

UNITED STATES INTERNATIONAL TRADE COMMISSION

In the Matter of:)
)
SERVICE IMPORTS, WORKFORCE) Inv. No. 332-599
COMPOSITION, AND FIRM)
PERFORMANCE: EVIDENCE FROM)
FINNISH MICRODATA)
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Remote Hearing
 U.S. International
 Trade Commission
 500 E Street, SW
 Washington, D.C.

Wednesday,
 July 17, 2024

The seminar commenced, pursuant to notice, at
 9:02 a.m., before the United States International Trade
 Commission.

PARTICIPANTS:

USITC:

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 BILL POWERS, Chief Economist, Director, Office of
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Seminar #4PAGE

Service Imports, Workforce Composition, and Firm
Performance: Evidence from Finnish Microdata

Presenter: Andrea Ariu, University of Milan 4

Discussant: Junie Joseph 39

Moderator: Martha Lawless

1

P R O C E E D I N G S

(9:02 a.m.)

1
2
3 MR. GRAY: -- the Chief of the Services Division,
4 Martha Lawless.

5 MS. LAWLESS: Good morning. Welcome to our fourth
6 seminar in the 2024 seminar week focusing on distributional
7 effects of U.S. trade and trade policy. We did a similar
8 series back in the fall, and many of you may have listened to
9 the ones, the three seminars we've had already this week on
10 Monday and yesterday, and if that's the case, thanks for
11 joining us again.

12 If this is the first seminar you're joining this
13 week, let me explain that this is a full week of seminars and
14 it's a part of USITC's multi-year work on distributional
15 effects of trade. The first report we published on this
16 subject was published in October 2022, and we're now working
17 toward a second report that will be published in January '26
18 and four further reports scheduled at intervals out until
19 2035. You can see that this is an important subject for
20 policymakers. There is a home page for the entire effort,
21 and I think Theron and the team might put the URL in the
22 chat, and you can look up the full schedule for this week.

23 Our speaker this morning is Andrea Ariu, who is an
24 Associate Professor at the University of Milan, and he got
25 his Ph.D. from the Université catholique de Louvain. His

1 research focuses on international trade, with a focus on
2 services trade and international migration. Before joining
3 the University of Milan, Andrea held an Assistant Professor
4 position at the Ludwig Maximilians Universität in Munich and
5 post-doc positions at the Geneva School of Economics and
6 Management and the McDonough Business School at Georgetown
7 University, where I'm assuming he encountered at least one of
8 his co-authors. Brad Jensen is a good friend of our services
9 team here.

10 Andrea will be presenting the paper shown up on the
11 screen, which, very excitingly, in my view, draws connections
12 between services imports and the composition of importing
13 firms' workforce and their financial and export performance.
14 As the head of the services division here, we are very
15 excited about having more work done in this area, I can tell
16 you. Papers looking at labor market impacts of shocks and
17 services trade are relatively rare, and so we're very glad to
18 have Andrea here today to present.

19 So I turn it over to you. Thank you so much.

20 MR. ARIU: Thank you very much. Thank you you for
21 the invitation. I'm very happy to present this paper to you.
22 It's a paper which has been there for very long, and I was
23 mentioning before that having access to services trade data,
24 it's difficult and it's become increasingly difficult due to
25 new regulation on data, on confidential data. But now we

1 have a final version in a sense, and that's what I'm
2 presenting, the latest results.

3 It's a joint work with Brad Jensen, Katariina
4 Nilsson Hakkala, who's now in the Philippines and she's also
5 Associate at Aalto University, and Saara Tamminen, who left
6 academia to work for the Prime Minister, so she's not anymore
7 really active in the project, but she contributed a lot at
8 the beginning.

9 The title is, "Service Imports, Workforce
10 Composition, and Firm Performance: Evidence from Finnish
11 Microdata." Why did we decide to focus on services? It's
12 because, in general, the decision of a firm on how to
13 organize production, this decision has implications on a set
14 of outcomes for the firm, such as trade patterns,
15 productivity, but also labor demand.

16 And we know quite a lot about trading goods. There
17 are several papers who analyze these phenomenon on the goods
18 side, and this was justified by the fact that we experienced
19 in the past 40 years a huge increase in trading goods. Now
20 it's kind of slowing down a bit, but that was the big chunk
21 of the globalization that we experienced, was trading goods,
22 and so that fostered a lot of research on trading goods and
23 on understanding what are the consequences of firms in
24 trading goods, especially on employment.

25 However, trading services nowadays is growing a lot

1 and much more than trading goods. So we saw a six-fold
2 increase over more or less the same period or at least the
3 same length, and, however, the issues that we know very
4 little about, what are the consequences of trading services
5 nowadays, and we know little especially in terms of what are
6 the employment consequences, what are the performance
7 consequences, and in particular outside the manufacturing
8 sector, and this is because, traditionally, most research
9 focuses on the set of firms who are in the manufacturing
10 sector.

11 However, the number of firms in the manufacturing
12 sector is a minority; it's around 20 to 30 percent usually.
13 And also, in terms of employment, it's small and it's
14 decreasing over time, while the services sector account for
15 around 70, if not more, firms and employees, and it's
16 growing, actually, over time. This is also known as a
17 structural change. And so, like, we found that there was
18 something to say potentially about these phenomenon of
19 importing services, and so that's why we jumped in.

20 Another reason why we should be focusing on
21 services is that the two, goods and services, are different
22 and not just in terms of what they are because goods are
23 tangible and services tend to be intangible, but there are
24 too many reasons specifically to focus on services, on
25 imports of services especially.

1 The first is that service intermediate inputs are
2 used more broadly across the economy and with respect to
3 manufacturing intermediate inputs, and the reason is that
4 services tend to be inputs which need to be used always. And
5 the typical example is accounting. Every firm in the economy
6 needs to fill the accounts and needs then to be certified and
7 et cetera, and usually, these are service firms who provide
8 these type of services, and especially there are
9 international companies who do these at a global level. So
10 it means that doing the accounts before could be done inside
11 the firm, and then, at a certain point, it became possible to
12 do it outside the firm, so outsourcing it and buying it from
13 abroad.

14 And the main difference between importing a good
15 and importing a service is that the range of firms who can
16 actually do this type of activity, it's much bigger for
17 services than for goods. Of course, this is not true for all
18 type of services, but there is a narrow range of services,
19 which are especially business services or also transport
20 services, for example, who are actually bought by all firms
21 in the economy.

22 A second reason why it's important to focus on
23 services is that they are different because they tend to be
24 more high skill-intensive than goods, and so this means that
25 if we think of the consequences, these are going to be -- so

1 this phenomenon is going to target different workers,
2 different occupations in different industries, depending on
3 the skill intensity of the worker, of the occupation, or the
4 industry. And so, as I said, the targets of these phenomenon
5 might be different from trading goods.

6 And so these are the two main differences that we
7 highlight in the paper to justify why we need to look at
8 services and why it's important to look at services.

9 So, more specifically, what we do in the paper is
10 to use micro-level data from Finland to understand the fact
11 of importing services intermediates on firm workforce
12 composition and performance.

13 Why did we choose Finland? First of all, it has
14 amazing data. I'm going to describe it in a bit. But also
15 because it's an interesting case study. And in particular,
16 it's a country which experienced a dramatic increase in
17 imports of services, and it's not just in level terms, which
18 is big, but it's also big in terms of GDP because the
19 increase has been from 7.4 percent of GDP to 12.3 percent, so
20 it means that it's almost 5 percentage points in a timeframe
21 of more or less 10 years.

22 And just to give you an idea, the China shock
23 that's really famous now is only two percentage points of GDP
24 increase. So we are talking about something which is almost
25 2.5 times more bigger than that type of phenomenon.

1 In order to guide our empirical analysis, because
2 the paper is mostly empirical, we are going to borrow a
3 theoretical framework from Adão, Arkolakis, and Esposito.
4 And this is particularly helpful because it's a paper which
5 provides us with a theoretical justification for the
6 empirical strategy and tells us also which predictions should
7 be coming from the data. So, in a sense, we are going to be
8 testing this model in the environment of trading services.

