock across different geographies, and so, yeah, when comparing the two states with different shares of manufacturing and value added, I show that gender differences in wages and welfare gains are smaller in locations that are less exposed to the import competition.

Thank you, and I'm looking forward to your questions.

DR. BENGURIA: Okay. Well, thank you very much, Masha. That was fantastic.

The next paper is by Philip Saure from Johannes Gutenberg University, and he's going to talk of "International Trade, the Gender Wage Gap and Female Labor Force Participation." So thanks very much, Philip, it's all yours.

DR. SAURE: Can you hear me? Can you see the slides?

DR. BENGURIA: We can see your slides, but you could also go to view full mode.

DR. SAURE: Sure, I just wanted to make sure.

DR. BENGURIA: Excellent.

DR. SAURE: Thanks to all of you for being here. Thanks for the organizers for giving me the chance to talk about this paper. It's a relatively old paper from 2014, so
one of the first ones looking into the connection between
international trade and the gender wage gap and
gender-specific labor market outcomes.

I'm not going to moderate this further. I'm just
assuming that we are all interested in this topic. The
insight I will give you is from this earlier paper with this
fantastic co-author of mine, Hosny Zoabi from The New
Economic School University in Moscow, but also I'm going to
take a peek, time permitting, into some of the results of an
ongoing project which is much more detailed in terms of data.

Okay. So what do I want to tell you? I want to
outline a theory and mechanism and then present you the
vertical analysis and very quickly the design and the key
results and takeaways. Then there is this additional
material from another paper.

Okay. What did we do here when we started thinking
about this, about gender labor market outcomes and trade from
the start? We thought about men and women having different
types of labor. So we go into the literature and take the
view that women have more brains to offer in the labor market
and men relatively more brawn. And then we also assumed that
firms or sectors differ in their demand for brains and brawn.
And then you're in the middle of the Heckscher-Ohlin theory.
And what you would expect is that those countries which have
a high female labor force participation export those goods,
the production of which are intensive in brains or in female labor. And so that's the Heckscher-Ohlin theorem.

And then there's the Stolper-Samuelson theorem that goes for the prices, and if you apply this to the setting, you would expect the trade integration narrows, the gender wage group in countries with a relatively high female labor force participation, and reversing in countries with low female labor force participation.

But what we are actually doing here in the theory part, we give it a little twist that flips at least this price prediction. And the additional elements we throw in in this theory is coming straight out of earlier papers. There are complementarities between brains of female labor and physical capital. And, also, there's some cultural production going on in the background. So one man and one woman forms a household and they are not only optimizing income or consumption but also from some whole production goods or the literature -- call this child rearing. But this is insubstantial for our paper here.

So what we observe now if we are throwing in these additional elements, we observe that men are more attached to the labor force, so they earn higher wages and, therefore, they are less inclined to do the household work. Why? Because they are supplying brains and brawn to the labor market. In other words, they have lower labor supply
elasticity and women have a relatively high one.

If we add this to the standard Heckscher-Ohlin framework, what we get out of this is that in periods of trade integration or on the trade integration, in capital-rich countries, right, those with high female labor force participation, what you may do, the male workers sitting there in the contracting sectors will not leave the labor market but rather switch to the other sectors, to the expanding sectors, where they dilute the capital/labor ratio and this depresses the relative wage of women, so the gender wage gap rises and women leave the labor force. So that's the very brush and the rough brush picture of the theory.

And with that, we're going to the later. So what are we looking at? We're looking at something that we saw here today, tonight, a couple of times already, the NAFTA episode, and we're looking here at a country, the United States, with a relatively high capital/labor ratio and a high female labor force participation relative to this other country, Mexico. We don't look at Canada here.

So what are we looking at? We don't look at commuting zones, which we would look at now probably. But, by the time we're looking at U.S. states, so we have 50 U.S. states plus D.C.

The variables of interest are, well, the trade share, so import value for local output. That's our shock
variable. Then there is the labor market outcomes. That's female employment either in head counts or in the employment number, the number complete and the working hours of those involved. And then we're looking at the gender wage gap. All this is from CPS.

So we are interested in these labor market outcomes -- I believe you do see the cursor there -- these labor market outcomes and how they react with trade. Of course, there's the typical endogeneity issues, and we don't use it with a shift chair instrument but with the old school distance instrument. So we look at the change in the trade share and how it relates to distance. If we go to the data not by sector but by state, then we see that there is this clear and strong negative relation between trade, the change in trade and the distance to the Mexican border.

Okay. So, with that, this is our instrument and what will we instrument? We instrument the trade, it increases trade share in order to establish labor, causality on the labor market outcomes, of the effect of trade on labor market outcomes.

Okay. What is the first thing we are looking at here, it's the employment rate. I have to manage my windows. I hope you can still see me and hear me.

So, with this two-stage square estimation, we're looking at the employment rate, that's the number of female
employed over the total working, the head count of the working age population, female again.

So, if we look at female only, that's the idea in the second column here, we see that there is a significant negative relation. If we turn to the male, we do see a positive relation but which is insignificant.

So, if we sum that up, we can also look at the trade share and -- okay, if we sum that up, we see -- or if we go to the units of those variables that we defined, we see that an increase in U.S. trade with Mexico by one percentage point of local GDP, this is a significant decrease in female employment rate.

When we look, the employment rate is the extensive margin of the individual employment. If we look at the intensive margin, we also see an effect, positive for men and negative for women, in line with our theory. And if we then look at those, at the higher educated women and the lower educated women, so if we take a first look into this disaggregation pattern, into this further segmentation of the labor market, we see higher effects, higher negative effects on weekly hours worked for less educated women than for highly educated women.

Last, the quantity effect. We also want to look at the price effect, the gender wage gap. So we look at the relative wage, female over male, and we don't see anything
significant if we look at the overall picture. But, as Ann Harrison has said, we shouldn't look at the gender wage gap on average, so we shouldn't look at aggregates, but we should rather look at individuals. And the way we do here is we look at percentiles, percentiles including the non-employed, for which we give a zero wage, right? And if we line them up according to the distribution, we see that the high percentiles here see a strong negative effect on the wage. The effect is weaker and insignificant for the lower wage groups; 18, 17 sounds like still very high, but remember that we do include that as we've done before.

So, to conclude, women seem to enrich countries. That's Heckscher-Ohlin, right? There's a counterpart in the poorer countries. Women do seem to lose relative to men due to trade integration. Women less educated or low-income groups tend to lose in terms of employment, so that's a quantity effect whereas the other high educated or high-income groups tend to see price effects. It will be super interesting to discuss that in terms of the other work.

What I do want to point out towards the end now is that this is a theory based on effect of proportions. So it's north/south trade. It's not north/north and inter-industry trade so much.

And findings, that's a big caveat, findings are based on state level aggregates. However, and here is where
I want to push this other work, this ongoing work with my co-authors. If we look at work, matched work history, firm trade data, and we do that, we do find some of the results, and I'm not going to expand on which ones, but we do see some of the results of our early papers.

So thank you very much. Sorry for going over time.

DR. BENGURIA: Thanks very much, Philip. That was very interesting.

And our next paper is "NAFTA and the Gender Wage Gap," which is going to be presented by John McLaren. Thanks very much, John. It's all yours.

DR. McLAREN: Thank you. I appreciate the organizers putting all this together. It's terrific.

This is joint work with Shushan Hakobyan, who is at the IMF and who is also present. There are likely questions she can answer that I can't answer, so we'll figure it out.

Right. Although very closely related to a number of the other things that we've just seen, we researched an earlier paper just on the gender wage effects of NAFTA which a couple of people have mentioned and found surprisingly strong negative effects of NAFTA tariff eliminations on the wages of blue collar workers, especially high school dropouts. Came out just in October 2016, just when everybody was arguing about NAFTA, including the political spheres. It was good timing.
There's not a lot more on NAFTA. At the time, the NAFTA literature was kind of small, just getting started. And Philip, you didn't send us your paper, so I didn't even know about it until today, so I've added it in red to our NAFTA literature to make sure that you would notice it. So I hope to get the working paper in my inbox soon.

So we're don't need to rehearse the different related papers. We're actually seeing today most of our literature in this panel, so this is fantastic.

What really hasn't been mentioned is this paper by Keller and Utar which is forthcoming in the areas, though. It's about Danish data where they look at the differential effects of trade shocks on men and women workers in Denmark.

And so I'll refer to that later.

So our method here is to use the decennial census, 1990 and 2000, which gives us kind of a clean before-and-after pair of snapshots. Of course, it's a repeated cross-section and that has limitations which are shared with most of the papers we've seen today. Not all of them. That's the nature of most of this literature.

There are some complications with trying to measure the effect of NAFTA in this way. So one of them is that, as several people have already mentioned, NAFTA tariffs do not go to zero right away. A lot of them were eliminated based on a gradual schedule. So here's a diagram that shows you
the average tariff on imports from Mexico by industry. Each dot is an industry. The horizontal axis is the initial tariff in 1990, and the vertical component is the change between 1990 and 2000. And so everything that's on this 45-degree line is a tariff that was at zero by the time of 2000, our second data point. But a lot of things are above the 45-degree line. Those were tariffs that had not yet gone all the way to zero. And so there are some dynamics in the data that we tried to deal with in the appearance.

So we look at the effect by industry as well as by locality. So we start here in industry, but we also have local average tariffs which are computed analogously to the way a number of the previous papers compute local average tariffs. We don't use commuting zones in this paper. We use the constant pool that we defined, public use microdata area, which I think is actually better than commuting zones for this work. Anyway, these are local area tariffs by locality, and it's all analogous. So we try to take into account both local average tariffs or local labor market effects and industry tariffs through industry effects, and they're both better.

Okay. So, when we compute local average tariffs, we use not only employment rates, but we also weigh it by Mexico's revealed comparative advantage because Mexico is not good at exporting everything. It makes a difference, and we
So we have a very horrible -- we have the world's most horrible estimating equation because we try to take all the different effects into account. So we have an estimating equation where we've got workers law wage on the left-hand side. On the right-hand side, we've got the initial tariff for that worker is local labor market. And the initial tariff -- and also we have the impact effect of the change in tariff between 2000 and -- 1990 and 2000 for that worker.

And now you'll see for the -- don't worry about the notation. I don't have time to go through it. But we have both the initial tariff on the local labor market and how much of the tariff has come down by 2000, which varies by industry, which vary by locality and also analogously by industry, the initial industry tariff and how much the tariff has gone down by 2000. And we do all this by education group as well. We have the four education groups: dropouts, high school graduates, some college, and college graduates, right.

So just to cut to the chase, we did a wage regression and we split the sample by male and female workers. We find, as in our previous work, a big effect for high school dropouts, but it's three times the size for women as for men. That was really kind of stunning for us. And this is what it is by the location effect, by the local area tariff. A similar effect by industry tariffs.
And this doesn't exactly contradict the results that Philip was showing us because this is within state and also Philip was talking about industry effects, and the industry effects are very strong here. Right.

So you also find strong effects by privately being employed. Again, much stronger for women workers, more than twice as strong, compared to men workers in the same educational category.

So we were trying to figure out why we should have such enormous differences between the two genders.

Say, Felipe, what time am I -- has my time cut out?

DR. BENGURIA: You have more than five minutes left, Doctor.

MR. SECRETARY: You have four minutes left, Doctor.

DR. BENGURIA: Oh, okay.

DR. McLAREN: Okay, thank you.

Here, we split the sample by married workers and single workers. So, here, the first two columns of this table look only at married workers and there you see the effect is even much stronger. Sorry, but when you do look at civil worker, this usually goes away. So it looks as though this is specifically a larger wage effect for married workers, married women workers compared to all the other categories.

So we looked through three different possible
theories that might explain this, men and women as far as
different occupations, there may be some occupation effect;
maybe it's intra-household bargaining where men have more
bargaining power than women and that affects labor
rereallocation. But what we settled on is the selective
non-labor marker -- labor market non-participation story, and
here there's a beautiful model in the paper which I don't
have time to show you, and it's actually most closely related
to this paper by Keller and Utar.

