

Spring/Summer 2021

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RESEARCH FROM NEW TEAM MEMBERS

Trade, Internal Migration, and Human Capital: Who Gains from India's IT Boom?

Dear colleagues,



Due to the ongoing pandemic and resulting economic and health crises, inclusive international cooperation and effective development policies are even more important than before. As the DECTI team, we have been working together to understand the economic impact of Covid-19 to produce relevant research papers and inform policy makers. Our team's research on Covid-19 has received the DEC VPU team award this year. In this newsletter, we are presenting you with a few selected research and policy outputs, with a special focus on Covid-19, international trade, and jobs. I am very happy to have joined DECTI last September and to introduce three other new team members, Devaki, Roman, and Tristan who are most recently working on important research questions about migration, infrastructure, and poverty respectively.

Best regards,

Daria Taglioni



How do trade shocks affect welfare and inequality when human capital is endogenous? Using an external IT demand shock and detailed internal migration data from India, **Devaki Ghose** first documents that both IT employment and engineering enrollment responded to the rise in IT exports, with IT employment responding more when nearby regions have higher college age population. Devaki then develops a quantitative spatial equilibrium model featuring two new channels: higher education choice and differential costs of migrating for college and work. Using the framework, the author quantifies the aggregate and distributional effects of the IT boom and performs counterfactuals. Without endogenous education, estimated aggregate welfare gain from the export shock would have been half and regional inequality about a third higher. Reducing barriers to mobility for education, such as reducing in-state quotas for students at higher education institutes, would substantially reduce inequality in the gains from the IT boom across districts. (Preliminary draft available upon request)

[DECTI Web Page](#)

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Trade War and Global Reallocation

In this paper, Pablo Fajgelbaum, Penny Goldberg, Amit Khandelwal, Patrick Kennedy, and **Daria Taglioni** examine how global trade responded to the US-China trade war of 2018-19. They find that many countries increased their exports to the rest of the world while also increasing exports to the United States or China. Hence, the trade war created net trade rather than simply prompting reallocation. They also find substantial heterogeneity across countries in their export response to China, the US, and the rest of the world. This heterogeneity is driven by country-specific responses, rather than by differences in specialization across products targeted by the trade war. Through the lens of a general equilibrium model, these patterns reveal each country's demand substitutability or complementarity with the US and China, country-specific factor-reallocation elasticities, and product-level scale economies. Combining the model with the tariff variation, they quantify each of these forces and assess their importance in driving the global reallocation to trade shocks. (Preliminary draft available upon request)

Does Transit Infrastructure Reduce Informality in Developing Countries?



In this paper, **Roman Zarate** proposes a new mechanism to explain resource misallocation in developing countries: the high commuting costs within cities that prevent workers from accessing formal employment. To test this mechanism, Roman combines a rich collection of administrative microdata and exploit the construction of new subway lines in Mexico City. First, the author provides evidence that firms with larger wedges (formal firms) concentrate in the city center, while informal firms lie in the outskirts. Second, he shows that informal workers are more sensitive to commuting costs than their formal counterparts and, as a result, work closer to home. Third, he finds that transit improvements reduce informality rates by four

percentage points in areas near the new subway stations. He develops a spatial model that accounts for the direct effects of transit infrastructure in perfectly efficient economies and on allocative efficiency. Changes in allocative efficiency driven by workers' reallocation to the formal sector amplify the welfare gains by around 20%-25%. (Preliminary draft available upon request)

Income Distribution, International Integration and Sustained Poverty Reduction



What is the pathway to development in a world with less international integration? Penny Goldberg and **Tristan Reed** answer this question within a model that emphasizes the role of demand-side constraints on national development, which is identified with sustained poverty reduction. In this framework, development is linked to the adoption of an increasing returns to scale technology by imperfectly competitive firms that need to pay the fixed setup cost of switching to that technology. Sustained poverty reduction is measured as a continuous decline in the share of the population living below \$1.90/day purchasing power parity in 2011 US dollars over a five-year period. This outcome is affected in a statistically significant and economically meaningful way by domestic market size, which is measured as function of the income distribution, and international market size, which is measured as a function of legally-binding provisions to international trade agreements, including the General Agreement on Tariffs and Trade, the World Trade Organization, and 279 preferential trade agreements. Counterfactual estimates suggest that, in the absence of international integration, the average resident of a low or lower-middle income country does not live in a market large enough to experience sustained poverty reduction. ([Download paper](#))