9 And, by the way, if you have any questions, feel
10 free to interrupt me at any time. I forgot to say that at
11 the beginning.

12 The type of empirical analysis that we do, it's
13 going to be a shift-share type of analysis in which there is
14 going to be an instrument that is going to solve the
15 endogeneity issues of relating imports to firm-level outcomes
16 or employment outcomes, and so I'm going to be more specific
17 there, but that's the type of analysis that you're going to
18 see in a moment.

19 And then we are going to exploit the granularity of
20 our data to make a bit of heterogeneity analysis, especially
21 comparing firms in different occupations -- in different
22 industries, sorry. Why do we do so? It's because
23 manufacturing firms importing services might do it for
24 different reasons than firms that import services from the
25 services sector, and so we are going to try to highlight the

1 differences in the reasons why firms in the manufacturing
2 sectors and those in the services sectors are going to be
3 different in terms of outcomes.

4 In terms of results, what we find is that firms
5 that increase imports of services, they improve performance
6 in terms of productivity, sales, and assets; reduce
7 employment of occupations that use at the time intensive low-
8 and medium-skilled workers; and increase employment of
9 managers and high-skilled professionals.

10 So there is a sort of skill upgrading at the firm
11 level that is in use by the imports of services. And in
12 particular, what's important is that this category of high-
13 skilled professionals is including engineers, computer
14 programmers, and other high-skilled type of technical
15 activities that represent in a sense high-value-added
16 occupations and jobs. And so it looks like the firm is kind
17 of concentrating into core business, leaving aside maybe
18 stuff which is more ancillary to the business of the firm,
19 and that is good because it involves not only reorganization
20 of the firm towards more high-skilled people but also to
21 higher performance in their markets.

22 These results, these are the main results that hold
23 in general, and when we split into service sectors and
24 manufacturing sectors, we find that the service firms, so
25 firms in services sectors, they also increased total

1 employment, they experienced a stronger performance
2 improvement, and there is no decrease in medium-skill
3 occupation employment.

4 For firms in manufacturing, in the manufacturing
5 sector, instead we find that employments tend to decrease not
6 much but a little bit, the performance increase is weaker,
7 and we don't observe an increase in high-skilled
8 professionals. So there is, in the manufacturing sector,
9 there is less of these, let's say, focusing on the core
10 business but rather to just get rid of some service
11 activities which were maybe costly, and so it looks like it's
12 mostly a cost-saving strategy in the manufacturing sector
13 rather than in the services, rather than from firms in the
14 services sector.

15 And then the last result that we find is that we
16 get to what is the welfare effect of these phenomena of
17 importing services, and we find that the welfare effects are
18 higher than for trading goods. And this is kind of good news
19 and a good reason why we should be aiming at having stronger
20 liberalization for services because there hasn't been much
21 going on lately, and so, instead, there are gains that we
22 could achieve thanks to a liberalization of trading services.

23 What's the contribution of the paper? Well, there
24 is a big literature which analyzes why firms import and how
25 they do so, and this is almost entirely focusing on goods.

1 And so the value-add of our paper is to focus on services.
2 Moreover, these papers tend to focus on manufacturing firms,
3 while we do have information on all firms in the economy, and
4 we are especially emphasizing the role of within-firm
5 changes, which is one of the main drivers of change in the
6 economy rather than across sectors once or across firms.

7 Second, there is a big literature which is
8 analyzing service imports but with a narrower focus,
9 especially on offshoring. And the issue is that there are
10 several papers, but each paper is focusing on a different
11 aspect of it. So some papers focus on total employment.
12 Some other papers focus on high- versus low-skilled. Some
13 other papers focus on performance. But there is not a paper
14 which has all the ingredients together. There is not a paper
15 which has all firms in the economy and can really distinguish
16 across different sectors.

17 And so the big value-add of this paper is that we
18 are kind of putting everything together and giving a unified
19 answer to all the different questions that are there. And
20 this is a big value-add because, like, changing setting,
21 changing the type of methodology used can lead to different
22 results in a sense. And here in this paper, instead we have
23 the same setting for all the questions, and so we can be sure
24 that there is some sort of coherence in all the results.

25 Then there is another big question in the

1 literature is that why manufacturing firms get into service
2 imports, and what we say to that literature is that there are
3 many firms in the manufacturing sector that imports also
4 services, and these firms are very important. And so these
5 phenomenon of importing services is something which involves
6 many sectors and many workers, and so it's a phenomenon which
7 is quite widespread and big.

8 And, finally, there are very few papers which are
9 interested in the welfare effects of trading services
10 liberalization. There is a plethora of papers analyzing the
11 same question for goods. And together with these two papers
12 that you can see in this slide, we are kind of saying that
13 maybe the focus should be shifting to services because the
14 welfare effects that we measure are bigger, tend to be bigger
15 than for trading goods. They are at least as big as trading
16 goods, if not bigger, depending on the paper that we take
17 into account.

18 Okay. So let me get to the description of the
19 data. We have a panel of 10 years, and potentially nowadays,
20 if anyone is interested into working with this data, there is
21 the possibility of there being an updated version of it, but
22 we are sticking to it because -- we are sticking to this one
23 because it's complicated to have an update, and second, there
24 were many things going on after, so we don't want to get the
25 results be contaminated by shocks. We already have one to

1 there; we have the great trade collapse, and even though it
2 doesn't affect our results, it's already something which can
3 change a bit the context that we are analyzing.

4 And so the panel is combining four sources of data.
5 We have the annual firm level increase on international trade
6 in services. It's a survey which collects information on
7 imports and exports of services by type of service and by
8 origin country or by destination country depending on whether
9 we are analyzing imports or exports.

10 The disaggregation of the trade in services data is
11 following the EBOPS usual classification, so it's a balance-
12 of-payment classification which counts about 30 types of
13 services. We focus only on 10, so we need to aggregate up a
14 little bit this data because of confidentiality issues. We
15 need to have a certain number of firms for every category and
16 for every year, and so we cannot slice the data too much. We
17 have to aggregate these a little bit up. We have the same
18 information for trading goods, which comes from the Finnish
19 Customs, and, basically, it's the usual information on firms
20 importing or exporting, by product, at the CN-8 level, which
21 is basically the HS classification at the eight-digit level,
22 and by origin or destination country.

23 Then we have the Finnish longitudinal employer-
24 employee database, which contains information on all workers
25 in Finland. And this is quite exceptional because, even in

1 Italy, we are a bigger country, we are six times the size of
2 Finland. This is impossible to do. But, for Finland, this
3 is doable, so we have all the information on workers. And we
4 know also in which firm they are working, so we can link the
5 employee to the employer.

6 And, finally, we have information on the full
7 account of Finnish firms from Statistics Finland, and so we
8 know basically all the account information for all firms in
9 Finland, though we kind of focus only on those firms who have
10 more than five employees because we want to analyze
11 employment. And so I think small firms it leads to have
12 crazy results if we are analyzing only firms who have one or
13 two employees.

14 So the sample of analysis consists of 11,000 firm
15 years and these are firms who have more than five employees
16 and for which we have information on imports of services. So
17 these are firms who have been importing for at least two
18 consecutive years in the timespan that we are analyzing.

19 So the level of analysis is going to be a firm
20 year, and for every firm year, we have the information on the
21 number of employees, the total, but also by occupation and by
22 educational activity. I'm going to show you exactly what I
23 mean by these in the next slide.

24 And then we are going to have the productivity,
25 turnover, the assets that are in the expenditure, and the

1 industry classification, and we are going to have the total
2 firm-level imports and exports of goods and services. So we
3 can put a lot of information together, and this is the
4 sample, this is going to be the sample of analysis.