Suppose non-participation in the labor market is an
option for married women workers but not for married men and
not for other categories. Then, if the tariff falls for
Industry I, it's possible that some fraction of the workers
in Industry I, the women workers, drop out of the labor
market because of their diminished labor market return. But, if the women workers who have dropped out are the most productive, then average women's wages in that industry will fall because of the composition effect.

Okay. Why would the most productive women workers
drop out? Well, that might be the case if child-bearing
women tend to marry high ability men. In that case, you
know, because of positive sort of matching, the higher
ability women are in more affluent households and they're the
ones who can afford to drop out. And so this is a simple
story that does not capture every feature in the data, but
that's the closest to explain what we're seeing in the data. So when -- and this is actually quite similar to some of the things we saw in Philip's paper as well as in Felipe's paper, you actually do see a differential labor force participation effect. So, in column two here, you see a much stronger tendency for women workers to drop out of the labor market compared to male workers if you do a trade shock.

And here's another little cute clue. This is what happens to married couples where both the men and women are in the same industry. If that tariff falls, you don't get this differential wage effect, which makes sense because it's only when the women's wage differentially falls that we get this incentive to drop out of the labor market, whereas, if the two are in different industries, then we get this differential, that labor market wage effect.

And there are other hints that suggest that that might be what's going on. In particular, I think this one is really cute. What happens if you have a married couple and the husband's industry is hit by a loss of its tariff? Well, it turns out that the wife's wage goes up on average. So we argue that there seems to be a composition effect due to differential labor market participation.

And that's the end of the story. Thank you.

DR. BENGURIA: Okay. Thanks a lot, that was really
So the next paper moving on is by Tibor Besedes of Georgia Tech, and it's called "Trade Liberalization and Gender Wage Gaps in Local Labor Market Outcomes: Dimensions of Adjustment in the U.S." Thanks, Tibor, it's all yours.

DR. BESEDES: Thanks for having me, and thanks for including this paper in this great event. This is joint work with Seung Hoon Lee and a former graduate student, Tongyang Yang.

So what we were curious in looking at is what has happened to gender wage gaps or sort of local labor market outcome gaps in the wake of the China shock, and so we're going to take a look at what happens. We're going to start with the wage gap and then try to look at, try to identify mechanisms and changes that have occurred since.

So we know there's less China interest in WTO and we gain some normal trade relation status with the United States, but there's this rapid increase in U.S. imports from China. And so there have been two basic ways of going after this, either using the ADH approach or the Pierce and Schott. We're going to take the Pierce and Schott approach and sort of the cutoff day for us is going to be the date when China gains permanent normal trade relations with the United States.

And the one sort of aspect of this that's important
is that gaining PNTR with the United States didn't change the tariff rates that China was facing on its exports to the United States. It simply changed the -- it eliminated the uncertainty that those tariffs might rise because they've been having those, they've been facing those tariffs, NTR tariffs since the '80s but with uncertainty because there was no annual renewed status.

So, in terms of our data, we're going to use similar trade policy variables as Pierce and Schott. We need the NTR gap, and that's going to be the NTR tariff rates, the MFN tariff rates versus we'll call it tariff rates, sort of the basic tariff rates you're going to face if you export to the United States without the NTR status.

On labor market outcomes, that will come from CPS and they will be elongated at the metropolitan statistical area, so we're going to do everything at the MSA level.

We're going to also need employment data, and that comes from the county business patterns. And so, since the CPS is at the individual level, we are going to aggregate it for everything but one regression that we're going to take a look at. This aggregation allows us to include a sample of 270 MSAs where we can have both the female and male as sort of average information, whether it's wages, labor force participation, or other variables that we take a look at.

The PNTR exposure or the exposure to trade
liberalization to us is the difference between the non-NTR tariff rate, the -- tariff rate, and the NTR tariff rate. It's going to depend on industry that's present in an MSA, and it's a weighted average where the weights depend on the level of employment in each MSA in each industry. So it's simply just a weighted average where the weights are based in 1990, so at the start of our sample.

So the left-hand panel here is the county-level data, the county-level entry gap that you have in Pierce and Schott. The right-hand panel is what we get for the MSAs. So it has sort of similar grassroots. In Florida, there's a lot of exposure, in the eastern seaboard, the south, the Midwest, and the west coast.

Our specification standard difference and differences where we care about this data which is going to identify the post-PNTR effect in areas that face the largest exposure which is reflected by the size of the NTR gap. We're also going to include certain measures that are in U.S. trade policy information, such as tariff rates, MSA information, fiber agreement information that goes away during this period. And then we're going to also have some variables that characterize the MSAs. We're going to focus on then the fade down in this de-ID effect, and so that's what I'm going to show you in most of these regressions.

So the first thing we take a look at is what
happened to the gender wage gap and the wages, and so we can identify in the first column here, we're looking at regressing the ratio of the female to male wage rates, and a positive coefficient indicates that the relative female wage has increased, and so we do get, we do find that the wage, the relative wage of women in the areas in MSAs that are more exposed goes up. So the gender wage gap reduces in the wake of the China shock.

We try to then look at what happens to wages of women and men, and here we sort of find rather weak results. So, for women, we get statistically marginally significant increase in the wage, and for men we don't find any statistical significance. So really any significance we get in the wages is really from sort of the difference between the two, the ratio of the two.

We then sort of try to identify whether there's any sort of change in cross-sectors and it sort of gets at a story that we heard earlier today. So, when you sort of look at this, we can identify manufacturing services and other industries showing manufacturing. You actually get a reduction -- sorry, an increase in the gender wage gap. So this is still looking at the female-to-male wage rate in manufacturing, that rate decreases in services and increases. And then given this reallocation of the labor force from manufacturing to services, you get it, so when you pull
everything together, the services sort of win out and we do get this picture of the gender wage gap decreasing.

This is looking at using, looking at the simple wage gap that might mask certain compositional and selection effects. So we then look at the residual wage gap. And this is done at individual level, so we use the individual level data from CPS. We'll calculate the residual wage as the residual from regression of the wages on the observed characteristics of workers and then calculate the residual wage gap and look at that and regress it on PNTR.

This is an individual level regression, so now our essentially specifications are triple different, so we then try the post-PNTR/NTR gap in male coefficient. So we actually end up getting that the residual wage gap has actually increased in the sense that the residual wage for men increases while that for women decreases.

So there's a couple ways that we can sort of think about that happening. It could be that the relative female wage increased because more educated women entered the labor force, or alternatively or together, less educated men left the workforce. So we need to take a look at labor force participation rate.

So what happens with labor force participation? So the first thing we take a look, we just look at labor force participation across women and men and we look at the
relative labor force participation of women, we actually get a large increase in the labor force participation rates of women in the more exposed areas. When we look at women by gender, as the labor force participation rate of women in the more exposed industries increases, that of men decreases.

So, it goes back to sort of -- going back to the residual wage regression results, we do get a greater entry into the labor force on the part of women, and departures from the labor force on the part of the men. And to account for that increase in the residual wage for men, we need to take a look at what happens by the level of education.

So when we take a look at the labor force participation rates with the relative and absolute by education levels where we define less educated as individuals with no college education; more educated as individuals with at least some college education, and here we have that the labor force participation gap for the less educated isn't effective, or for the more educated individuals it does reduce by quite a lot.

And what's really happening is that we do get are more educated women are entering the labor force, and the less educated men are leaving the labor force, which is sort of -- will account for the results we have for the -- in the residual wage regression.

The other thing that I would then take a look at is
what's happening to intra household work dynamics a little bit along the lines what John just talked about.

So, the first question we ask is who in the household is working so the CPS can identify individuals who are cohabiting together. So, if we look at what's happening to the fraction of households where both spouses are working, there's a positive efficiency (phonetic) doesn't seem that this trade liberalization episode is the China shock affects that the fraction of households with both spouses working, but we do have a reduction in households where only the husband works, and an increase in households where only the wife works. And if you look at the share of female income in household income, that increases.

So, part of what might be going on is there's a reallocation, or gender reallocation of the labor force in that men are leaving the labor force, women are entering the labor force, and women are doing so essentially to some extent in an attempt to substitute for the lost income, or to make up for the lost income of the husbands that have departed the labor force.

And, so, if you look at then the labor force participation by numerical status, we did that in single households, so there's no change in sort of the single women working. There's a reduction in participating in the labor force, there's a reduction in men from single households

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participating in the labor force, and in married and
cohabiting households there's an increase in the labor force
participation of women, or partners, or wives in the more
exposed areas, which sort of lends some credence to this
hypothesis that what might be happening is that as the men
are leaving the labor force, women are entering the labor
force to make up for that lost income.

We also then end up looking at the changes in how
much individuals work. So, if you look at total hours
worked, there's a significant reduction in the total hours
men end up working, and if you look at the hours, in this
case we can only identify weeks spanning part-time workers,
there's a large increase in weeks that women spend in
part-time work in the more exposed areas.

Of course, once we have this, we were sort of
curious as to why this happens. Is this by choice, or is
this by necessity increasing the hours, and the time spent in
part-time work, and when we look at that there's two
questions in the CPS that are useful to looking at that.

Is it lack of motivation, or is it either
individuals working part-time jobs because they cannot find a
full-time job, or because they wanted a part-time job, and
were identifying to both for men and women in the more
exposed areas, they end up spending -- they end up working in
part-time jobs because they cannot find full-time work rather
than because they initially wanted to have a full or part-time job.

And we also have some results that looked at unemployment. In employment we do find that unemployment of both men and women increased in the more exposed MSAs, and the employment rate of men in the more exposed MSAs.

So, what we're identifying is sort of a nice, I think, story of what's happening to gender wage gaps, and labor market outcomes in the wake of the China shock. The gender wage gap decreases. It seems to somewhat due to higher female wages. The labor force participation rate for gender -- the labor force participation rate gender gap decreases, it decreases because women are entering the labor force, men are exiting the labor force, and it's the more educated women who enter, and the less educated men.

But before, we identify some interesting changes, intra household changes in behavior in terms of who is working, and how they adjust their hours worked. And that would be it.

DR. BENGURIA: Tibor, thanks very much. That was great, and the last paper in the presentation is by David Fortunato of the University of California, San Diego, and it's called "Representation and the Trade Roots of the Gender Pay Gap".

And after that we have some time for panel
discussion. So, David, thanks very much. Go ahead.

DR. SECRETARY: You're on mute, David. You're still on mute. There you go.

DR. FORTUNATO: There we go. Okay. Sorry about that. As I was saying, I did some collaborative work with Tim Betz and Diana O'Brien, and my presentation is a little different than the last two, so -- but we're going to have fun.

Okay. So, this is an early draft, and it is paperwork thinking about tariffs as like foreign redistributed instruments where we can deliver kind of large narrow gains to specific producers, and pay for them with widely distributed costs to consumers, or we can reduce tariffs, and deliver small widely distributed gains to consumers, and pay for them with larger, more narrow costs at producers.

So, for example, the United States famously has this very large tariff on pick-up trucks, about 25 percent, and that leads to a domestic advantage for domestic producers, bigger revenues for owners, hopefully more job security for workers. The downside is that trucks are more expensive for American consumers.

If we were to relax that, eliminate that domestic advantage for domestic producers, you'll have smaller revenues for owners, maybe less security for workers, but
trucks would get less expensive.

Now, typically we think about these trade policy choices as balancing the interest between consumers and producers, but importantly, different types of people produce and consume different types of goods, and today I'm going to talk about gender differences in the work force, and how trade policy shapes outcomes for men and women.

Okay. So, men and women work in different sectors. In the United States only about five percent of machinists are women, but travel agents, and sewing machine operators about three-quarters of them are women.

Now, this is important because different sectors face different levels of international competition. Some jobs are naturally protected like hairdressers, and bartenders. They have to be where the customers are to provide the service. And some jobs are protected by trade policy choices like, for example, the pick-up trucks that I was just talking about.

This is important because different sectors also rely on different types of workers, so pick-up trucks are made by machinists who are overwhelmingly men, and those male workers get a large degree of protection from international competition from U.S. trade policy.