SPECIAL FEATURES

Policy Research Talk on Firm-level Upgrading, Automation, and Industrial development

In recent decades, trade and international integration enabled a remarkable economic convergence. Several low-income countries leveraged strong export performance to rapidly industrialize and catch up with high-income countries. Despite this achievement, too many firms in developing countries remain poorly positioned to succeed in global markets. At the same time, a new threat is emerging. The automation of industrial production in developed countries – only accelerated by the COVID-19 pandemic—could hinder the future growth of export manufacturing in low-income countries. On the other hand, the pandemic accelerated digitalization and remote work, which could promote the offshoring of services to developing countries.

In the most recent policy research talk, **Paulo Bastos** presented evidence from several studies to identify key drivers of firm-level upgrading and industrial development, including entrepreneurial ability, exports, foreign ownership, and training. Paulo also discussed insights from recent research on the implications of robotization for trade between developed and developing countries, as well as new evidence on learning by working in high-skill services sectors and internationally active firms. Informed by this evidence, Paulo outlined and critically assessed policy options for promoting industrial development and openness-led growth in the recovery from the pandemic recession. ([Event Link](#))

Seminar on Covid-19 and Trade

The emergence of the Covid-19 pandemic is not only a global health crisis but also a global economic crisis preventing people from work and disrupting production and international trade flows. Professors Richard Baldwin (Graduate Institute Geneva), Vasco Carvalho (Cambridge University), and Simon Evenett (University of St Gallen) discussed the impact of the pandemic on

global value chains drawing lessons from their past research on other negative shocks, presented the new trade restrictions enacted as a response based on their own research, and discussed policy options recommended policy recipes to mitigate disruptive effects on trade in a DECRG e-seminar on April 22, 2020. The "Trade and Global Value Chains in the Age of COVID-19" seminar was organized by **Ana Fernandes** and **Daria Taglioni** and chaired by Aaditya Mattoo, Chief Economist of East Asia and Pacific ([Event Link](#)).

Policy Research Talk on Globalization, Poverty, and Inequality

The recent pandemic changed the relative output of sectors significantly, increasing in some, such as IT, and decreasing in others, such as services. This shift created challenges for many workers, especially low skilled workers who cannot work from home and lost their jobs due to the drastic decline of output in many sectors. Thus, the pandemic magnified the income inequality among workers, which was already large prior to 2020. How much did globalization contribute to the growing inequality and poverty among workers? Over the last decade, researchers have developed new empirical and analytical approaches to answer this question. In a recent talk **Erhan Artuc** laid out the facts, answers, and misconceptions surrounding this growing literature.

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

COVID-19 RELATED RESEARCH

DECTI Covid-19 Webpage

DECTI has a new webpage dedicated to the team's policy research on Covid-19. This work has received the DEC VPU team award in 2021.

<https://www.worldbank.org/en/research/brief/trade-research-data-and-policy-insights-on-the-covid-19-pandemic>

Five Ways that COVID-19 Diagnostics Can Save Lives: Prioritizing Uses of Tests to Maximize Cost-Effectiveness

Supplies of diagnostic tests for SARS-CoV-2, the virus that causes COVID-19 (coronavirus), are still limited in many countries, and there is uncertainty about how to allocate the scarce supply across alternative types of testing (use cases). In this Research & Policy Brief, **Tristan Reed**, William Waites, David Manheim, Damien De Walque, Chiara Vallini, Roberta Gatti, and Timothy B. Hallett quantify the cost-effectiveness of five alternative diagnostic use cases in terms of tests required per death averted. Across use cases, a single death can be averted by administering 940 to 8,838 tests, implying a large and positive return on investment in all use cases, even assuming a very low value for loss of life. That is, all five use cases pay for themselves many times over. When prevalence of SARS-CoV-2 is high, the most cost-effective uses of SARS-CoV-2 diagnostics seem to be clinical triage of patients, at-risk worker screening, and population surveillance. Test-trace-isolate programs and border screening are also worthwhile, although they are more resource intensive per death averted if done comprehensively. These latter two interventions become relatively more cost effective when prevalence is low and can stop the virus from entering a community completely. While governments should seek widespread deployment of tests in all five use cases, prioritizing them in this way is likely to maximize the cost-effectiveness of their use. As more contagious strains emerge, each use case will become more valuable than ever. ([Download Paper](#))