5 As I said, one of the great things of this data set
6 is that we have information on all firms, on all workers, but
7 we also have information which is quite detailed about that.
8 And in particular, we can divide workers in a very fine way.
9 So it's not as for many countries for which we can only
10 divide them into white- or blue-collar workers, only high-
11 skilled versus low-skilled. Here, we really do have the real
12 occupation of each worker. And, again, for confidentiality
13 reasons, we need to aggregate these categories up a bit, and
14 we end up with five categories, which are goods production
15 workers, service production workers, medium-skilled
16 professionals, high-skilled professionals, and managers.

17 Goods production workers are the usual blue-collar
18 workers, so they're people who work in producing a product.
19 Service production workers, instead, are workers which
20 require a low level of education and do ancillary activities,
21 mostly, to production, and, here, we have secretaries,
22 receptionists, say, clerks, and et cetera.

23 Medium-skilled professionals instead are people who
24 have a medium level of education, but they do stuff which can
25 be used both as a support for production but also for

1 management and decision-making, and here, we have
2 occupational sales representative, process control
3 technicians, trade brokers, and et cetera.

4 High-skilled professionals are mostly scientists,
5 people with a high skill, so it's a high level of education,
6 and they do have some technical knowledge which is very
7 valuable. We have science engineering professionals, doctors
8 in a broad sense, so also doctors who work for private
9 companies, so not only doctors that work for the public
10 health system, which we don't take into account because we
11 focus only on the private sector, and teaching professionals,
12 so people who do training, for example.

13 And, finally, we have managers, and here, we can
14 divide between administrative, production, and other type of
15 managers. So, as you can see, it's very detailed.

16 In terms of education, it's a standard
17 classification. We have low-skilled, which are those who
18 have less than nine years of education; medium-skilled, which
19 is from 10 to 12; and high-skilled, which are those that have
20 more than 12 years of education, which basically implies
21 having a Master's or a Ph.D. more or less.

22 So, with these data, I'm going to present you some
23 statistics that are going to be guiding also our analysis.
24 Here, this table is representing the aggregate trends of
25 trade service imports in Finland, and as you can see, most of

1 imports come from other European countries, a little bit from
2 North America, and more or less the same from other
3 countries.

4 There has been a big increase in trading services.
5 It's almost three times in this short period, so trading
6 services increased three times, and most of this increase
7 actually comes mostly from European origins, and this is very
8 important because it's a big difference with respect to what
9 we observe for trading goods, for which the increase in
10 imports comes mostly from developing countries while, for
11 services, this comes from developed countries and especially
12 other European countries, a little bit from U.S. and a little
13 bit from especially Asian countries, but the bulk of the
14 increase is actually coming from the European market.

15 So the type of shock that we are going to be
16 analyzing is an increase in imports from other developing
17 countries. And as I said before, this is not just big per
18 se, but it's big also in terms of GDP because it's five
19 percentage points of GDP, which makes it more than twice the
20 China shock that was analyzed especially in the U.S.

21 Which were the services which grew the most? These
22 are especially computer services, for which the increase has
23 been almost 400 percent, and followed by R&D, legal
24 advertising and consulting, trade-related activities, and
25 services. So these are the biggest increases.

1 From this table, you might find that there is no
2 transport and there is no tourism, and this is because we
3 don't have those services in our data, unfortunately, because
4 they are accounted from different surveys in a different way,
5 so it's very hard to put them together, unfortunately. And
6 so we are kind of only focusing on these services, and,
7 actually, it's not such a bad news because these are the
8 services which are mostly high-skill-intensive, while
9 transport and travel usually are mostly related to trading
10 goods, first, and second, they are not very high-skill-
11 intensive.

12 So this is in terms of composition of imports in
13 terms of type of services, and what we can say is that it's
14 mostly an increase in high-skilled type of services. This
15 table instead is checking how spread is this phenomenon. So
16 we know that it's mostly coming from developed countries.
17 It's mostly high-skilled services, but who's buying them?

18 And here we have on the X-axis all the industries
19 in Finland. It's a bit aggregated here again because we need
20 a certain number of firms for each category. And you can see
21 with the bar the number of importers and, with the square
22 orange points, the share of these firms with respect to the
23 total number of firms in the sector.

24 And in both cases, you see that this is a
25 phenomenon which is quite widespread. In every sector, there

1 is more than one importer of services, and, actually, the
2 actual share of firms who import services is not negligible
3 because, for some sectors, it's up to 40 percent of firms who
4 are actually importing these, for example, the chemical
5 sector.

6 So it's a phenomenon which is quite broad and
7 widespread across all firms in the economy. And one might
8 think that imports of service is mostly related by firms in
9 the services sector. Actually, no. There are many firms in
10 the manufacturing sectors that are importing services. We
11 don't have the table here, but if we do the same instead for
12 trading goods, the only service sector which really imports
13 goods is actually the wholesale sector. But all the others
14 have imports of goods which are negligible with respect to
15 what we observe for the manufacturing sector. So this is a
16 big difference. This is a big and important difference, and
17 it says that the number of firms that can be potentially
18 affected by this phenomenon are actually big, it's actually
19 big, the share, and widespread across all sectors.

20 Then we asked ourselves whether these importing
21 firms are different from domestic firms and by how much, so
22 we basically regress the number of employees, the log number
23 of employees, the productivity, the turnover, the capital
24 intensity of the average wage on data identifying service
25 importers, service exporters, goods exporters, and goods

1 importers. And as you can see, and regardless of the fact
2 that we put industry fixed effects or any other type of fixed
3 effect, we do observe that service importers tend to be big,
4 very productive, capital-intensive, and they pay high wages
5 with respect to firms who don't import and don't export at
6 all, regardless of both for services and goods.

7 So it means that these firms are the best firms in
8 the economy. And this is not something really new in the
9 sense that we knew from other papers that for trading goods
10 this is the case. So this is just saying that, also taking
11 into account services, we do find the same.

12 And then, finally, in terms of descriptive
13 statistics, I would like to point out the fact that we have
14 dynamics which are very interesting in Finland. And what we
15 observe in the manufacturing sector in terms of education is
16 that there is a decrease in low-skilled and medium-skilled
17 workers, while there is a small but still an increase in
18 high-skilled workers.

19 For services instead, we don't observe a decrease
20 in medium-skilled workers, and we observe a much lower
21 decrease in low-skilled workers and a big increase in high-
22 skilled workers. So the entire economy is kind of skill-
23 upgrading, so firms tend to be, on aggregate, they are
24 upgrading their skills. And so what we are going to do is
25 trying to understand how much of this is going to be related

1 by the imports of services.

2 If you look at occupations, the picture looks very
3 much, it's very much similar. Goods production workers,
4 service production workers, and medium-skilled professionals
5 are decreasing for manufacturing firms, while for services,
6 all categories are actually increasing.

7 Okay. So I'm going to try to be quick on the model
8 because it's not our main contribution, but still I would
9 like to use it for guiding you through the empirical
10 strategy. The model that we use is basically a multi-sector
11 gravity model, very similar to Costinot and others, in which
12 there are C countries, and in each country, there are going
13 to be different labor markets, so there are going to be
14 regions in a sense. And workers are going to be immobile, so
15 they cannot move across different regions, but the only
16 choice that they're going to have is whether they want to
17 work or not, and this is going to be based depending on
18 what's the wage at the local labor market level, and they're
19 going to be comparing that with respect to an outside option,
20 which is going to be, for example, a cash transfer from the
21 government.

22 And in each region, there is going to be different
23 industries, and in each industry, there's going to be a
24 representative firm who operates under perfect competition
25 and is subject to production ruminant forces. And so this

1 is just to give you an idea. We're going to have multiple
2 countries, multiple regions, and in each region, there are
3 different -- there are several, sorry, several industries.
4 In each industry, there is a representative firm who produces
5 a product that can be sold to other firms, and this is done
6 in perfect competition, subject to other remuneration forces.