Conversely, (indiscernible) are made overwhelmingly by women, and they receive little or no competition from U.S.
So, this gendered clustering in different occupations leads to gender differences in vulnerability to wage pressures from international trade. So, as a result, women's jobs are just going to have fundamentally different types of wage pressures placed on them from international competition than their male counterparts in the work force.

And, importantly, governments are choosing these differences whether they know it, or not, whether they like it, or not. So, we want to analyze how these choices are actually affecting workers on the ground.

Okay. So, the argument that we make in our paper, which I'm just going to gloss over, is that within a country, within a sector, it's likely that domestic trade policy is going to protect men's jobs more than women's jobs, but increasing women's representation in government should ameliorate these gender differences in trade protectionism across sectors. So, the hypothesis that we're going to assess with our data is that within country, within sector, increasing women's representation should reduce gender protectionism.

So, the first thing that we want to do is we want to measure gender protectionism, and to do this we're going to gather data on applied tariffs from WITS (World Integrated Trade Solution), and we're going to match that to specific
industries to try to calculate each industry's average applied tariff. That's the dependent variable in our first analysis, the average applied tariff for a particular industry, in a particular country, in a particular year. And we're going to look at several hundred industries spanning about 60 countries over a period of 17 years.

Now, we're here talking about the United States, so I want to tell you why we're not going to study just the United States. The first reason is that there's very little variability, but our keycode (phonetic) variants over this time period in the U.S. So, if we want to understand how the U.S. got to be where it is, it's beneficial to look at the dynamics of more volatile economies over this time period.

The second reason is that the United States is pretty influential over the trade policy choices adopted by our trading partners, and we want to understand if those trade policies are going to have differential impacts, for men and women in their workforce, men and women as consumers.

Okay. So, we have these average industry applied tariffs for a particular country in a particular year, so we want to measure how many women are working that particular industry in that country, and in that year, and we do that with data from the ILO.

And then we also have information on how many women
are serving in Parliament in that country, and in that year. So the independent variables in our analysis are going to be the interaction of two factors, the share of women working in a particular industry, in a particular country, in a particular year, and how many women are serving the legislature in that country, in that year.

So, I'm going to take that independent variable, that average applied industry tariff that varies over countries and years and industries, and regress that on the share of women working that industry, and the share of women in the legislature, and the interactions of those two factors.

We're going to adjust for a bunch potential confounders that are not terribly interesting, so I'm not going to talk about them, and we're also going to estimate fixed effects for countries, industries, and years as well.

So, what this means is that the variation that's going to identify our estimates of the impact of women's share of the labor force, and women's representation on the amount of protectionism an industry receives, there are two types of variation.

One is within state variation across industries, so the fact that more women make linen blazers than pick-up trucks in the United States, and cross-state variation within industry. So, the fact that more women make linen blazers in
India than in the United States.

So, let me show you what we get. First, I'm going to show you what happens when we analyze only the United States. So, there's one very important thing here is that we can't assess the effect of women's representation looking only in the U.S. because it varies very little, and it's washed out by the year of fixed effects.

The second thing is that this is not a ton of variation within industry over this period. All of the variability explained is by the industry fixed effects, so we've got no results here that are just kind of nonsensical.

But when we expand our analysis to all the countries for which we have data, what we recover is a large negative correlation between women's share of the work force in a particular industry, and how protected that industry is from international competition.

So, as women constitute a larger and larger portion of the work force in a particular industry, that industry becomes more vulnerable to international competition as a function of trade barriers being lowered. But that gendered effect is ameliorated by women's share of parliamentary seats.

So, the takeaway from this part of the analysis is that when women are under represented in the legislature, women workers will be overexposed to trade risk relative to
their male counterparts. Inequalities in representation translate into inequalities in trade protection. So, now we want to assess how much these gender differences and protectionism matter for earnings. We're going to estimate the effect of, I'm sorry, the relationship between the tariff gap on the global wage gap.

So, the first thing that we want to do is aggregate the average tariff for the typical woman worker in a particular country, in a particular year. So, we're going to take all those industry average applied tariffs, multiply them by the proportion of women workers in that industry, and just sum them all up, and then we'll do the same thing for men.

And then the difference between those two is what we're calling the tariff gap, so when this thing is equal to zero, men and women are equally protected in their jobs by third government's trade policy. When it's equal to one, women have no protection at all relative to their male counterparts in the labor market.

Then we do the same thing with data on wages from the ILO, and calculate the same measures. So, again, when this is equal to zero, men and women are making the same wages. When it's equivalent to one, women are uncompensated relative to their male counterparts in the work force. So, we're going to estimate the relationship between one and the
Okay. So, again, looking just at the United States, these measures vary almost not at all over this 17-year period, so there's a zero correlation, but, again, once we expand to other countries for which we've gathered data, we see that the conditional correlation between the gender tariff gap on the X axis, and the gender pay gap on the Y axis, is positive.

And when we look at the coefficient estimates from our regression model trying to account for a bunch of potential confounders, what we see is about 25 percent of the gender tariff gap survives into the gender wage gap across countries, and over time. And in our data this tariff gap explains about ten percent of the variation in the gender wage gap.

So, the result here to take away is that gender bias trade policy is positively contributing to the global gender wage gap. And I'm almost done, but before I close out, what I want to make clear is that our paper is not advocating for increasing trade barriers, specifically to protect women's jobs.

What we want to make clear is that trade policy has differential effects across groups, in this case men and women, and it is incumbent on trade policymakers to consider the downstream effects of how various trade negotiations, the
outcomes of various trade negotiations might have
differential effects on men and women as consumers and
workers in the United States.

Further, it has the largest economy in the world.
The United States has the luxury, and I would argue even the
responsibility, to pursue to gender equity on a global scale.
So, we need to understand how the trade negotiations that
we're entering with our trading partners might differentially
affect men and women in their work forces, and in their
consumer bases.

And that's the end of my presentation. Thank you
very much for your attention.

DR. BENGURIA: Okay. David, thanks so much. So,
thanks very much to all of the presenters in this panel.
And, so, now we have 15 minutes for questions and answers,
and just as we have done in the previous panels, I have some
questions that have been forwarded that I'm going to put out
there, and you can raise your hand. Any of the panelists, if
there's some problem to raise your hand next to your name in
the participant list, by the way, if you haven't seen it.

So, the first question is looking forward into the
future, so, what research questions related to distributional
effects of trade and trade policy on gender remain
unanswered, and should be considered in future research, and
are there any data, or methodological limitations preventing
us from addressing them?

Okay. Stephanie wants to answer that first, and then Masha wants to answer it too. So, Stephanie, and then Masha, please.

DR. FORTUNE-TAYLOR: Thank you, Dr. Benguria. I would like to point out that one of the things that we would really like to know more about are the intersectionalities between gender, and race, and ethnicity, if that's something that hasn't been investigated as much, and that's something that's really pressing because there's reason to believe that certain labor constraints that a black woman might face could be different from those of their white female counterparts. So, that's something that's very important to address.

I'm not sure, especially for our paper when we're looking at four-digit sectors if the statistical power is sufficient to examine these things, but, I think, these things are important to consider because these effects might not translate across race and ethnicity.

DR. BENGURIA: Masha, and then John. Thanks, Stephanie.

DR. BRUSSEVICH: Thank you, Felipe, for the question. So, I think that there are a couple of things that can be explored. One is more research on dynamic clarification of labor, and for that we need very good panel data that impact workers over time, and, you know, besides
the ongoing rotation groups data, there's not much of their -- at least at face or just in general that is publicly available. So, that's one thing.

The other thing is maybe research on the impact on trade and services. Everything that we've been really looking at so far has been looking at, you know, this import competition and shock in the manufacturing sector, and how that affects workers in manufacturing, and services, but what about trade and financial services, for example. We haven't really seen that.

And, you know, given that we have shown that there's uneven distribution in our workers, male and female workers across sectors, you know, that could be an important channel to explore. Thanks.

DR. BENGURIA: John?

DR. MCLAREN: I would second what Masha said about the longitudinal work would be desirable there having to do with the United States.

That's one of the great things about the Keller and Utar paper, I mentioned. That data actually followed individual workers over their whole career, and it's fascinating. And by the way, Wolfgang Keller is presenting that tomorrow morning in this same forum. I just noticed. So, that's good stuff.

If the U.S. and Rudy (phonetic) with the CPS by
tracking people for one year, there's not that much you could do. Ann Harrison has done some work in that line, the paper that she was describing a couple hours ago with co-authors.

I've been exploring that a little bit with Danielle Parks, who is a grad student at Colorado, a really capable, smart young person, and we've been finding it looks like -- we do see big differences between black and white workers, and workers from high income families, and low income families. And it looks like black workers and low income workers are less likely to see a one-year decline in their income in the face of a trade shock.

This surprised us, and we were thinking it looks like maybe those workers are more faced with liquidity constraints, and if the live from paycheck to paycheck, you can't afford your income to go down because you need money for the basic expenses, and, so you'll take an extra job and work extra hours rather than suffer an income decline, whereas, the more affluent worker can put up with an income decline for a couple years.

So, the liquidity constraints are another area there's nothing about in this area, and it's very important for lower income workers.

DR. BENGURIA: David.

DR. FORTUNATO: Yeah, thank you very much. So, if you noticed in my presentation, I use the word average a
whole lot, average, average, average, average, average. And it would be nice if we were able to marry micro level data on individual worker compensation to firms over a protected period of time, so we can learn how these differential trade policies are affecting workers at the micro level in the United States rather than, you know, only using countries with more readily available registry data like Sweden and Denmark like John mentioned before.

Unfortunately, the IRS is not going to listen to me, but they might listen to you, right, they might listen to Katherine Todd. Thank you.

DR. BENGURIA: Okay, great. Phillip, also raised his hand.

DR. SAURE: Yeah, great question. The obvious question in the end, right, where should we go with the research, and, I think, we've got some excellent indications. Also, from the papers.

I spin around this keyword of mine, this labor force attachment, or the elasticity at the worker level -- John mentioned, but also within household bargaining of various respects.

But it can also come from the firm side, right. There's the old Becka (phonetic) theory that there's discrimination against women, but it may be also by certain years, or by race, that firms can afford more or less under
various degrees of competition.
So, we might look at the firms' side at the same
time, and, again, this requires the according matching of
data, but, yeah, we are here to push for more data quality to
some extent, right. And I would hope to advertise at some
point in time this future work that's -- that we're currently
working on. That's it.

DR. BENGURIA: Okay. Thanks a lot. And, so here I
have some of our questions. Maybe we can tackle a couple of
them.

So, the next question is in your research do you
find evidence of gender differences in the labor market real
location of U.S. workers across sectors, and let me add a
little bit of context. I think it's really interesting to
think how longitudinal, you know, adjustments, as I think all
of you have mentioned, but also to think that women might not
be able to reallocate, especially geographically in a large
country like the U.S. as much as men. Perhaps that's an
hypothesis.

So we wanted to hear your thoughts of the possible
gender differences of relocation, and what do you
hypothesize, you know, might you find. Okay, Masha was
raising your hand.

DR. BRUSSEVICH: Yes, so, as I've shown in the
paper that I presented, there are actually non-traditional
differences in terms of how male and female workers move across sectors, and specifically when they exit the manufacturing sector that is being hit by a trade shop, where do they go, you know, that depends on the gender.

So, for example, women tend to move more into some of the high wage services, which, you know, may be somewhat surprising, but at the same time you have to think about where women have the compared advantage, and, you know, as a lot of the literature shows, that's the service sector.

Right? So, when the manufacturing sector is hit, women tend to move into services, and some of the faster growing sectors in terms of both wages and just overall employment are the high wage services like finance, for example.

So, those are the important things that you do have to take into account when considering the effects of the trade policy, and with that, you know, as I mentioned, you do need this longitudinal data that I mentioned.

As John mentioned, we do have at least, you know, one year where they asked workers to compare where they were previously, and where they ended up. You know, that's just not enough to do some of the more granular work, and to understand some of the drivers of these different concerns in ability. Thank you.