Do Immigrants Push Natives towards Safer Jobs? Exposure to COVID-19 in the European Union

In this paper, Laurent Bossavie, Daniel Garrote Sanchez, Mattia Makovec, and **Caglar Ozden** assess the impact of immigration to Western Europe on the exposure of native-born workers to economic and health risks created by the COVID-19 pandemic. Using various measures of occupational risks, they first show that immigrant workers, especially those coming from lower-income member countries of the European Union or from outside the European Union, are more exposed to the negative income shocks relative to the natives. The paper then examines whether immigration has an impact on the exposure of natives to COVID-19-related risks in Western Europe. A Bartik-type shift share instrument is used to control for potential unobservable factors that would lead migrants to self-select into more vulnerable occupations across regions and bias the results. The results of the instrumental variable estimates indicate that the presence of immigrant workers had a causal impact in reducing the exposure of natives to COVID-19-related economic and health risks in European regions. Estimated effects are stronger for high-skilled native workers than for low-skilled natives and for women relative to men. The paper does not find any significant effect of immigration on wages and employment, which indicates that the effects are mostly driven by a reallocation from less safe jobs to safer jobs. ([Download Paper](#))

Who on Earth Can Work from Home?

In this paper, Daniel Garrote Sanchez, **Nicolas Gomez Parra**, **Caglar Ozden**, **Bob Rijkers**, Mariana Viollaz, and Hernan Winkler present new estimates of the share of jobs that can be performed from home. The analysis is based on the task content of occupations, their information and communications technology requirements, and the availability of internet access by country and income groupings. Globally, one of every five jobs can be performed from home. The ability to telework is correlated with income. In low-income countries, only one of every 26 jobs can be done from home. Failing to account for internet access yields upward biased estimates of the resilience of poor countries, lagging regions, and poor workers. Since

better paid workers are more likely to be able to work from home, COVID-19 is likely to exacerbate inequality, especially in richer countries where better paid and educated workers are insulated from the shock. The overall labor market burden of COVID-19 is bound to be larger in poor countries, where only a small share of workers can work from home and social protection systems are weaker. Across the globe, young, poorly educated workers and those on temporary contracts are least likely to be able to work from home and more vulnerable to the labor market shocks from COVID-19. ([Download Paper](#))

How to End the COVID-19 Pandemic by March 2022

How can the world reach herd immunity against COVID-19 before the second anniversary of the pandemic, or March 2022? A study of vaccine demand and supply by Ruchir Agarwal and **Tristan Reed** answers this question. A target of vaccinating 60 percent of the population in each country by March 2022 is likely sufficient to achieve worldwide herd immunity under a baseline scenario with limited mutation. Achieving this target appears feasible given stated production capacity of vaccine manufacturers and the pace of current and historical vaccination campaigns. Considering existing pre-purchase contracts for vaccines, achieving this target requires addressing a procurement gap of just 350 million vaccine courses in low- and middle-income countries. Immediate additional donor funding of about \$4 billion or in-kind donations of excess orders by high-income countries would be sufficient to close this gap. There are additional challenges along the path to achieving world-wide herd immunity---including supply chain issues, trade restrictions, vaccine delivery, and mutations. Overall, however, this analysis suggests multilateral action now can bring an end to the acute phase of the pandemic early next year. ([Download Paper](#))

COVID-19 and Trade Disruptions Due to China

Since the first case of COVID-19 was known in Wuhan, China, in December 2019, the virus has spread around the world infecting millions of people in all countries. To curb the spread of the virus, the Chinese government first instituted a lockdown of Wuhan. The lockdown also affected many other cities in the same province, as well as many major cities in the other provinces. Since China is the world's factory and the hub of global value chains, the lockdown led to a major adverse supply shock in world trade. In this note, **Hiau Looi Kee** studies the first-round short-term impacts on trade due to the lockdown in China. Results show that countries such as EU, Mexico and Japan may experience an annualized price increase of 3.75 percent on imports from China due to the lockdown that cut Chinese production by half in the first quarter of 2020. For many countries, particularly small developing countries, China is their main importing partner. Such big price changes also led to large welfare impacts, measured in terms of GDP. (contact author for the draft).

RESEARCH HIGHLIGHTS

Elite Capture of Foreign Aid: Evidence from Offshore Bank Accounts



Do elites capture foreign aid? Jorgen Anderson, Niels Johannesen, and **Bob Rijkers** document that aid disbursements to highly aid-dependent countries coincide with sharp increases in bank deposits in offshore financial centers known for bank secrecy and private wealth management, but not in other financial centers.