7 Using this setting, I know, like, it's very, like,
8 general, what I said, so it's not very precise, it's not very
9 detailed, but what happens in this type of framework is that
10 if there is any change in the fundamentals of the global
11 economy, which can be due to, for example, a change in trade
12 cost or productivity shocks, then we can relate an outcome,
13 Y, at the local level, I, through three channels of partial
14 equilibrium shifts.

15 So there are basically three types of shocks that
16 can affect firms in each region, and the first one is the
17 revenue shock, which is the one that has been analyzed in the
18 case of the China shock, and it's basically due to how much
19 the revenues of a firm decrease -- or a region, if we
20 aggregate up to the region level -- how much foreign
21 competition decreases the sales of a firm who's operating in
22 market I. And this is due to the decrease in the demand for
23 the goods that are produced by a firm in a certain sector,
24 the share of a labor market in region I that is employed by
25 firms in sector S, and so it's a multiplication of the two

1 that gives us this shift, which is multiplied by the trade
2 elasticity, which is given by one minus sigma.

3 So this shift tells us that if there is an increase
4 in foreign competition, firms in my region are going to be
5 decreasing how much they are going to be selling due to the
6 revenue shock. This is what is this shift.

7 The second shift is the consumption shock, and this
8 is mostly for final consumers. And it's a positive effect
9 due to the fact that now the goods that were imported become
10 cheaper either due to the decrease in trade costs or by the
11 increase in productivity in foreign countries. And so it
12 means that people in my region are going to be able to
13 consume more, and this is going to be positive.

14 These terms depend on three pieces. The first one
15 is the spending share of each market on goods that come from
16 a certain sector, the spending of each sector in goods coming
17 from a certain origin, and the average change in bilateral
18 trade shifters. These are the three components.

19 Finally, what we are really interested in is the
20 input shock exposure, which is η_M , and this is measuring
21 how much firms in market I and sector S save on input costs
22 by importing cheaper intermediate products from sector K in
23 country O. And so this depends on the share of inputs from
24 sector K used by firms in sector S in market I, the
25 expenditure share of market I on goods from a certain origin

1 and a certain sector, and the change in trade cost between a
2 certain country and a certain sector.

3 Okay. This is what we're going to be interested
4 in. We're going to be measuring this shock. We're going to
5 say by how much more inputs become cheaper and then what's
6 going to be the effect for firms of having these cheaper
7 inputs at their disposal.

8 However, in order to make this framework fully
9 consistent with our setting, we need to impose to the model
10 the following changes. First of all, we're going to assume
11 that there is not just a representative firm in each sector,
12 but we're going to assume that there are multiple firms in
13 each sector. This number is going to be fixed, and how it's
14 possible that we have different firms is this is due to the
15 fact that firms are going to be different in terms of the
16 structure of inputs, which means that each firm in the same
17 sector is going to be importing different service imports
18 from different countries.

19 However, since we are in perfect competition, we
20 are going to assume that this factor comes from firm-level
21 idiosyncrasies, but the total cost of production must be the
22 same. So it means that summing all the inputs from all
23 different service inputs from all origins must end up in the
24 same cost for every firm in the economy.

25 And so what we have is that firms are going to be

1 different depending on the input structure, and this is going
2 to give us a variation that we can exploit depending on from
3 where the shock is coming from. For example, if a firm is
4 importing accounting services from India and the other one is
5 importing the same service from the U.S., if there is a trade
6 liberalization with respect to India, one, for the first
7 firm, is going to be subject to a shock, the other not. And
8 that's the type of variation that we're going to be
9 exploiting.

10 Second, in the model, firms can buy from firms in
11 other local labor markets even within the same country, and
12 so there are input-output linkages within the same economy
13 across firms. And what we do is to ignore them, and we do it
14 for two reasons. One is simplicity, and the second one is
15 that our data, all firms that import services -- or 90
16 percent of firms who import services in our -- no, 70
17 percent, sorry, of firms that import services in our data
18 actually are all in the same region.

19 So these across-region effects in Finland are kind
20 of negligible because there is a big center for business,
21 which is the Helsinki region, and all the other regions tend
22 to be quite small with respect to the main one. So, for
23 these reasons, we are kind of ignoring these linkages. And
24 the other reasons is that we would have two or three regions
25 and so there is not enough variation to analyze these issues

1 at the regional level, unfortunately.

2 And I should speed up. Okay. So the first two
3 forces that I told you tend to be market-industry specific,
4 which means that they're common to all firms in the same
5 sector, and only the last one is actually giving us variation
6 across firms within the same sector, and that's the type of
7 force we're going to be analyzing. So the input cost shock,
8 that's what we're going to be using.

9 What are the predictions of the model? Following a
10 decrease in the cost of inputs, what we should be having,
11 what we should expect from the data is that firms increase
12 their productivity and their sales, and instead, in terms of
13 employment, the results are a bit uncertain for two reasons,
14 because there are two forces.

15 The increase in sales is going to increase labor
16 demand, so we should be expecting the labor force to
17 increase. However, cheaper inputs might be substituting
18 labor, and so the results depend on the elasticity of these
19 inputs to the different type of employments that are within
20 the firm and also the total employment. So the results on
21 employment are going to be ambiguous.

22 The equation that we bring to the data is the
23 following, and, basically, we have a firm-level outcome. We
24 have, for example, employment at the firm level for firm S,
25 which is in sector S, in a time T, and our main explanatory

1 variable is going to be the increase in the imports of
2 services of firm F in industry S at time T.

3 So what it means is that we are analyzing mostly
4 the intensive margin, so we're going to look at firms who
5 increase how much they import services. Unfortunately, we
6 cannot analyze the extensive margin, which is the fact that
7 the firm starts to import services because the salary that we
8 are using, all firms that start importing, basically, we
9 observe all firms that are added to the survey to be
10 importing since the first year they are added. So we don't
11 know whether they were importing before or not, and so it's
12 hard to make any extensive margin analysis.

13 And the other co-value that we're going to use is a
14 time trend for the variables that we're going to -- for each
15 variable, outcome variable that we analyze in order to take
16 into account for industry-level dynamics that could affect
17 our results.

18 Okay. I think it's pretty clear for everybody that
19 here there are many endogeneity issues. There is a level of
20 causality issue, and there is an omitted variable that can
21 affect both imports of services and firm-level outcomes, and
22 so we need an instrument, and the instrument we use is the
23 world export supply, so it's a shift-share in which the share
24 is the importance of each type of service in the total
25 imports of the firm. This is this part on the right. That's

1 a share, and we measure it at the beginning. So, in the
2 first year that we observe the firm importing, we measure how
3 much this firm is importing of each service from each origin,
4 and we measure how much of each of them is important in the
5 total imports of the firm.

6 And the shift is basically what's called the world
7 export supply, which is the world exports of service S in
8 country C at time T, excluding the exports that are directed
9 to Finland. And we use country data to use that. So this is
10 a common shift-share, and the type of variation that we think
11 it's important for us is coming both from the share and the
12 shift, but we assume that it's mostly the shift which is
13 providing the exogenous variation.

14 However, I would like to highlight that also the
15 share is very good because what we have is that the shares
16 tend to be very constant over time, and this is because the
17 median service origin countries imported by only two firms,
18 and this iteration tends to remain stable over time, which
19 means that the trade structure -- in other words, firms
20 choose from where to import each type of service at the
21 beginning, and then they don't tend to change them. So the
22 import structure remains the same. The only thing which
23 varies is the intensive margins, how much they import. And
24 so it means that the trade structure is exogenous to shocks
25 and it's a good characteristic of these shares.

1 But the other important fact is that Finland is a
2 small country, and so we can really think of the shift, so
3 how much the other countries are exporting, as being kind of
4 a productivity shock which Finland is actually subject to,
5 okay? And so it provides the exogenous variation.

6 There are other threats to identification even
7 using these type of instruments, but maybe I'm going to talk
8 about them in the robustness checks. So let me jump straight
9 to the results. This is the first stage for performance.
10 Coefficients are very similar because the only thing which
11 changes from one regression to the other is the timeframes.
12 And as you can see, it's a good instrument; the statistics
13 are fine.