DR. BENGURIA: Okay. Thanks a lot. I also now am
going to bring up a question from the audience by Christina
A. Otrelia (phonetic) from the U.S. Census Bureau who wants
to ask Dr. McLaren specifically why is -- why are the
location effects -- why do the location effects seem more
important than the industry effects?

    DR. MCLAREN: Well --

    DR. BENGURIA: John?

    DR. MCLAREN: I wouldn't completely -- I wouldn't
completely say they are. The industry effects are actually
more robust, so your basic tables, the locational effects
might be -- might show up stronger.

    I personally put more weight on the industry
effects. And, honestly, I don't have a good story for why
the -- in the basic tables those locational effects look kind
of stronger. It's my intuition would go in the other
direction.

    It's worth pointing out that I'm sure you've
noticed other people who have looked at these things at the
level of local labor markets like the paper here today, and
the paper by Autor, Dorn, and Hanson that focuses on
marriage. So, that's why I'm kind of shocked, which is a
different episode, and a different period, and different
data, so there's not necessarily a problem that they answer,
but they tend to find that real wages are pushed down
relative to female wages, or female wages are pushed up
relative to male wages at the level of local end market in
the presence of the trade shock. And we signify the
opposite. So, I don't actually know why. If you have a
story, I'd be interested in hearing it.

But, I also can understand the industry effects
better intuitively, and if Shoshanna has any better ideas,
I'd be eager to hear it as well.

I wish I had a better answer.

DR. BENJURIA: Okay, thanks a lot.

Does anyone else want to comment on that, or should
I move -- maybe I'll move to the next question, which is to
what extent do you think the occupation and industry
composition of workers by gender drives gender differences in
trade-related worker outcomes? So maybe let me give a little
bit of context to clarify the question.

So the effect of trade on, like, gender wage gaps,
for example, could be purely compositional. Okay, women work
in apparel and then, you know, trade hits the apparel sector
and hits the two genders differently. But there could be
more stories than that, right, which could have to do with
bargaining power and so on and so forth.

So would anyone like to tackle that? Philip?

DR. SAURE: Yeah. I won't give a number here
share. Certainly, both is operating. The theory we're
building on in this 2014 paper is essentially based on the
effect of proportions and that theory.

But what we do see, it's playing out on the industry, as this recent paper by Swatty Degura (phonetic) and Ruey, Ruey Costa, Swatty Degura, and co-author is pointing at. At the same time, we do see gender differences in reallocation in wages when we look within industries, across the differently exposed firms, exposed firms to a trade shock, so the export and import intensity or net export intensity. That's related to -- that can be related to labor market response, and that's what we see in this ongoing project. We do see differences across gender here.

So I guess both is operating, both -- yeah, the simple answer is future research should show how much is on the one side or the other. But I would bet on both operating substantially.

DR. BENGURIA: Okay. Masha?

MR. BRUSSEVICH: Yes. I just wanted to quickly mention that, to give you an example, the electronics sector was one of the most shaped sectors by that China shock. And if you look at, you know, within electronics manufacturing sector, you can sort of divide workers by their occupation into more production-oriented occupations and more service-type occupations.

And, you know, when you look at the reallocation then of workers, let's say the whole sector is impacted and
the workers move on, but women tend to be in more let's say secretarial-type occupations versus men being in production occupations. But it would be less costly for a woman to switch from that electronics manufacturing sector to another service sector that is growing than it would be for a man switching the types of occupations that they would have to then find in a different industry.

So, yes, it is important and there is a lot of nuance in terms of, you know, whether you're looking across industries, within industries, and occupations.

DR. BENGURIA: David had a hand raised.

DR. FORTUNATO: Yeah, I just want to note that, you know, trade policies are made by human beings, and human beings carry a package of implicit biases with them. So, when a lobbyist from a producer let's say of pickup trucks with a male-dominated workforce goes to lobby for trade protections to a male-dominated Congress, they don't even need to mention the fact that they have an all male workforce composed of, you know, what we might think of as like breadwinners because that perception's already baked in.

You know, there's a reason that I used auto industry and garment industry as the examples in the presentation. It's because when I say a garment factory we're automatically thinking about women. When I say auto factory, we're automatically thinking about men. And
Congresspeople are probably doing the same thing when they're dealing with these lobbyists. There are certain realities of implicit biases that we need to keep in mind.

DR. BENGURIA: Okay, that's great.

So, given the time, maybe, well, I'll ask if there's anything else someone would like to ask, I mean to add?

(No response.)

DR. BENGURIA: Okay, so maybe we can conclude with that. And I'd like to thank again the six presenters and all the authors that might be around and Hooyen at USITC. And I believe the next panel is at 3:20, right?

MR. SECRETARY: Yes. Thank you so much to all of the members of this panel. We appreciate it so much.

We'll go ahead and take a brief break so everyone can stretch and come back for our next panel, which will be our final panel of the day. So go ahead and take a break and we will start at --

DR. RIVERA: 3:20.

MR. SECRETARY: Say it again, Sandra, please.

DR. RIVERA: 3:20.

MR. SECRETARY: We will begin at 3:20 with our final panel of the day. So thanks so much, everyone. I will get on early and do my Webex tips again for you. See you then.

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(202) 628-4888
(Whereupon, a brief recess was taken.)

MR. SECRETARY: So good to see you. Please begin when you're ready.

DR. POWERS: Thank you, Bill. Can you hear me?

MR. SECRETARY: I can hear you, yes.

DR. POWERS: All right. Fantastic. Well, let's get started.

Good afternoon, everyone, or perhaps good evening or good morning.

First, I want to thank Bill and Sandra and all the people who put this event together and my distinguished panelists for helping make it a great event. So thanks, everyone.

I do want to take a moment here. There's Sandra online again. Hello, Sandra. And I did want to take a moment here to describe this session since it's a bit different than our earlier sessions. We've got five presenters, as Bill Bishop just mentioned. They're going to be a little shorter presentations than we've seen, but they have measured the impact of trade in three different ways: through computable generated equilibrium models, through structural general equilibrium models, and through shift share approaches.

Each of these approaches can advance our understanding of the distributional effects of trade, and one
of the things we want to look at today is what are the
differences, what are the strengths, what are perhaps some of the shortcomings in these methods.

I did want to point out that historically many
general equilibrium models didn't incorporate labor frictions. In fact, we heard Dr. Spriggs earlier today say, and I wrote down, "frictions in the labor market are real, and GE models don't incorporate these frictions." I did want to point out that that may be true in the past. All of our GE models today incorporate some type of labor friction.

Each of these papers also looks at transition costs either by estimating them directly or by noting that they have pretty substantial effects. However, they take some very different approaches to estimating these costs.

And another thing I'll be looking for, hopefully you will as well, the different approaches that contribute to our understanding.

Our panel is set up so that each presenter has 10 minutes. We should have 25 minutes for discussion at the end. And I'll hold all questions until then. But, before that, please submit them and we'll try to get to them at the end.

And with those thoughts, let's get started. We're starting with Dr. Maryla Maliszewska of the World Bank.
Maryla, you've got 10 minutes. Take it away.
DR. MALISZEWSKA: Thank you so much. I'll start by sharing my screen and saying that -- with the discussion so far. And I'd like to thank the organizers for inviting me to join. Can you see it in full screen now? See? Yeah? I hope that works. Please scream if it doesn't work.

DR. RIVERA: You are sharing both your first screen and your second screen at the same time, so it's --

DR. MALISZEWSKA: Okay. Let's see, how do I fix that?

(Pause.)

DR. MALISZEWSKA: Okay. Thank you, everyone. So my name is Maryla Maliszewska. I'm a senior economist with the World Bank, Global Trade Analysis Unit, and this is a slide presentation of my colleague, Israel Osorio-Rodarte, who is also connected, and I'm going to just simply direct all the difficult questions to him, so I'm glad he's here.

I'm going to talk about the tools that we use in our unit but just first start with a very brief introduction, what is it that we do and what we focus on.

So, as you know, the World Bank has twin goals, twin goals of eradicating poverty and promoting trade prosperity. I already make a point here that we're already focusing on lower- and middle-income countries.

So we don't do much research on high-income countries, only to the degree that it affects the developing
countries. So what we do at Global Trade Analysis will, of course, include all important trade partners, but when looking at the distributional impacts, we mostly focus on low-income countries, and we do it using a lot of approaches at the bank, but I'm going here to discuss only the tools we'd be using for the forward-looking analysis, as Bill mentioned, and from there, the computer will generate a real model envisioned a microsimulation tool that is called Global Income Distribution Dynamics.

And we use these two tools to look at the variability of outcomes. So we look at the trade policy changes, trade policy shocks or trade shocks, and we look at the impacts on poverty, income distribution, wages, construction, formal/informal employment, and wherever we can we split them by gender, occupation, educational attainment, and by geographical location. And I'm going to briefly discuss the totals and then give you some examples of the findings that we reached using those, the stated approach.

Variability, how does the tool work? I think what I want to highlight here is that there is really this coordination between the macro and micro. So usually with the top-down approach, what you do, you use -- the computer will generate a model or other tool to project changes in employment and wages and then try to superimpose those changes on a microsimulation tool based on household...
surveys.

What's different in this approach is that there is already before we use a -- before we do any simulations, we already use the household survey data, to include the data on employment and wages from the microdata into the CGE model.

So, in a sense, a typical CGE model will use the Global Trade Analysis Project database on variability, and it includes wages and employment just, you know, to then modify each other and you get the value added. So we take it and we split it by type of worker, so skilled/unskilled, rural/urban, female/male. And then, in the most recent application, we also split them by location, so basically where they are based in the country.

And based on what goes into the microsimulations, we use the World Bank population projections, we use the education projections to figure out the share of skilled/unskilled workers. All of those are bundled together to generate a new household survey let's say in 2030 or whatever is the time duration of the analysis. And these are the inputs into the CGE model.

Then, once we do the typical CGE analysis and look at the implications of, for example, a free trade agreement on a particular country, then we come up with a new allocation of workers across sectors, their new wages. There are going to see dramatic prices of full/non-full items, and
all of those changes get translated into a new household
distribution, income distribution.

So, as an example, we can have the baseline
distribution let's say in 2030 based on the data, and then we
have the CGE shocks, and we say, okay, after the shock, after
the feature that we meant, these are the households that are
going to benefit, these are the households that might be
worse off and workers and so on.

Okay. It took a lot of time, but the rest will be
relatively quick. So I just want to give you some examples
of the applications that we have done with this approach.

So, as I mentioned, we look at free trade
agreements and within free trade agreements, we look at the
organizational failures and Ems and trade lateralization
measures. So, recently, we've been focusing quite a lot on
the African continent and free trade area, but we've also
been studying CPTPP. The new approach that we've been using
is also building on the gravity approach study the
implications of free trade agreements on the FDI flows and
then bringing that back into the CGE model and then looking
at the distributional impacts, so looking at trade and
investment in the context of AFCTA, building on the free
trade agreement database of the bank.

We also looked at the impact of U.S./China trade
war, and, of course, we're looking at the impact of another
trade war that's hitting the actual war, crisis in Ukraine. And, recently, we were also looking quite a lot on the implications of the climate change mitigation policies on the distributional aspect.

And I'm going to walk you very quickly through a few examples of the results that we get, so the projections for what looking at simulations of the potential distributional impacts of different trade policy changes.

The headline message is that the government get out of them. For example, from the AFCFDA study, we found that it has the potential to lift 30 million people out of poverty in addition to what we would have anticipated in the data in 2030. We did the analysis of the -- position in Sri Lanka and this hypertypical scenario, we found that it would, you know, lead to faster growth and poverty reduction. However, it could also exacerbate the existing regional inequalities as the new jobs would tend to occur in already well-established manufacturing sectors.

And, finally, on climate change, what we found is that more ambitious climate change mitigation scenarios could really hurt top earners in the income distribution.

So here is an example that we did for the AFCFDA and the number that I mentioned for the extreme poor. And just to show you some granularity, that in addition to looking, of course, at the headline numbers, we have data on
the country level and, for example, we find that the
countries with high regional poverty rates will experience
the greatest decline in poverty. So this is really a
promising outcome.