The estimates are not confounded by contemporaneous shocks such as civil conflicts, natural disasters, and financial crises, and are robust to instrumenting with predetermined aid commitments. The implied leakage rate is around 7.5 percent at the sample mean and tends to increase with the ratio of aid to GDP. The findings are consistent with aid capture in the most aid-dependent countries. ([Download paper](#))

Does Better Information Curb Customs Fraud?



Cyril Chalendar, Alice Duhaut, **Ana Fernandes**, Aaditya Mattoo, Gael Raballand and **Bob Rijkers** examine how providing better information to customs inspectors and monitoring their actions affects tax revenue and fraud detection in Madagascar. First, an instrumental variables strategy is used to show that transaction-

specific, third-party valuation advice on a subset of high-risk import declarations increases fraud findings by 21.7 percentage points and tax collection by 5.2 percentage points. Second, a randomized control trial is conducted in which a subset of high-risk declarations is selected to receive detailed risk comments and another subset is explicitly tagged for ex-post monitoring. For declarations not subject to third-party valuation advice, detailed comments increase reporting of fraud by 3.1 percentage points and improve tax yield by 1 percentage point. However, valuation advice and detailed comments have a significantly smaller impact on revenue when potential tax losses and opportunities for graft are large. Monitoring induces inspectors to scan more shipments but does not result in the detection of more fraud or the collection of additional revenue. Better information thus helps curb customs fraud, but its effectiveness appears compromised by corruption. ([Download paper](#))

Gender Empowerment, Supply-Chain Linkages and Foreign Direct Investment: Evidence on Bangladesh



Ana Fernandes and **Hiau Looi Kee** study foreign direct investment spillovers on the gender-related labor market practices of domestic firms, based on a unique firm-to-firm data set of Bangladesh's textiles and garment sectors. The authors look at the female employment of domestic firms that are directly and

indirectly related to foreign direct investment firms

through supply chain linkages. These domestic firms are either the local suppliers or customers of foreign direct investment firms, or they share local suppliers and customers with foreign direct investment firms. The estimates show that domestic firms related to foreign direct investment firms have significantly more female administrative workers, but not necessarily female non-administrative workers, due to the former participating in more firm-to-firm interactions. ([Download paper](#))

Trade, Jobs, and Worker Welfare



Erhan Artuc, **Paulo Bastos**, and Eunhee Lee examine the welfare effects of international trade on workers in a new dynamic general equilibrium discrete choice model of labor mobility, where the workers' choice set of jobs is endogenous. The analysis exploits differential exposure of sectors and regions to destination-

specific demand shocks to estimate the impacts of exports on wages, employment, and labor mobility, using employer-employee panel data for Brazil. It then employs the same empirical strategy to estimate structural parameters and the different components of changes in model-implied worker welfare. Counterfactual simulations show that the endogenous number of job options significantly magnifies the welfare effects of trade shocks. ([Download paper](#))

Which Jobs Are Most Vulnerable to COVID-19?



Daniel Garrote Sanchez, **Nicolas Gomez Parra**, **Caglar Ozden** and **Bob Rijkers** present measures of labor market exposure to COVID-19 (coronavirus) in the European Union (EU) by identifying jobs in non-essential industries that cannot be performed from home. Jobs most at risk account for 30 percent of all EU employment.

These jobs are concentrated in lagging regions; tend to be low paid and less secure; and are disproportionately held by young, poorly educated workers and migrants.

TRADE RESEARCH NEWSLETTER

In the absence of urgent large-scale remedial action, the COVID-19 (coronavirus) is likely to exacerbate preexisting socioeconomic and regional disparities. ([Download paper](#))

Distributional Effects of International Trade: Misconceptions about Losses and Gains



International trade increases efficiency but also redistributes income, thus creating winners and losers. To account for the total impact and calculate redistributive effects correctly and fully, the different channels of gains and losses must be measured precisely. **Erhan Artuc** shows that measuring the gains is often much

more challenging than measuring the losses, generating misconceptions and an overstatement of the adverse impacts of international trade. To assess the effects of trade shocks objectively, and to promote effective policy options, policy makers must be aware of the limitations in data and methodology surrounding the research on the distributional effects of international trade, and the misconceptions that ensue. ([Download paper](#))

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