14 Let's look at the results. What we have is that,
15 let's focus on panel A, which analyzes the complete sample.
16 What we observe is that if a firm F in sector S is increasing
17 the imports of services, this leads to an increase in
18 productivity and increase in turnover, which means sales.
19 And the total value of assets is not related to an increase
20 in R&D expenditure, but it is related to an increase in
21 service exports in general. So this is by looking at all
22 firms in the economy.

23 If we focus only on manufacturing firms, the
24 results are similar. The only thing which is different is
25 that the magnitudes tend to be smaller, not by a lot but a

1 little bit less, and there is no positive effect on service
2 exports. These are the main differences.

3 For services, instead, the increase in performance
4 tend to be more -- tend to be stronger, and there is a
5 positive effect on service exports. So, in a sense, this
6 table is telling us that the model is right. If there is a
7 decrease in the cost of inputs, the firm is going to do
8 better. It's going to be more productive and sell more.

9 And heterogeneity says that it's a little bit
10 better for the service firms than the firms in the
11 manufacturing sector. This is the first stage for
12 employment. Again, all statistics look fine. The
13 coefficients are statistically significant, so we can be sure
14 that it's a good instrument at least in terms of being
15 correlated with the endogenous variable.

16 And here, we look at the employment. And we have
17 that if we look at panel A, so the complete sample, we see
18 that it looks like there is no change in employment following
19 an increase in imports of services. However, if we divide
20 the total employment into two different categories in terms
21 of education or occupation, actually, there is a lot going on
22 behind this non-significant result.

23 And in particular, we observe that there is a skill
24 upgrading, there is a decrease in low-skilled workers and an
25 increase in high-skilled workers, and when we further divide

1 into occupations, even though occupation and education do not
2 perfectly overlap because there are some low-skilled workers
3 who do medium-skill type of occupations, or there are some
4 low-skilled who are managers actually, what we observe is
5 that there is a decrease in goods production and service
6 production workers, there is a decrease in medium-skill
7 professionals, and there is an increase in high-skilled
8 professionals and managers.

9 I'm not going to comment much on the task
10 intensity, but the categories that are increasing are the
11 occupations which use more non-routine tasks and interactive
12 tasks. By dividing into manufacturing and services, what we
13 observe is that, for employment, there is a decrease for the
14 amount of firms in the manufacturing sector, while there is
15 an increase for firms in the services sector, so this is the
16 big difference in between the two. And that's also why we
17 don't observe anything in the total employment. In both
18 sectors, there is a skill upgrading. The only difference in
19 terms of education, the only difference is that there is a
20 decrease in medium-skilled professionals in the manufacturing
21 sector while there is not in the services sector.

22 And in terms of occupations, the results are pretty
23 similar, except for the fact, again, that the medium-skilled
24 professionals are not decreasing for the services sector and
25 there is not an increase in high-skilled professionals for

1 the manufacturing sector.

2 What does it mean? It means that for manufacturing
3 firms, it looks like there is less of an emphasis of focusing
4 on high-skill occupations than for the services sector, while
5 there is much more emphasis on the negative side for medium-
6 skilled professionals. And our paper is the first paper
7 which finds actually a negative effect for occupations which
8 are beyond low-skilled.

9 So we do observe that the services have a negative
10 effect also on medium-skill, which is a big debate which has
11 been going on for quite some time, the threat of having
12 imports of services, that also high-skilled are going to be
13 hurt. It looks like this is not yet the case, but it's the
14 first time it's the case that medium-skilled are actually
15 affected by this phenomenon, and so this is kind of
16 important.

17 In terms of robustness checks, there is a myriad of
18 things that we were asked to do, and, first of all, we could
19 discuss what's the best way of classifying standard errors.
20 We tried different ways, and the results hold. There could
21 be unobserved firm-specific demand shocks, so we don't
22 observe whether a firm is having a positive shock in a
23 certain country.

24 And so what we do is to try to measure possibly in
25 different ways demand shocks, and the results hold. In our

1 main specification that I showed you before, we are not
2 taking into account the fact that these firms might be also
3 importing goods, so they could be subject, for example, to
4 offshoring of intermediate inputs.

5 But, if we do take into account also that type of
6 strategy, the results hold again. There could be some sort
7 of importing competition issues, so facing competition from
8 abroad, which could be biasing our results. If we take these
9 into account also, our results hold, and if we change how we
10 measure service imports, for example, in order to understand
11 how much is due to offshoring rather than just importing, we
12 do observe that, actually, it's both of them that are at work
13 that are kind of driving our results. So it's not only the
14 fact of relocating what we had done before, but it's also the
15 fact that, in general, importing services for production have
16 an effect on employment and on performance.

17 The only robustness check that I would like to
18 highlight, which I really love it because what we can do is
19 that we can have information on firms before the timeframe of
20 our analysis, which means that we have education categories
21 and performance categories for the period before our
22 analysis. And this is 1993 to 2000, and so we can relate
23 future changes in imports of firms to past changes in firm-
24 level outcomes. And so we can measure whether our import
25 measure is actually embedding some sort of long-run trends

1 rather than really the effect of importing and so whether
2 there is an omitted variable that is driving our results.

3 And as you can see, future imports are not related
4 to past changes in employment in terms of education or in
5 terms of performance, so we are, let's say, sure in a sense,
6 we are a little bit more confident on our results and on the
7 fact that there is not an omitted variable which is biasing
8 our results.

9 And this is kind of fantastic because having data
10 for firms in the past periods is kind of very difficult, and
11 we are very lucky to have that and to be able to make these
12 type of tests. Of course, there are limits to this, which is
13 that we have only half of the firms for which we can have
14 this information because firms enter and firms exit from the
15 market, so we can only do these tests for firms who have
16 survived throughout the period. But still, it's something
17 important.

18 So I'm going to spare you from looking at all the
19 slides of all the results on all the robustness checks
20 because that would be too much and I'm almost out of time.
21 What I would like to talk to finish is the welfare effects,
22 and in order to do these type of exercise, we are going to
23 rely again on another paper of Costinot, Arkolakis, and this
24 time it's going to be with Costinot and Rodriguez-Clare.
25 It's a very famous paper in which they basically say that the

1 welfare effects of trade liberalization can be measured using
2 aggregate data and only two variables. One is basically the
3 import penetration ratio, and the second one is the
4 elasticity of imports with respect to variable trade costs.
5 The first is denoted by λ , the second one by ϵ .

6 And so we need only these two ingredients in order
7 to know how much the welfare would increase by having a full
8 liberalization of services. So, basically, this exercise is
9 going to make the comparison between autarchy and full
10 liberalization in a sense. And so it's a bit of an
11 overstatement in the sense that it analyzes a situation which
12 cannot happen in reality. We are not going to be seeing any
13 countries switching from full autarchy to full
14 liberalization, but that's what we do in models. And still,
15 it gets us what's potential gains from trade also in the case
16 of services.

17 The other good thing is that this is going to help
18 us because it's a methodology which has been used for trading
19 goods and which means that we can compare the results for
20 goods with the results of trading services.

21 And without adding anything more, what we can do, I
22 would again do is to show you the results. So let's focus on
23 the first line, which is Finland. What we have is that on
24 the left side, we are doing the size for trading services, on
25 the right-hand side for trading goods. And since the two

1 types of trade are different, the elasticities, the trade
2 elasticities, are going to be different. For trading
3 services, we're using the paper of Benz and Jaax and the
4 paper of Munoz, which is also a paper that might be very good
5 to have represented in the same series because it also deals
6 with distributional consequences of trading services.

7 In any case, what we have is an epsilon which is
8 around -1.1 to 1.6, which is much lower than for trading
9 goods, for which we have values between 5 and 10. This is
10 what is being used broadly in the literature, and Anderson
11 and van Wincoop are those that are suggesting that this is
12 the range of values for which it makes, for which the
13 elasticity makes sense.