We also look at the number of jobs generated or
reallocated across the region. We look at the changes in
wages. Here, for this application, we have skilled,
unskilled female and male workers, and what we found is that
AFCFDA generates opportunities especially for unskilled
workers and that the growth rate of female wages or female
workers' wages is a bit faster than the growth of male
workers, so kind of helping bridge the gender wage gap.

Just very quickly, as I mentioned, we started to
look at the impact of trade policy changes at the
sub-national level, and this really, this example really
illustrates well the usefulness of this approach. And as I
mentioned, even though we found that overall trade benefits
the country, as a whole, there will be some regions that will
be much better off than others, and those tend to be already
well-developed regions. So addressing worker mobility and
providing social protection for displaced workers might be
some policy options to consider when implementing these
policies.

Okay, and I see that I have one minute left. So
very briefly, what are the next steps and how have we been
building on the work so far.

So, on the macro side, you know, the analysis is only as good as the data and the tools that we use, so we've invested a lot of time and effort in interpreting our data sets. So a new social impact in a lot of cases for the general data set, improving the CGE model to distinguish between different types of workers. And on the micro side is adding more households in labor force surveys, disaggregating by sector, by education, by location and so on. And for that, we have generated a gender disaggregated labor database which includes also in addition to sector attitude and industrial classification data on wages and employment. We also have 70 categories with information at the sub-national level.

And, finally, what are the next steps, and I think this leads really nice to what Hans will be talking about. The next steps are, in addition to working on data and tools, we want to focus on the adjustment path, so basically looking at the transition matrixes, which workers are likely to switch jobs and build that adjustment path into the CGE model, which typically allows for immediate adjustment across sectors. Although there is some migration from rural to urban sectors, I think this must be done and we're going to learn from Hans's approach.

So over to Hans. Thank you.
DR. POWERS: Thank you, Maryla.
And as you've just indicated, we have Hans Lofgren, also at the World Bank, up next.

DR. LOFGREN: Okay, thank you very much.

Good afternoon. I will try to share my screen, hopefully with success. Is that visible now?

MR. SECRETARY: Yeah. Perfect. Thank you.

DR. LOFGREN: Okay. Great. So my name is Hans Lofgren. I'm a retired World Bank economist. I had the pleasure of working with Maryla and Israel, and in the past, also I worked for the International Food Policy Research Institute, working on CGE modeling.

I will talk about the specific approach to labor mobility in CGE models that I have worked on, developed together with a colleague, Martin Ciecowicz. And I will talk a little bit in general about CGE models, but I will focus on the issue of the labor mobility question.

So, first of all, why do we use the CGE models to analyze these issues? It's because it is a modeling framework that is linking different parts of the economy, production sectors, the incomes they generate to households, the links to the government, the links to the market, the links to the international trade, and it's important to have this kind of a comprehensive view of the economy when analyzing these issues because, for example, if there is an
increase in an imported good, that will have consequences for
the sectors that produce import substitutes, employment
income streams there. It will have implications for
households that may be buying this imported good. It will
have implications for sectors that may be using this import
as an input. And as a result, there are lots of things in
the economy that may change as a result of such a change, and
then it's important to have a comprehensive model where you
also have the policy tools that the government can use to
improve the outcomes beyond what is generated by the markets.

Now our labor market is treated in CGE models, but
there are lots of different models, lots of different
treatments, but in almost all cases, one has labor split into
a few categories, perhaps by education, occupation, gender, a
much finer disaggregation of sectors. For example, the
current GTAP model has 65 sectors. And for each type of
labor, there is what you could call a segment, and that
segment could be the whole national economy, and that segment
typically has an exogenous level of total employment and full
mobility within that segment for labor. And that statement
could be in other cases all the sectors in the region or all
the sectors of a certain type like all agriculture sectors.

Now this treatment of labor mobility tends to
exaggerate the ease of moving between jobs. When employment
declines in a sector, the workers that lose their jobs will
Immediately be able to find jobs in other sectors and also be as productive as the workers that already work in the receiving sectors.

And also, by having this very big, broad labor market, the impacts of shocks also tend to become weakened or dissipated across the whole economy whereas, in reality, particularly in the short run, the shocks are felt in a specific sector in a specific region where the sectors are important and for certain categories of labor types.

So this approach, we developed a proximity-based approach that makes certain assumptions that I will discuss and how it influences the results.

So, here, we have firms that maximize profits in assessing where the capabilities of workers typically are viewed as being different depending on which sector they are working in. So workers at a certain level of education in a certain category of a certain type, they're assumed to have different capabilities also seen through the sector in which they are working. And there is a proximity parameter that is measuring the degree of similarity between sectors in terms of the capabilities, and this proximity parameter is seen to be efficiency of the workers.

So one is looking at the efficiency of a worker that is initially in Sector A, moves to Sector A Prime, how efficient that worker is relative to the workers that already
were in A Prime. And the workers, they receive wages on the basis of their efficiency, and as a result, workers that are reallocated are less efficient than the workers that already work in the sector they move to will be receiving lower wages.

From the perspective of the worker, we look at all the different wage earning options they have in the current sector, in other sectors, taking into account that they may lose or may receive a lower wage than the workers that already are in those sectors because of the lower efficiency, their lower efficiency. And if the highest wage they can get is below their reservation wage, then the workers may fall into unemployment.

Now, if we look at the results, this approach, it depends on the parameters that you are using, but it will certainly remove the short-term ability workers to move to other sectors without wage losses, and if your skills are very let's say -- not very applicable in other sectors, then you may fall into unemployment, and if you look at the dynamic, you need to consider learning by doing as when workers have spent some time in the sector, then they will catch up in terms of their efficiency.

Now the main challenge with this approach is related to data, so in the paper that we refer to, we are using data estimated using product space analysis that refers
to similarities between sectors, but looking at sectors as a whole as opposed to the specific similarities in terms of what is required from the workers. So, in order to apply this approach, for example, to analysis of U.S. trade policy, one needs to estimate the sectoral proximity parameters based on survey data that would need to include information about workers that have been moving between different sectors, which sectors they have been employed in, and how their wages have developed and what they look like compared to the wages received today, received by workers in the receiving sectors.

And also, without empirical data, you can still use the approach to just test when you are doing simulations how sensitive are the results to the degree of mobility, so if you have a very mobile starting point, you can look at what could happen if you make it more mobile and which is likely to flatten over time.

And two final observations, first of all, involving labor mobility. In the current version of the GTAP model, there is an approach where they have made labor a sluggish factor that finds it more difficult to move between the different sectors in a way that is similar to that there are difficulties involved in if you're looking at production to reallocate production between different markets of destination, perhaps domestic and foreign.

And indeed, apart from the treatment of labor
mobility, it's also important to do many of the things that Maryla was referring to to try to desegregate labor by as many dimensions actually as the data would permit I would say, and secondly was to try to get creation of disaggregation into the national models since, as I said, these shocks are typically felt much more in certain parts of the economy, and I note this here. There are some references that you find and there is certainty models of the U.S. economy where indeed there is a bit of disaggregation.

I heard the bell, and I am done here, so thank you very much for your attention, and for those who are interested in mathematics, there is two appendices that try to summarize what we are doing in the paper, so thank you very much.

DR. POWERS: Thank you very much, Hans, and thank you for ending right there, in fact, perhaps even early, but let us move on to our next panelist or presenter, who is Rafael Dix-Carneiro at Duke University and also a visiting scholar now at the U.S. International Trade Commission.

Rafael, take it away.

DR. DIX-CARNEIRO: All right. Okay. All right. Classic question. Can everyone see this?

MR. SECRETARY: We sure can.

DR. DIX-CARNEIRO: All right. Classic answer. All right. Thank you very much for the invitation and to pursue
me to present my recent work with Joao Paulo Pessoa, Ricardo Reyes-Heroles, and Sharon Traiberman, and the paper is motivated by the fact that it has been widely documented that large globalization shocks, such as the rise of China, trade localization episodes, these shocks have been leading to substantial disruptions in the labor market, and this empirical literature has led to an increasing interest of trade economists in modeling and quantifying the labor market adjustment process in response to these shocks.

And that literature has mostly focused on measuring and unpacking mobility frictions that workers might be facing in switching sectors or occupations, and we have used these models to quantify the implications of these frictions both for the adjustment process but also for their distributional consequences, right? And many of us have also used these frameworks to think about policies that might be implemented by the government to smooth some of these consequences of globalization shocks.

Now this literature has mostly focused on small open economy models, though, and on the other hand, multi-country, multi-sector general equilibrium models tend to be static and, typically, they don't allow for unemployment and they tend to be silent about the role of trade imbalances for the labor market adjustment process.

So what my collaborators and I have done here is
that we developed a model which is a multi-country and
multi-sector general equilibrium model where, one, we're able
to understand the adjustment tasks economies go through in
response to globalization shocks, okay? So we're going to be
able to characterize how economies behave dynamically in
response to changes in the global environment.

The other thing is that we also are able to think
about problems of adjustment that arise when economies face
large globalization shocks, okay? So we're going to be
thinking about whether it is hard for workers to move across
sectors, across occupations, and whether, when they do,
whether they're going to be facing unemployment spells, and
then finally, and what is really special about this project,
is that we're going to be thinking about the role of trade
imbalance in this adjustment process, okay, and in
particular, we show that trade imbalances can actually
magnify problems of adjustment and can have important impacts
on the labor market, okay?

So a bird's-eye view here is that this is a
practical model that can be used to study the impact of trade
policy on the labor market with a quite rich set of labor
market facts. Yeah, so what is the paper about and what is
the model, what are the different pieces of the model. So we
again have a model that can be taken to the data, so it's a
model that is estimable, it's a general equilibrium model.
with many countries in many sectors, okay?

And this model is going to have three main building blocks. So the first building block is that we're going to have consumption-saving decisions in each country commended by a representative family following the spirit of Obstfeld & Rogoff, and these consumption-smoothing decisions, if you wish, at the country level is going to be generating trade imbalances, okay?

So the second component of the model is that we're going to have labor market frictions across and within sectors, so mobility frictions across sectors are modeled according to Artuc Chaudhiri McLaren, and these are models of classic mobility costs, so workers here are forward-looking. They're looking at wages in each sector, but whenever there's a shock to their sector to another sector, they're going to be trading off net present values of choosing a sector, but they have to incur mobility costs in order to switch sectors.

Now, even when they switch sectors, they're not guaranteed to find a job in the new sector because they're going to facing certain matching frictions within sectors, and this is the part of the model that is going to be generating unemployment.

Now we're going to be wrapping up all of these components into a comparative advantage model with costly trade. This is more of the bread and butter of trade.
economies these days because it'll be based on the comparative advantage model of Eaton & Kortum and Caliendo & Parro if you want to have input/output linkages across sectors.

Now it's said the model can be estimated, and it can be estimated using data from the work input/output database if you want to get information on various aggregate variables from many countries, ILOSTAT to get information on unemployment rates across countries, and we can also use microdata on wages in worker sector transitions across countries in order to be able to estimate these mobility costs that workers face in switching across sectors.

So here's a bit of a slide with some of the findings that we got in this paper. So, first, we find that modeling trade imbalances can be quite consequential for us to understand transitional limits in response to globalization shocks. We do get quite distinct dynamics of adjustment compared to models that just impose that we have balanced trade, okay?

Interestingly here, maybe for policymakers, we don't find that trade imbalances are systemically related to changes in unemployment, okay? We can actually have trade surpluses, countries going through trade surpluses and still going through increases in unemployment in the same way as we can have countries going through increases in trade deficits.
and also experiencing increasing unemployment, so we don't find such a systemic relationship here, okay?

When we apply our model to the China shock, we actually find that, one, the China shock did lead to a sizable deterioration of the U.S. trade deficit between 2000 and 2014. We find that China accounted for a quarter of the decline of manufacturing in the U.S. over that period, and, actually, this estimate is halved if we had instead considered a balanced rate model again here showcasing the importance of taking trade imbalances into account when you think about the labor market effects of trade, and also, if we had imposed a balanced rate model, we would drastically be underestimating reallocation towards services, okay?

Interestingly, though, we find virtually no aggregate unemployment effect with the China shock because many of these workers that lose jobs in manufacturing, they're able to find jobs in services quite quickly, okay?

Now the other thing that is interesting as well, and I'm just going to put it here for the interested economists, we do find quite distinct welfare predictions compared to the ACR formula, so adding labor market frictions in trade imbalances can lead to quite divergent predictions for welfare compared to the canonical way that trade economists these days used to compute welfare effects of trade shocks.
Okay. So one thing that I have to be up front here is that the current version of this model does not speak to inequality effects of trade, but we are currently extending it to allow for different types of workers as well as endogenous gap accumulation in order to be able to talk about the effects of globalization on the steel premium, okay? Now the model can be easily sealed up on the number of sectors and industries, and just a bit of an advertising here, what we're advising, we're advising the U.S. ITC's Office of Economics to add this model to its toolkit.

All right. So, since I was asked to think about tradeoffs here, so one thing that is interesting to mention, important to mention, is that our model does not feature realistic geography within countries and many papers have shown that taking geography into account can be consequential for how we think about distributional effects of trade within countries.

The other thing that is important to mention is that the current model does not feature a lot of worker heterogeneity, but, you know, there are other models out there that feature wide, rich heterogeneity, but these models demand a lot more information on workers, and in particular here, I have a paper and my co-author, Sharon Traiberman, has a paper as well using Brazilian data and Danish data to be thinking about very rich distributional consequences of trade
but in the context of small open economy models, okay? Now a note of caution here is that, you know, if you're thinking about using these models, if you're thinking about forward-looking individuals facing mobility across sectors, occupations, adding geography can be incredibly computationally challenged in here, high dimensionality of the problem is a bottleneck. So I'm done. Thank you very much, and talk to you later.

DR. POWERS: Rafael, thank you very much.

Now we are on to our next presenter, Kirill Borusyak at the University College London. Kirill, are you ready to take it away?

DR. BORUSYAK: I am. Rafael, maybe you can stop sharing so I can share?

DR. DIX-CARNEIRO: If I can figure out how I can stop sharing, I will. I cannot.

DR. BORUSYAK: Okay. Can you see my screen now?

MR. SECRETARY: Yep, you're all good.

DR. BORUSYAK: Okay. Excellent. Let me just move this other window away. All right. Thanks a lot for inviting me on this panel. It's a pleasure to see all the other presentations and I'll try to briefly talk about two papers actually, one about distributional effects of trade here and evidence from the U.S., which is an exact analysis of small trade shocks, and we'll look at the distributional
effects of these shocks through both cost of living and wages, and the other paper was experiential shift share redesigns, which is a methodological paper at the core focusing on shift share regressions like many that you have seen today, especially on the first panel, but I'll focus on how we revisit the Gordon and Hanson seminal study of the China shock.

Okay. So, on the trade and the cost of living first, so our idea here is that one can do a forward-looking analysis of a potential counterfactual trade shock based on measuring exposure of different consumers to these shocks, you know, the economics of it is that if you have a small and uniform change in import prices, then the effect of this shock on the cost of living or the price index of any household is governed primarily by the share of imports and the spending of that consumer, and, you know, households buying more imports will gain relatively more when the import price falls, and so it boils down to just measuring how originating import spending.

Of course, you know, there are many details. You need to measure the import share carefully, including intermediate inputs which are imported but then used in domestic goods production. Of course, this results about the sufficient statistic requires assumptions. For example, you need the perfect pass-through of cost enterprises for it to
work, but at the same time, it is kind of non-parametric and
regardless of preferences of consumers, so you don't need to
think about substitution patterns and so on. You just need
to measure the exposure.

And important is this approach in nature naturally
applies to more uniform shocks like, you know, we'll look at
the trade war with China specifically, tariff elimination and
so on, and so then kind of empirically the problem here is to
measure heterogeneity in import spending for which we build
three complementary data sets. Why so? Well, because, to
measure import spending of a given household or household
group, you need to see imports in terms of each product and
then the consumer-specific expenditure shares, and that's not
easy.

So we'll kind of do it in part. We'll first look
at some groups' spend on categories of goods which are more
imported on average, more than others, so that, you know,
will match consumption data from consumer spending survey to
the IO tables as a measure of import shares, but I'll also
look at whether reach of more household, indicated or not
indicated and so on spend more on imported goods within some
categories of products, specifically fast-moving consumer
groups using the Nielsen consumption data merged with
economic census data on trade and the same for motor vehicles
again to see who spends -- who buys imported cars in the U.S.
and who buys domestic.

And so our overall finding is that while import shares are similar across income groups, education groups, whatever groups, it also holds for China, it holds for, you know, specific products involved in the 2018 trade war specifically and so on, suggesting that probably these shocks do not affect the inequality of cost of living in the U.S.

The final part of the paper in terms of cost of living is to compare our measurement strategy with an alternative popular approach, for example, from the well-known study, which doesn't measure -- which doesn't observe, you know, household specific or income group specific import shares but instead leverages across country more standard trade data to identify which products should be equalized from cross country.

The data predict within country heterogeneity in import shares and found very different from us strongly proper gains from trade shocks, from trade liberalizations, and so we show high sensitivity of such estimates to the demand system assumptions which are necessary for this approach, in particular, the aids in that system used by a number of papers, mechanical engineer rates before gains, we find that a different demand system of -- matches our measurement better, but, ultimately, if you can measure, that's all you should do, okay? So that's the first part
Now let me quickly talk about the second part about the labor market. So here again our paper tries to argue that a key statistic or key set of statistics you want to understand is heterogeneity in exposure of different workers, like different earnings group or the education groups, to different margins of trade, and that will be informative about the effects of counterfactual small trade shocks in the labor market.

And the idea here is that well, labor demand for these workers originates from product demand, and so, you know, worker groups which are kind of best exposed to trade shocks in various ways, they're the ones for whom the labor demand will grow more, and this exposure depends on, like, was the industry or the firm where you work at supposed to grow after the trade shock or shrink, and that is, in part, determined by observables, things like, you know, export and import competition measures in your industry or firm if you can measure that and similarly imported intermediates.

And so, by measuring the exposure of different groups of workers to these margins of trade, we get very useful information about the potential counterfactual effects of trade shocks. Now that's not all you need, and like the cost of living side, you also need elasticity as a substitution across different goods, which we calibrate, but
mainly we check robustness to various values of that, with
the idea that if there are no differences of exposures and
whatever, elasticity of good, it's unlikely that there will
be differences in impacts.

As a final step here is to translate changes in
labor demand predicted by the exposure statistics in the
changes of wages, which requires thinking about the labor
market mobility more, which we do a little bit on, but,
again, if there is no difference in exposure, we don't expect
a lot of systemic difference in incidence, so we formalize
and implement these ideas in a simple quantitative trade
model that are static, very simple. I'm not going to spend
time on it quite yet, and so, again, we define that on
average worker groups in the U.S. by earnings or education
have very similar exposure to the various margins of trade
that we can measure.

At the time same, there is a lot of heterogeneity
in exposure within these groups coming from different
industries, you know, some are exporting, some are not and so
on, and so, as a result, we see that and we predict that
there will be little effect of small trade shocks on income
inequality while there may be strong heterogeneous or
distributional effects as long as mobility of workers across
industries is limited, so we call this horizontal
distributional effects, which are kind of musical chairs.
They move around workers and create winners and losers within income groups rather than across, so we kind of conclude that at least through the mechanism that our model can understand, trade wars are not class wars, unlike the popular, you know, phrase these days.

And now, finally, in the last three minutes, let me switch gears completely and talk about shift share designs and regressions which are a popular tool for exposed evaluation of observed trade shocks. They are central to the local labor markets approach and therefore informative about the spatial inequality aspect of our theme today, and, as you all know, exposure in a typical scenario, exposure of region I to some shock, like, you know, a growth of import competition with China, is the sum across manufacturing industry.

G is also local employment shares times the measured industry shock, and so the popularity is in part due to the fact that by comparing regions which are more and less exposed and not industries, we can better capture skill over effects, for example, on an effect of the industries within the same affected regions, and so our paper shows that we can think about these regressions, even though they are the regional level, we can think of identification of them as coming from the industry level and so whereas an industry level as good as randomness assumption, which is not a
trivial assumption by all means, but still it guarantees that
the idea or less regression that you're running is going to
be valid.

We also propose it by, you know, industry-level
balance test, corrective errors there and so on, a bunch of
practical tools which would verify these assumptions and make
your estimates actually correct within the philosophy or, you
know, thinking -- we're thinking that the industry
exogeneities is something which is relevant in these
regressions, and so a particularly important kind of
empirical message, practical message from our study that I
have the last minute for is what I call the incomplete share
problem.

So, you know, all this is good. You can have
exogenous shocks, but you need to put in an extra control for
education to actually come from the industry heterogeneity,
which in the simplest case is the -- it's always the soft
share of exposure shares, which since trade shocks only shift
manufacturing, it's basically the local share of
manufacturing employment, and without it, we're not comparing
different, you know, regions with alleging different things,
such as wages.

We're just comparing manufacturing to
non-manufacturing heavy industries, which may suffer from
different shocks at the same time, and so, you know, a slight
complication here is that, you know, this is a simple control, but if our industry shock is only exogenous, conditioned on some observables like if you want to put time paradigm is -- then you should interact the sum of shares, the local manufacturing share wisdom and so, once we revisit the ADH study, the initial ADH study including that control, we find that the results change, and that's something which we hope will be taken by following work, which it hasn't always been.

So we see that, for example, in the initial paper, the effects on manufacturing employment of the China shock go down by about 30 to 55 percent, remaining insignificant, while the negative effects on various other outcomes, like non-participation in labor force or unemployment wages, they all become small and insignificant, which absolutely doesn't necessarily mean that the China shock didn't affect those margins, but it does mean that the initial regression doesn't really suggest that, and, again, we hope that this is something which, you know, this control is something that everybody should pay attention to in other work of this sort.

Thank you very much.

DR. POWERS: Kirill, congratulations on getting through two papers in the very short time period allotted.

Now we are moving on to our last presenter, Michael Waugh.

MR. SECRETARY: We sure can.

DR. WAUGH: Great. So I got to preview anything I'm going to say does not, you know, reflect the fed or my fed in Minneapolis. So I'm really happy to be here. This is a paper that I worked really hard on in the fall of 2019 leading up to the negotiations with China and then Covid hit and it kind of died with Covid. I stopped working on it for a while, and then I'm happy to bring it back and hear your thoughts on it.

So, in about 2016, I became very interested in distributional issues in trade. And I kind of came into this actually coming from the modeling side, is like how do I want to think about a model that could reconcile the stuff that we see in Autor Dorn and Hanson, and, you know, in my head, a bunch of questions came up, but one of the questions that this paper kind of seeks to address is this idea that -- so we see a lot of action going on on the labor market side. In fact, all today a lot of people are saying we see this particular aspect of, you know, labor market impact from trade, but, you know, conceptually, what you want to do is, if you want to get a welfare statement, is you want to go labor market into consumption and then into welfare.

And this was kind of a missing piece that I saw in
the literature, is, like, how do I actually get to something like what we see -- like see that shows up in the utility function, how that moves in response to a labor demand shock. Now the problem about this is it's very hard to measure consumption, right, and so that's kind of one of the innovations, I marshaled a bunch of resources to kind of do this, so let me tell you how I do it.

So I'm going to exploit the U.S./China trade war and in particular the first episode, which was very rapid, geographically disbursed, but I'm going to layer on top of it what I'll argue is a very high-quality measure of expenditures by households at a narrowly defined level, and the way I do this is I'm going to have the universe of U.S. new auto sales by month by county covering that whole particular time period. I mean, this -- I'll come back -- I'll talk more about this, but this is essentially administrative-level style data set, and then I'm going to do something super simple. I'm just going to be correlating them with the geography at the county level with actions in the U.S./China trade war.