14 And so, for Finland, which is the first row, what
15 we observe is that the welfare effects grow from 6.6 to 9.6,
16 which is pretty big, and it's actually bigger than for
17 trading for goods, for which it goes from 2.8 to 5.5. So it
18 says that for liberalizing trade -- I can't see the chat.
19 There might be a question, but I can't see it from the full
20 screen. So, if anyone wants to tell me after, I can answer
21 to that, to the question.

22 So what we observe is that gains for Finland are
23 higher. But they're not higher only for Finland; they are
24 higher for any country that you can see in the table, except
25 for the U.S. And why is Finland having higher gains in

1 general than the U.S.? The reason is that Finland is a
2 small, open economy, so the import penetration is much higher
3 for Finland with respect to the U.S.

4 And second, imports of services for Finland are
5 more important than for the U.S., which is mostly an exporter
6 of services actually. And so that's the reason why there are
7 these differences. Still, we can state that at least the
8 gains from liberalizing services are at least as big as for
9 trading goods, and this is something important. There are
10 other papers which tend to say that this is the case, but
11 they use different methodologies. So, in a sense, what we're
12 doing is kind of corroborating the only two papers which make
13 these type of analyses using different methodologies.

14 And these papers are the Reverie (phonetic) one and
15 the Gervais and Jensen. And both papers find that the gains
16 from liberalizing trade are, first of all, very similar to
17 the numbers that we have for Finland, for example, in the
18 case of Reverie, and in the case of Gervais and Jensen, they
19 do find that at least again are as good as for trading goods.

20 So I think I'm running out of time, so let me get
21 to the conclusion. This paper provides the first
22 comprehensive analysis on the impact of trading services
23 imports using firm-level data, and so we can analyze both the
24 employment consequences and the performance consequences of
25 these phenomenon, and we can do it for all firms in the

1 economy.

2 What we find is that service imports is a
3 widespread phenomenon that impacts employment and
4 performance, and that is affecting workers, not only low-
5 skilled ones but also medium-skilled ones and high-skilled
6 ones. Service imports make the firm more high-skill
7 intensive, the number of manager increases, and the number of
8 service production workers decreases, together with other
9 categories. And the results are heterogeneous across
10 sectors. For the manufacturing sector, there is a decrease
11 in medium-skilled workers and a smaller effect on
12 performance. For service firms, the effect is much more
13 pronounced on the high-skill side and also in terms of
14 performance.

15 So that's all. And, again, thank you very much for
16 the opportunity to present this paper. I'm very open to
17 comments and questions.

18 MR. GRAY: Thank you very much, Professor Ariu.
19 I'm monitoring the chat, but I think, for now, we'll hand it
20 over to our discussant for today's chat, and that is Junie
21 Joseph, an economist in the services division of our Office
22 of Industry and Competitiveness Analysis.

23 MS. JOSEPH: Great. Thank you so much for your
24 presentation again. I found it really interesting,
25 especially the level of detail that you're able to get at,

1 and I'm sad to hear that it's becoming more difficult to get
2 to that level of detail for services trade data for
3 microdata.

4 But I have the pleasure of sharing with you all a
5 few discussion points on services imports, workforce
6 composition, and firm performance by Andrea and his co-
7 authors. I'm Junie Joseph. I'm from the Office of
8 Industries and Competitiveness Analysis, and let's get
9 started.

10 I'll just briefly recap what was just presented.
11 The key research question here was, how does importing
12 intermediate service inputs influence manufacturing and non-
13 manufacturing firms, in particular, services firms, both
14 their employment, particularly by the composition by skill,
15 whether that's education or occupation, and also performance.
16 So this is productivity as measured by value added per
17 worker.

18 I have employment again, but sales, he talks about
19 turnover or revenue, as well as assets. The data that he and
20 the authors use is really interesting because it's employer-
21 employee Finnish microdata that's linked. So we are somewhat
22 familiar with the concept of linking this employer-employee
23 microdata.

24 In particular, this takes firm-level account
25 information and links it to a database that has employer

1 information, as well as the employee information, that
2 includes worker characteristics, such as their demographics,
3 their age, their education, even as much as their work
4 history. So it's a great level of detail that they're able
5 to really take advantage of in their analysis.

6 They are using a particular reference point, 2002
7 to 2012, and the reason for that is they saw dramatic
8 increase in services import growth during that time. As you
9 scale up by GDP, they noticed that it was 5 percent of GDP.
10 And I love how they put it in context to the China shock for
11 the U.S., which is only about 2 percent of U.S. GDP.
12 Granted, U.S. GDP is huge and we're not as open, but it gives
13 you a good context of what this services growth felt like for
14 Finland during that time.

15 In terms of methodology, this is the same shift-
16 share approach, for those of you who have been with us
17 throughout the seminar week, we've seen repetitively. So
18 it's a very common methodology to use for analyzing these
19 types of questions regarding distributional effects when it
20 comes to trade.

21 What's unique about this paper is this is the first
22 paper that we've seen this week that looks at it for services
23 trade and uses services imports rather than goods trade.
24 This also follows a good framework by Adão and co-authors in
25 2019, where they actually build this equilibrium model and

1 really motivate where these instruments and the different
2 shocks are coming from.

3 So we heard just now about a revenue of consumption
4 shock, which is just being controlled here. It's not an
5 actual additional variable in their model or in their
6 analysis. But they really take advantage of these firm-
7 specific input shocks, and that's the change that's happening
8 in the imports relative to the countries that they import
9 from.

10 So think about it this way: If I'm a firm in the
11 UK -- or in Finland and I import accounting services from a
12 firm in the UK and another firm imports their accounting
13 services from a firm in the Netherlands, like KPMG, for
14 instance, if something happens in the UK market and we see
15 that firms, accounting firms from the UK increase their
16 imports to the rest of the world, the first firm sees that
17 shock, whereas the other firm in the Finland market that
18 imports services from Netherlands won't see that import
19 shock. So that's kind of the way that we're seeing this
20 firm-level variety in services imports.

21 So let's get to the results of this. Pretty
22 interesting. The first thing is that firm productivity,
23 revenues, assets all increased overall, and we see this even
24 when there's a breakout for manufacturing firms versus
25 services firms. But, for services firms, as you can imagine,

1 the impact was even larger.

2 Employment effects, on the other hand, those
3 varied. Overall, there's no effect on employment across the
4 industries, but when we actually break it down by either
5 education level or the different types of skill level for
6 occupations, we do see a decrease in the low- and medium-
7 skilled workers -- that's in terms of education -- as well as
8 occupation. And then you see an increase in the high-skilled
9 professionals and managers.

10 A lot of what's driving these overall results seem
11 to be what's happening in the services firms because
12 manufacturing firms' total employment decreased, and then you
13 saw decreases in the low- and medium-skilled workers but,
14 interestingly, an increase in managerial employment.

15 And one of the suggested mechanisms for this is, as
16 they increase international trade and services, there needs
17 to be more people coordinating and managing all of these,
18 like, additional productivity, whereas the actual thing that
19 was outsourced or imported rather, the services, that
20 employment goes away.

21 For services firms, total employment increased, and
22 a lot of that increase is happening from the high-skilled and
23 managerial employment. Interestingly enough, there is no
24 significant effect on medium-skilled employment for services.

25 So I'll talk a bit about some limitations, and I

1 group this in three not mutually exclusive chunks. The first
2 one is data, and, actually, Andrea mentioned this during his
3 presentation. Unfortunately, there's no transport services.
4 And for Finland, transport services is about 20 percent in
5 2012 of the services that they imported. So it makes up a
6 big chunk of the service import basket. And I wonder if,
7 like, given that there's not a way at the moment -- at least
8 not a clean way -- if there was a way you can imagine that if
9 transport services was included, we might see a higher impact
10 on manufacturing firms that really rely on transportation
11 services more than services firms may.