And you see super clear evidence in particular on the Chinese retaliation side, so counties that had higher exposure to Chinese retaliation, you see consumption drop quite dramatically and in particular in response to what looks like poor looking behavior, so it actually looks like
expectations are buying import in bulk here, you know, and I'm not going to talk about it today, but this kind of fits in with like what Rafael is doing, is I'm going to layer in on top of this a, you know, heterogeneous agent, multi-region, multi-country trade model to kind of interpret this evidence, and this is partly work in progress, but I won't go into this today.

So I just got to always be clear about what I'm not doing, so there's, like, a sequence of really important papers about the U.S./China trade war, but I call it that they typically think about the standard way to go about this is, like, trade is affecting prices, variety, and then that feeds into consumption and welfare, all right? That's not what I'm doing, all right? I'm connecting it thinking more conceptually with this labor market side is that trade at a narrowly defined geographic level is affecting labor market outcomes.

And then I want to see how that feeds into consumption. That's the idea. That's the whole premise of this, and so, again, like we saw concept papers on this, you know, we know something from today. We know something from Autor Dorn and Hanson about the first arrow, but the second arrow we kind of don't know a lot about, so that's kind of the real key contribution of this paper.

Let me just add one more thing about this is why I
think consumption is important, is it's from a normative standpoint for how to design policy. So one way to think about this is actually in the context of this paper by, like, Mark Bailey and Ron Arshetti, there's two papers. But the basic idea was about how you design off the mole unemployment insurance, and one of the key results that comes up on those papers is you need to know how consumption responds to an unemployment spell, so the way to think about this is if I know how the consumption is responding to the trade shock, then that can help me design how I should, you know, design trade policy or some other kind of insurance in response to the shock, so that's why I think this is something.

So the way I correlate with this geography is pretty simple. It's similar to what people have done. I'm basically going to take the tariffs from the U.S. side and the Chinese side and start at like the highest level, merge it into NAICS and then use 2017 employment statistics from the BLS to construct, like, you know, apportion the tariff based on, you know, how much employment is in a particular sector, so it's always like, if you get confused, sometimes I do, for example, if a county's employment is all soybeans, then that county is going to be effectively facing the soybean tariff, all right?

Now most of the results here that I'll talk about today, you know, is on the Chinese side, but I have some of
the U.S. side isn't as clear. I can talk about that more later. You know, the one other thing when I do this is I only focus on the initial period of the U.S./Chinese trade war, and partly that's to avoid a treatment on a treated problem when you start looking at the last period, so I'm going to be exploiting this like very fine window and when you see these rapid policy actions, so this is like a very high frequency study.

So this is kind of -- I mean, I'm not going to talk too much about these maps, but, you know, a lot of people have maps today, and then Kirill didn't have a map, but, you know, this is, you know, the Chinese retaliation in particular hit agriculture, rural kind of counties, so that's in a sense about, you know, the kind of communities that this is affecting, the Chinese retaliation. U.S. retaliation is -- or U.S. actions were correlated with Chinese retaliation, but it was more upper Midwest kind of thing than less agriculture.

So now here's the consumption measure. So I purchased this from IHS Polk. I actually have an NSF grant that allows me to continue to purchase this. It's at the county level by registration, so this is important, so it's actually where people are registering it, not where they're buying it, so if I bought when I used to live in New York, if I bought a car in Pennsylvania, it's going to show up on my
data set as being in New York, right, because it's registered
to my household, so I have it bi-monthly, so it's high
frequency.

I actually have actually minor details. I have it
make, model, and so forth, and this is derived from
registration at the state DMVs. You know, this matches
national and common product accounts that are like within
like decimal points in terms of -- so I basically capture
everything. You know, you can't match this data set in terms
of high frequency, geography in near real time. Like, I was
doing a bunch of this stuff in fall 2019, so I could see
actually very quickly what was going on. You can't see this
in CX or the PSID.

And then the other issue is it's not sent like, you
know, another question that typically comes up is why don't
you look at the -- credit card data stuff. Typically, these
data sets have, you know, sampling or, you know, various
restrictions on who's looked at, whereas this is the
universe. I have the universe here, so here's like kind of
the main result, and once you kind of unearth this, you kind
of see a lot of stuff, so this is just simple -- two by two
diff and diff kind of thing, so I'm going to chop this up
pre-trade war, post-trade war. I'm going to define it as
June 2018, all right?

So the first column says -- this is in the Chinese
retaliation side, upper quartile of the change, so who got
hit the most, bottom quartile who got hit the least, and then
that's pre-trade war, so the way to interpret this is these
are in log points, but this is like upper quartile was like
growing, auto sales were growing at about one percent per
year, and then the bottom quartile, auto sales were growing
at about one percent a year, so when you kind of look at
this, it looks like the trends in auto sales across these two
different types of counties are about the same.

Post-trade war, what you see is both growth rates
go down. Partly, that's because of my employer, my employer
now, they were raising interest rates during that time, so
that reduced the auto demand, but what you see is in the
upper quartile, the places there were more exposed, they saw
larger decreases in auto sales growth, all right? And you
can do -- visually, I'll show some regression scales which
have both the U.S. and the Chinese tariff. You know, columns
1 and 2 are just the most simplest kind of projections that
you could see, so just projecting auto sales growth on this.

Column No. 3 shows that when I include both, what's
happening is everything's loading on the Chinese retaliation
tariff, and then 4 and 5 include various time effects and
then time by observation controls, which actually kind of
look like the stuff that Kirill was talking about, the last
thing here, and what again comes out very clearly is that
counties that were more exposed to Chinese retaliation saw actually substantial decline in auto sales growth in response to it. So this is my sense about like auto sales isn't all consumption, but it's a sense that it's picking up, you know, declines and you can see.

I'll end on this table here. This is kind of projecting on the forward, so it's trying to pick up anticipation effects, and, again, here, leading up into the trade war is you see this stuff is in, you know, the standard error, no effect of the lead, but then almost on announcement, you see a big drop in consumption, so the consumption response does look like it's not only picking up, you know, what's happening today but expectations about the future, and that's kind of like the whole point about, you know, adding in the model is that here I can then think about, you know, both how people are reacting to expectations about how this is going to play out in the future, so I'll just end it here and then we can talk more in the chat. Thank you.

DR. POWERS: Thank you, Michael.

So we are moving in to the question and answer portion of this. I don't believe we have any from the audience yet, so I would encourage you to send in your questions to de@usitc.gov, but I have several questions, and one of the issues that I've heard across several of the
presentations today is ex ante analysis, and as an organization that provides analysis and things approaching advice to policymakers, the Commission is often tasked with doing ex ante analysis, and oftentimes policymakers very, very much want to know what the effect of something that they are considering doing will be on, in this case, you know, a distributional population.

But, you know, in any of their policies, they like to know, and we are one of the places they come to, so, you know, we know that the benefits of CGE in ex ante analysis, and we heard that from both Maryla and Hans, you know, they are disaggregated. They can look upstream and downstream. They can look at the effects across sectors. They can look at the effects across countries, and so that's what we've got going on there, and now, Rafael, I think one of the challenges with these CGE models have traditionally been that it's very difficult to incorporate any regional data into them.

And, Rafael, it was quite interesting to hear you say as well that it's quite difficult to integrate regional information into yours, and that may just be, as you said, fundamental to any forward-looking GE model, so let me ask this. Which of these models, given that this is a requirement, this is something that stakeholders absolutely have interest in knowing and really want to know to get their
policies right, how do we go about -- given all the tools we have at our exposure, at our command, how do we go about doing that type of ex ante analysis? What's our best set of tools right now?

DR. DIX-CARNEIRO: Was it a question for me specifically or for everyone?

DR. POWERS: For the panel, but, yeah, why don't you lead us off because you kind of started us down that direction.

DR. DIX-CARNEIRO: So, okay, I'll take the lead because, I mean, very coincidentally, we just had a seminar here at Duke by Rodrigo Adão, who just wrote a paper with Dave Donaldson and Arnaud Costinot precisely on that question. You know, trade economists, typically, we don't have much of a culture to, you know, assess, you know, how our model's predictions are, which is quite different from what actually the macro-economists have been doing, which they're all the time assessing how their models are doing out of samples.

So there's something we don't have this culture, and we've been debating over the standard areas is because of lack of data, is this because, you know, trade economists mostly work with the same models and so forth, but I think that the truth, and I think I'll be honest here at least from my side, is that we don't know how well some of our models
actually do in projecting some of these counterfactuals, and I think that the big value here about estimating an instructional model and simulating it is mostly about really understanding the mechanisms and getting a good picture of the magnitudes that are involved in these counterfactuals, but I'm very curious to hear other people's perspectives as well.

DR. POWERS: Thank you. Kirill?

DR. BORUSYAK: Yeah, so just to add to what Rafael said, I mean, I think these like at least two papers by Rodrigo Dow are pushing us very nicely in that direction and specifically in terms of how we can, you know, achieve this goal of evaluating our models, right? So something which I don't think, you know, our field has quite adopted yet but should is to take the same model using a historical, you know, episode of trade policy, predict, you know, what the model, you know, see what the model predicts, and that can be done for any model as complicated as you wish, and then regress the truth in the prediction and the coefficient has to be one, and nothing else should predict -- you know, everything else should be unpredictable, and I think that, you know, Dow's papers are doing this, and I think we all should.

DR. POWERS: Thank you. I see that, Michael, you've got your hand up as well, and then I think Maryla
after that. All right. Hans, we've got the full group. Michael, please.

DR. WAUGH: Yeah, I just wanted to kind of take a different take on this, is that, you know, for example, like what Rafael is doing today is, you know, a lot of -- you kind of strip down the forward-looking model to kind of investigate mechanisms and kind of understand things, and then, like, for example, your question is how do we do forward-looking analysis, and, you know, one of the things that comes up, though, is -- I'd like to hear this from you is how do we think about policy forward-looking analysis, and, you know, some of these models and a lot of these models is there's kind of no role for policy because the allocations in these models are first best, and so somehow we need to think about, well, what is the source of the inefficiency.

Maybe that's the -- you know, and partly that's why I started talking about the consumption, was, you know, you could have a bunch of labor market frictions, but if you have a complete markets allocation, even though people aren't adjusting on the labor market side and the consumption side, everything's a-okay, so I think the thing is like forward looking, I mean, I would kind of say is like, well, what's the friction? Like, how do we kind of answer that and then evaluate policy.

DR. POWERS: Michael, I will return to that.
Hopefully, I'll have a chance to give my impressions, but first I'm going to go to the other panelists. Maryla?

MS. MALISZEWSKA: So thank you. I'm going to give some substitution models. I'm going to maybe be a little controversial by saying that we now have the -- what -- how good we are at predicting the future, they are terrible, and there's no doubt about it, but that's just by design because the world is so much more complicated that we should ask for better tools to predict the future and adjust the ability to do a default ex -- to understand the mechanism, which sector is the order of magnitude, but the world is so much more complicated, which I think we've learned from the analysis exposed on areas of soft math, which basically doesn't reflects volumes of G models.

They just are an immediate view of the world, so if you're missing FDI, if you're missing other macro development, the labor market is mostly driven by market development models that have trade, even don't have a good handle on technology and that that's driving a lot of like trade decision. We don't have often -- I mean, I know the U.S. ITC has a model of FDI, but, nevertheless, there is a lot more going on, so even though I think it's a valuable exercise and I know that Peter Dixon does an amazing job for U.S. economy of trying to do this exposed validation experiment, I still think that we should acknowledge the
limitations and maybe the goal should still be improving the models but never use them for prediction, just for understanding the mechanics that work.

That's my take on this, and then the original question I think, Bill, was what they're good at doing, what they're not so good at doing, but maybe we'll come back to it, so I'll turn it over to Hans.

DR. POWERS: Hans.

DR. LOFGREN: Okay. Well, I have sort of a general observation that it is actually very difficult to compare these different models because they're enormous in terms of the labor disaggregation, the household disaggregation, the sectoral disaggregation, whether you have regions, what kind of policy tools you have available in the model, and then the question is then what is it that is relevant to the policymaker and what is the empirical validity of this, so it's a very, very difficult question to answer, and, unfortunately, the literatures are quite sort of separate here, the ones that we have recorded here.

I think there's a strong case for doing model comparisons because often models are actually sometimes deceptively similar, but they look much more similar than they are, even models that are quite -- sort of belong to the same class are making assumptions that are actually quite crucial and different, so I think to put an effort into that
I think is quite useful. It has been done in the CGE area for energy policy analysis to try to understand why do you get different results.

And finally, regarding the CGE models, of course, I mean, we are doing counterfactual simulations. We're saying that, you know, Factors 1, 2 or 3 are changing and we see what will happen in the economy over time if you do that, but, of course, in the real world, you know, 10 other things will change too at least, right? So we don't know about the kind of information about. It's a big challenge. Thanks.

DR. POWERS: Thank you, Hans. I think you made an excellent point there that I actually was confusing two different questions. One is for the empirical validity and then one is the relevance to the policymakers, and I know that, Maryla, you were just about to say something about what they're good at and what they're not good at, and maybe that would get to that second question. If you could maybe chime in on that one? I know you mentioned you might have some thoughts on that.

MS. MALISZEWSKA: Yeah, so, basically, what I was trying to say, that indeed, like, we -- maybe we cannot predict the future exactly like Hans said. There are so many things we cannot predict, but what we can do is to think through the consequences of different scenarios, so the policymakers are facing different choices in trade policy.
areas as to whether, you know, reduced barriers to trade through tariffs and Ems or trade facilitation reforms.

And, basically, our limited resources, you need to decide what's going to bring the biggest benefit and who it might hurt and what degree, what are the potential winners and losers. I think that's the advantage of having these filtering models, and, basically, the most we can do is to try to improve the data to try to improve the models themself or how do you tackle different workers, transition across sectors, substitutability across different occupations. Maybe if we can build in tasks as well, I know that you can also -- there are CGE models that have some national component built in. There's models for U.S. and so just improving the data side, improving the mechanisms that we cover, I think that that's going to get us to produce better results for policymakers, more valuable insights.

DR. POWERS: Thank you, Maryla. I would like to return back to Michael Waugh's question earlier. Michael, I didn't want you to think I'm ducking it, but I did ask around other things, so sort of what are we looking for? Or, first, I guess to the Commission, what am I looking for in these things? And I think, if you hear what Maryla just mentioned in terms of tariffs and non-tariff measures and trade reforms, the types of things that U.S. policymakers are interested in, and we're an independent agency and we give
analysis to both the executive branch and Congress, really
spans an enormous amount of things.

And so one of the things that a practical model has
to be able to do is you need a whole basket of different
models to analyze things, which is one approach and one that,
you know, certainly don't put all your eggs in one basket, or
you need to have one that's fairly adaptable to putting
different types of policy shocks in it. It's often about
what does this provision in a trade agreement do, and so it's
actually is there any way to put a provision effect, you
know, in an agreement, you know, and into a model and so that
it has to be flexible enough for that.

And I completely understand what you're asking
about. You know, your paper makes this great point about,
you know, labor market frictions are not really going to
affect much if you have complete insurance and, obviously, we
don't. We must not have complete insurance because they sure
do affect consumption, but even before I get to the analysis
of what those inefficiencies are and that helps me choose a
model, I have to figure out is the model practically
applicable to the multitude of questions that I'm likely to
get in this situation?

All right. I do have a question for Kirill,
specifically for you, and sorry to just -- and maybe you all
can just chime in, and this is the question I sent you
earlier, and you didn't get a whole lot of time to get to it in your shift share analysis, but we have heard that type of analysis applied repeatedly today and you have suggested that perhaps with the addition of additional controls -- there was some -- before your paper, there was some talk in the literature that perhaps that wasn't what -- Autor Dorn and Hanson were using, for example, weren't good instruments.

But you said with the addition of additional controls, it is actually a pretty reasonable approach to doing this, but if you look at it, wait a minute, some of these effects are lower or not even significant. Given how pervasive this method is in the literature right now, how reassured should we be by your findings or how worried should we be by your findings?

DR. BORUSYAK: I mean, you know, I think there is -- let me give you two answers to this question. One is idealistic and one is realistic. The idealistic answer is that, I mean, you know, no empirical work is ever perfect, and as long as we get our best estimates, that's as good as it gets, and so I think that, you know, our paper tried to contribute some tools to improve the estimates, and our paper did it in one dimension, but there are many others like, for example, again, the work of, for example, Dow -- and Esposito, and the spatial spillovers of these shocks is another dimension muted by the initial shift share which can
be incorporated into the shift share kind of reality, and, you know, if you take all of the things and put together, you'll get the best estimate you can.

Now, on the other hand, that requires diffusion of the tools, which is something which we don't see fully, and I encourage everyone using the methods to pay serious attention for the data I showed in the case of the initial Hanson paper, you know, matter quantitatively for the most important estimates we have in the literature.

Now, again, this doesn't mean that, you know, the change didn't have an impact to anything. In fact, the 2021 paper of Autor Dorn Hanson didn't make -- you know, didn't exclude the control we're talking about and still found significant impact. They also changed many other things, and so I don't quite know which changes contributed, but, you know, I think we should try to adopt the best, you know, tools here to, you know, get the estimates which are certainly better than the ones without them.

DR. POWERS: Thank you. I've got five minutes left and I'm hoping -- I think it's -- is it five or 15? Jean, what do I have?

MS. YUAN: I think we are actually still having, like, eight minute and a half.

DR. POWERS: Oh, thanks. I lost track of the clock. Thank you. I've got eight-and-a-half minutes left.
Thank you, Jean.

So I've got one question here, and it's about what we would find if we added distributional effects, additional types of distributional effects into our model. I'll just give you some examples.

Michael, you had talked here in this back and forth that, you know, the large difference between consumption -- that large changes in consumption means that firms -- people -- excuse me -- workers can't ensure against these shocks. I think our ability, given the differences in wealth by demographic groups and other things, I think that that could be pretty substantially different by demographic groups.

On the other hand, I think it was -- you're finding it's not -- you know, that some of these heterogenous effects are not that strong. I may be mischaracterizing that, and if I am, it would be worth having you put that out there for us.

Rafael, you mentioned that getting it into your model is hard. But, if anyone has any thoughts about, you know, what we would -- how large these effects would be as we put them into our models, I think that would be great to hear.

Michael?

DR. WAUGH: Yeah, so let me, like, lead off on this. I mean, I have several papers that have these distributional issues floating around. So I wrote a paper,
you know, both with Spencer Lyon, and it's a -- where there's a distribution of wealth in locations. Having the geography is a little abstract, but it's in a way that we can solve it. And one of the things that comes up is exactly what you're talking about, this notion that if you have a demographic group that's relatively poor in terms of wealth and then even if you have a small income shock, but you're hand to mouth, so you don't have any ability to smooth it, it's going to be very painful. So we can think about various demographic groups that have very low wealth, and when you have these just small shocks in income, it is a bad thing.

And, you know, the only thing that I'm going to add to this conversation is that in one of the papers with Spencer, what we did was we thought, how can you make things better? How can policy improve outcomes? And someone suggested this earlier, is what you do is you use a progressive tax scheme, and, in fact, you make the tax scheme more progressive as you become more open. And what that does is naturally provide insurance to those low income, low wealth households when you open up to trade.

DR. POWERS: Thank you.
Rafael, have your hand up?
DR. DIX-CARNEIRO: Yeah. So, I mean, there are different models to answer different questions. So the model that I presented here today, we don't speak to inequality,
but in past work, the focus has been on inequality of facts of trade. And I have a paper focused on Brazil where there I take heterogeneity very, very seriously. Workers can be heterogeneous in terms of education, age, gender, and sector-specific experience and also in innate ability across sectors.

So you have many dimensions of heterogeneity in this other paper, and we actually showed that, in the context of Brazil, shocks to sectors can have very large distributional consequences, right? So workers in sectors are affected by, adversely affected by price changes. These workers lose relative to the other workers. So that's one dimension of distributional effects.

But even within the sector that is hard hit you have very large distributional effects within the sector. For instance, older workers face much larger cost of switching across sectors, older workers lose disproportionately more than younger workers, and educated workers face lower costs of switching, okay? They tend to lose less than less-educated workers.

So, again, a different model for different questions, but, you know, in the context of Brazil, if you have a model with very rich heterogeneity -- but for this kind of model, you need a lot of data as well. So it's not easy to characterize these distributional effects in any
context.

DR. POWERS: Thank you, Rafael.

And, Kirill, if you'd like to jump back in and correct whatever I got wrong on your model, that would be fantastic.

DR. BORUSYAK: Not too much, but just a couple for a couple of comments. So, in terms of what I presented -- sorry I didn't have a lot of time to speak in detail -- what our results show is that across the income dimension, which is the one relevant to inequality -- indeed, there doesn't seem to be a lot of heterogeneity through the mechanism which our model can understand, which is not all mechanisms and, you know, other papers today have shown very interesting others -- there is a lot of heterogeneity within income groups, right? So, yeah, and that's the kind of horizontal versus vertical distributional effects that we want to emphasize.

Now, on a broader point of, like, you know, how do we learn about this, I think a useful framework here is to think that the effect of any shocks on different people can be different for exactly two reasons: either their exposure to the shock is different, or their elasticity, kind of responsiveness, to the shock is different.

And, typically, exposure is easier to measure, and the elasticity is where structural modeling does a lot of the
heavy weighting, and that's significant, and that's fine. It's just that, you know, I think it's useful -- and our paper tried to do that as well -- to kind of measure what we can measure first, and if we don't find heterogeneity exposure, then you need to provide quite strong evidence that the elasticities that we are getting, which are always more difficult objects to measure, are real, and, therefore, our distributional effects is real.

And, of course, we know that there are real distributional effects. It's just that I think that the kind of burden of evidence here is stronger.

DR. POWERS: Thank you.

All right. Well, we might have time for one last question, and I think I'll throw it up to Hans. Hans, you know, I find this quite interesting. You were talking earlier about some of the CGE comparison efforts we've had. And if I were to broadly characterize your approach, you know, you've got a GE model where you have introduced the cost -- the loss in productivity of a worker shifting from one sector to another. And you did that, actually, by looking at the distance in trade in some sense. I think, if I were to broadly characterize Rafael's work, I could say it's a GE approach that has, you know, worker labor market frictions in a similar way.

And I guess, if you were to compare these models,
you know, if you were to look at these, what question do you think would be useful that you could take these quite different models on the inside but somewhat similar models in generalities, and what question should we ask so we could put these against each other and have a horse race and see which one is closer to reality?

DR. LOFGREN: Well, I mean, maybe by Michael's thinking, I think that this model that I presented is really part of the broader CGE literature, so it comes with the pros and cons of that literature, but it's clearly better at looking at things that do not have so much to do with the dynamics, but more the incidents or specific detail, tariff barriers, non-tariff barriers, price changes with certain products, and so on, and who is being hit by that. I think that's a strong suit of these kinds of models. And now there are 13 seconds left.

DR. POWERS: Well, thank you, everyone. I think I'll use these 13 seconds to say thank you to my panel. It's been a lovely conversation. I really appreciate the very different perspectives we've taken in to this and some of the insights we've generated.

And I think unless Sandra or somebody is going to come on and lead us out for the day, Sandra, who should say thanks to everyone?

(Nonverbal response.)
DR. POWERS: I think Sandra's saying I should do it. Anyway, thanks, everybody. I thought this was a super interesting and great opportunity, a very unusual opportunity, to get so many different and relevant papers together. I appreciate it, I am certain that our requestor, the U.S. Trade Representative, has enjoyed it as well.

And on behalf of the Commission, I thank everybody, and I look forward to seeing as many of you as we can get tomorrow. Remember, this is a two-day event, and tomorrow we're going to start off by looking at some of the data issues and then move to an international and a broad-picture perspective, so please come back for that. Hope to get you all tomorrow. And I will see you soon.

MR. SECRETARY: Thank you, everybody. Hope to see you tomorrow.

(Whereupon, at 4:45 p.m. the meeting in the above-entitled matter was concluded.)
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