12 Another data limitation is we're only looking at
13 the intensive margin. What we mean by that is we're looking
14 at a firm's decision to import more or less, not whether they
15 import at all. So we don't see whether a firm decides, oh,
16 well, it looks like there's a great opportunity if I start
17 importing my services rather than using domestic services or
18 keeping that service in-house. Likewise, we don't see if a
19 firm started importing and then realizes, actually, I used
20 all that investment or all the revenue to reinvest in the in-
21 house service instead and I'm going to stop my imports. So
22 that's one limitation.

23 In terms of the framework and methodology, you'll
24 notice that you mentioned earlier that there's no upstream or
25 downstream linkages, and I would imagine that for Finland's

1 case where even though, as was mentioned, I think the paper
2 says about 70 percent of the firms are located in the capitol
3 region, I wonder if this actually still underreports some of
4 the effects that could happen.

5 For instance, if I am a downstream firm from a
6 services firm and I use, like, a domestic accounting firms,
7 but I might be importing financial services or other
8 professional services abroad, I might also be getting
9 benefits from the domestic firm that might also be importing
10 accounting services to further bolster their accounting
11 offerings. So, like, you can imagine that there might be
12 additional benefits to downstream industries from services
13 sectors, but that won't be captured here.

14 Something that wasn't mentioned is the labor
15 mobility. In the model, there is no labor mobility, largely,
16 perhaps for simplicity's sake. And you can imagine that --
17 and this will tie into one of the discussion questions --
18 where are these workers going? So I'll put a pin in that for
19 just a moment.

20 And one other framework and methodology limitation
21 would be that the indicators are the change in log
22 transformations or log transformations rather than levels or
23 share of workers. So, if you're thinking about, back to
24 Autor, Dorn and Hanson's, the China syndrome, he uses the
25 share of population for employment, like that kind of

1 employment variable.

2 And you might think of other papers. The paper
3 that we referenced here, Adão in 2019, they use employment
4 rate. This is somewhat similar to what's being used here.
5 If you do a log transformation and a change, it's effectively
6 like looking at a percent change of an employment rate kind
7 of thing.

8 As a result, it makes interpreting this data a bit
9 more difficult, especially if you're not in the esoteric
10 field of shift-share analysis and understanding Bartik
11 instruments. It takes a bit further.

12 I would actually recommend providing results
13 comparing the distribution of firms, so something like
14 compared to the firm at the 25th percentile, the distribution
15 of services of imports. Like, there's quite a bit of
16 quantifiers to add to that, but the firm at the 75th
17 percentile of the distribution had X.

18 You'll notice that because it's a Bartik
19 instrument, the results are really relative to other firms in
20 their import intensities. So, like, going through and
21 reporting the results, especially for people who are, like,
22 lay economists or people who are policymakers who are
23 digesting this information, having some kind of percentage
24 point increase comparison really would help.

25 Lastly, I would say context. As a share of GDP,

1 services imports is much larger in Finland than it is in the
2 U.S. In 2012, for the U.S., services imports are 2.9 percent
3 as a share of GDP, whereas, in Finland, it was 12.3, so when
4 you look at that comparison, it makes you think about that if
5 we applied this to the U.S. context, we might expect less
6 significant results or more. So it's unclear which direction
7 those results would go in. Also, the U.S. is a net exporter
8 of services, which has already been mentioned.

9 So, with the last bit of my time, I want to mention
10 these four discussion questions. The first one is, why not
11 more R&D by firms? Interestingly, across specifications, we
12 don't see any significant results in regards to R&D
13 expenditures, so it makes you wonder, like, you're doing
14 better as a firm, you're having increased productivity,
15 increased turnover, increased assets. Why don't we see more
16 investment? Is that because perhaps we're not seeing those
17 firms because they might enter or exit? Is it the timeframe?
18 Or maybe, across the board, firms are investing in R&D, so we
19 don't see it necessarily as a result of imports and it's just
20 captured in one of our controls.

21 Another thing that was pretty interesting is, what
22 happened to the workers? So, again, we're looking at
23 employment rates, so we're not looking at changes in levels
24 or population shares. So, when we say that high-skilled
25 workers increased, we're talking about, like, the growth rate

1 of high-skilled workers is increasing essentially. So is
2 this that these low-skilled workers are re-skilling and
3 they're going back into training schools and entering the
4 workforce in a higher occupation bracket or, like, skill
5 level? Is it that they're leaving the workforce? Are these
6 new participants into the workforce doing this high-skilled
7 professional work or managerial work?

8 I think because especially this is a DE seminar
9 week, I think what about the potential distributional effects
10 for the U.S. context? Workers at low- and medium-skill
11 education levels or occupations in the U.S. have
12 disproportionate minority representation, so if those are the
13 same groups that have employment losses, what does that mean
14 for policymakers when it comes to services trade
15 liberalization? So I think that's a kind of interesting
16 question to think about and perhaps try to find ways to model
17 to have a better grasp in the U.S. context.

18 And, finally, does the type of services trade
19 liberalization matter? So I really appreciated the welfare
20 gains analysis that was done at the end of paper, though that
21 was a very, like, macro approach. It would be great if there
22 was a way to provide the decomposition of your results, like
23 which services sectors, like, when they saw an increase, you
24 saw a very large increase in productivity or turnover or
25 whatnot, or employment.

1 Conversely, which countries where their imports
2 increased did we see high, great indicators, you know, of
3 great performance or bad or, like, really huge decreases in
4 employment.

5 That's all I have. Thank you so much.

6 MR. GRAY: Thank you, Junie, for those discussant
7 comments. Compelling. And I'll offer Professor Ariu a
8 chance to respond first, and I'll take this opportunity to
9 remind the broader audience that we will go to a Q&A for the
10 entire group here afterwards, so feel free to drop your
11 questions in the chat, as George has already done, or raise
12 your hand after Professor has a chance to speak.

13 MR. ARIU: Okay. Thank you, Junie, for all the
14 comments. Really, these are very, very insightful ones.
15 Okay. So, like, to transport and extensive margin, I can't
16 do much data. I would love to. That would have been even
17 more interesting than doing intensive margin, but,
18 unfortunately, we faced this data issue.

19 Regarding the downward bias of the results due to
20 the fact that we lacked the import IO linkages, actually,
21 this is true. The issue is that we would -- I mean, doing an
22 analysis at the firm level means that we should have these IO
23 linkages at the firm level, and this is hard to get. There
24 is no such data at the firm level.

25 Doing an analysis which exploits labor markets, as

1 in the U.S., that makes it feasible, so that's also the
2 reason why we can't do much about these IO linkages. There
3 is no data at the firm level that we can exploit. And the
4 fact that we have very little geographical variation makes it
5 impossible for us to make the analysis at the regional level,
6 unfortunately.

7 But I agree with you that this is creating a bias.
8 Fortunately, we think of this bias being a downward bias,
9 which makes us a bit more comfortable in presenting the
10 results. But you're right, this is a limitation.

11 I think also the question on what are workers doing
12 after, it's very interesting and we would have loved to do
13 something. However, we faced very difficult issues in
14 assessing the data at the worker level. And what I can say,
15 it's something which is not in the paper, so these are
16 results that we saw but then we couldn't include them in the
17 paper, basically, we see an increase in unemployment. So
18 these people tend to go to unemployment.

19 But this is a short-term effect. I don't know.
20 The data doesn't tell us what the worker is doing in the
21 meanwhile. I don't know if there is retraining. I don't
22 know if there is any other program in place, and I don't know
23 what comes after that. But I remember that the results were
24 saying that, like, after they were laid off, they were going
25 to unemployment mostly. This is what we find.

1 It's not in the paper; it's something that's mostly
2 as a descriptive statistic. But that's what we observed. We
3 would love to get into that. The only issue is that, as I
4 said, assessing the data is very costly for me now. Going to
5 Finland and work from Finland, it's difficult. And so it's
6 on the agenda, doing an analysis at the worker level, but we
7 didn't manage to do it yet.

8 And then I think the other comment which I would
9 like to discuss is how much -- what's the external value of
10 our results, so how much can we learn in other contexts, for
11 example, the U.S. case.

12 We're comparing, like, two countries which are very
13 different in terms of size, in terms of also type of
14 specialization. U.S. is an exporter of services. In
15 Finland, it's mostly an importer. And so, like, what can we
16 say -- and also, Finland experienced a big increase in
17 imports while U.S. to a much lesser extent.

18 And so what we can say is that if we see the U.S.
19 starting importing much more high-skill services, as it was
20 the case from Finland, we could be expecting the same type of
21 results. So negative effects on low- and medium-skilled and
22 positive effects on high-skilled and a general improvement in
23 performance of U.S. firms.

24 How big of an impact it could be? I don't know
25 because we lack a bit of data on how widespread is this

1 phenomenon in the U.S. case. I guess it's going to be the
2 same. So firms in all sectors are going to be importing, but
3 how many of them are importing, we still don't know this
4 actually fully, because there is a survey, but for such a big
5 country, I don't know exactly how big are the numbers for
6 each sector and so I don't know exactly how big it can be.

7 But I think that, like, following a similar type of
8 increase in imports of services, I think there could be the
9 same effects also in the U.S. Of course, there is a
10 structural difference in employment, which we will be taking
11 into account, but I think the results are pretty general.
12 And, again, given the same shock, I think firms are going to
13 be reacting in the same way.

14 Finally, I would like to comment on the cutting a
15 bit and understanding better the shock and so which type of
16 services, which type of origin countries are driving the
17 results, and I can tell you that most of it's coming from
18 Europe. So this increase comes from Europe and comes mostly
19 from high-skilled type of services.

20 The issue is that I cannot cut each individual type
21 of service and do a different analysis for each of them
22 because we end up with very few firms, and so we have
23 confidentiality issues that start kicking in. I cannot show
24 results if there is not a certain number of firms in each
25 cell. And so, formally, I can tell that these are the type

1 of countries and services which are driving our results, but
2 I cannot be more specific than that.

3 But something which we could do is to see how these
4 different type of services actually interact in the welfare
5 analysis. So, like, what's driving most of the welfare
6 increases. This is doable. There is a bit of an issue of
7 having the right elasticity for each type of service, but
8 this is something which can be done after, so, actually, it's
9 a very good suggestion.

10 And why there is not more R&D, I don't know, but
11 it's R&D spending. I don't know, maybe they changed the way
12 in which they do R&D? They don't change the budget, but they
13 change the type of R&D that they do? That's possible. I
14 only observed the total amount that is invested in R&D,
15 unfortunately, and it looks like they don't increase it after
16 they do increasing imports of services. That's all.

17 MR. GRAY: Thank you very much. I hope it's okay
18 to turn to the chat briefly before turning it over to Martha
19 and others. George has a question about the differential
20 effects on medium-skilled workers between manufacturing and
21 non-manufacturing firms. George, if you'd like to elaborate?

22 MR. YANG: Hey, Andrea, thank you so much. So I
23 was looking at your table and the effect for medium-skilled
24 manufacturing professionals of greater service imports is
25 negative 0.4 and then the effect is zero for service firms.

1 I guess my intuition wasn't -- I don't know, like, why that
2 is, and I was wondering if you could speculate on why you
3 think that magnitude is different.

4 MR. ARIU: Mm-hmm. Sure. So what's happening I
5 think is that the opportunity of importing services is
6 basically an opportunity to save on costs. And this is much
7 more binding for the manufacturing sector, which is a sector
8 which is struggling, which has been struggling in the period
9 like, which was struggling in the period that we are
10 analyzing, and so any opportunity to cut cost was actually
11 pursued by firms. And so the fact of being able to replace
12 medium-skilled workers was especially used by firms in the
13 manufacturing sector while, at the same time, the service
14 sector was kind of booming at that time and is still
15 actually. And so there was less the need of relocating these
16 type of workers in that sector, so that's the reason why we
17 observe different results for manufacturing versus service
18 firms, and that's what's driving that difference, I think.

19 MR. YANG: Thank you.

20 MR. GRAY: Martha?

21 MS. LAWLESS: Andrea, thank you again for the great
22 presentation, and, Junie, for your really helpful comments.
23 I was thinking sort of slightly big picture from the whole
24 welfare effect discussion that your conclusion that services
25 imports can help a country build their participation in the

1 global services markets themselves, as well as build their
2 expertise and sales domestically, it's a really important
3 observation because there's a lot of discussion.

4 We've seen rises in, you know, increases in the
5 number of barriers to services trade across the range of
6 different services industries but particularly digital
7 services or computer services or other fairly sophisticated
8 business services, and that is being driven by more and more
9 countries thinking that they need to have policy support to
10 their domestic ecosystems in those areas, whether it's
11 digital services or computer services, et cetera.

12 And that's a traditional view that if they give
13 them some space, they can develop their expertise locally and
14 that will allow them to gain the scale and expertise required
15 to get into the global market in some way.

16 And your results seem to counter that rationale for
17 policy in that, if you participate, you will build your
18 participation in global value chains in those services if you
19 import as well. Would you have thoughts for policymakers?

20 MR. ARIU: Yes. So, like, what our results say is
21 that, actually, opening up to trade is a way of getting
22 cheaper imports, or you can see these as better-quality
23 service imports. And this is actually very positive for
24 firms in terms of performance.

25 One thing we should always be taking into account

1 is that these changes have consequences for workers. And so
2 the policy challenge is how to grasp this opportunity without
3 creating further inequality or, like, leading to exacerbate
4 the issue of having winners and losers. And so that's a big
5 challenge.

6 And it's true that many countries try to pursue
7 this infant industry protection type of strategy, but the
8 observation is that it doesn't really pay off, unfortunately.
9 And so, in a way or another, all countries at a certain point
10 need to get into trade liberalization if they want to really
11 develop. And it's a great opportunity. There are a lot of
12 papers which show that the access to services leads to better
13 performance of manufacturing firms in different contexts, and
14 that's a policy that should be pursued. The difficult task
15 is how to take care of the fact that there are going to be
16 losers from this phenomenon, unfortunately, and I don't have
17 a solution for that.

18 But, for sure, I am very much in favor of pushing
19 for a liberalization which would allow more trade in
20 services, which is going to cause, according to my analysis,
21 to firms benefitting a lot from that and, actually, firms in
22 all sectors because we tend to think of industrial policy as
23 being only manufacturing, but, actually, we should think of
24 also the service sector, which is something which is
25 neglected on the policy tables.

1 MS. LAWLESS: That's the most interesting piece of
2 this, I think. It's that you're reinforcing expertise
3 possibly by importing the services rather than substituting.
4 It's a complement, and that that picture of what would happen
5 if you liberalized is a different picture because people use
6 that traditional one that goes with substitution.

7 And the digital services, for instance, is a much
8 more complicated ecosystem to build, and there may well be
9 different kinds of effects and not necessarily displacing
10 less-skilled workers, but if you're a country deliberately
11 trying to build your digital services ecosystem, it may be
12 from what you're finding that openness is a better way to go.
13 Thank you so much.

14 MR. ARIU: Thank you.

15 MR. GRAY: Great. Seeing as we are a bit over time
16 and I'm not seeing any more questions, I would like to
17 conclude by thanking Professor Ariu, Junie Joseph, and Martha
18 Lawless for your research and comments and discussion today.
19 I'd like to remind everyone that there are two more seminars
20 in our series this week, with the next one being tomorrow at
21 10 a.m. Eastern Standard Time, where Professor Reyes-Heroles
22 will present his paper, "Escaping the Losses from Trade: The
23 Impact of Heterogeneity and Skill Acquisition."

24 We hope to see you the rest of the week. Thanks,
25 all.

1 (Whereupon, at 10:35 a.m., the seminar in the
2 above-entitled matter was adjourned.)
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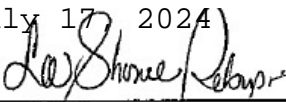
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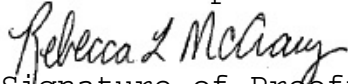
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