

COLOMBIA PRODUCTIVA

PRIOR BELIEFS ELICITATION

October 22, 2018

Prior beliefs about the take-up rate and ITT effects were elicited from three groups: academic experts, policymakers, and firms participating in the full version of the program.

Academic priors were collected in June and July 2018 from the following eleven academic experts, all of whom have familiarity with at least one of management improvements, export interventions, and/or Colombian firms: David Atkin, Nick Bloom, Miriam Bruhn, Marcela Esclava, Ana Fernandes, Yuki Higuchi, Amit Khandewal, Marcela Melendez, Adam Osman, Eric Verhoogen and Chris Woodruff.

Policy priors were collected between June and August 2018 from the following seven Colombian high-level policymakers, all of whom had input into policy decisions surrounding the program: Daniel Arango (vice minister of Commerce), Claudia Bedoya (chief deputy of Productivity from the Ministry of Commerce), Juan Pablo Garcia (Subdirector de Ciencia, Tecnología, e Innovación, Departamento Nacional de Planeación), Camilo Rivera Perez (Subdirector Técnico, Subdirección de Productividad, Internacionalización y Competencia, DNP), Dario Rodriguez Perez (Coordinador de Competitividad y Desarrollo Productivo, Programa de Transformación Productiva), Rafael Puyana (Vice-president from the Competitiveness Private council), Juan Sebastian Robledo (Director Técnico, Dirección de Innovación y Desarrollo Empresarial, DNP).

Firm priors were collected between August and October 2018 from one key decision-maker (typically the general manager) at each of ten firms participating in the full version of the program. During this time the firms had begun the diagnostic, but not implementation.

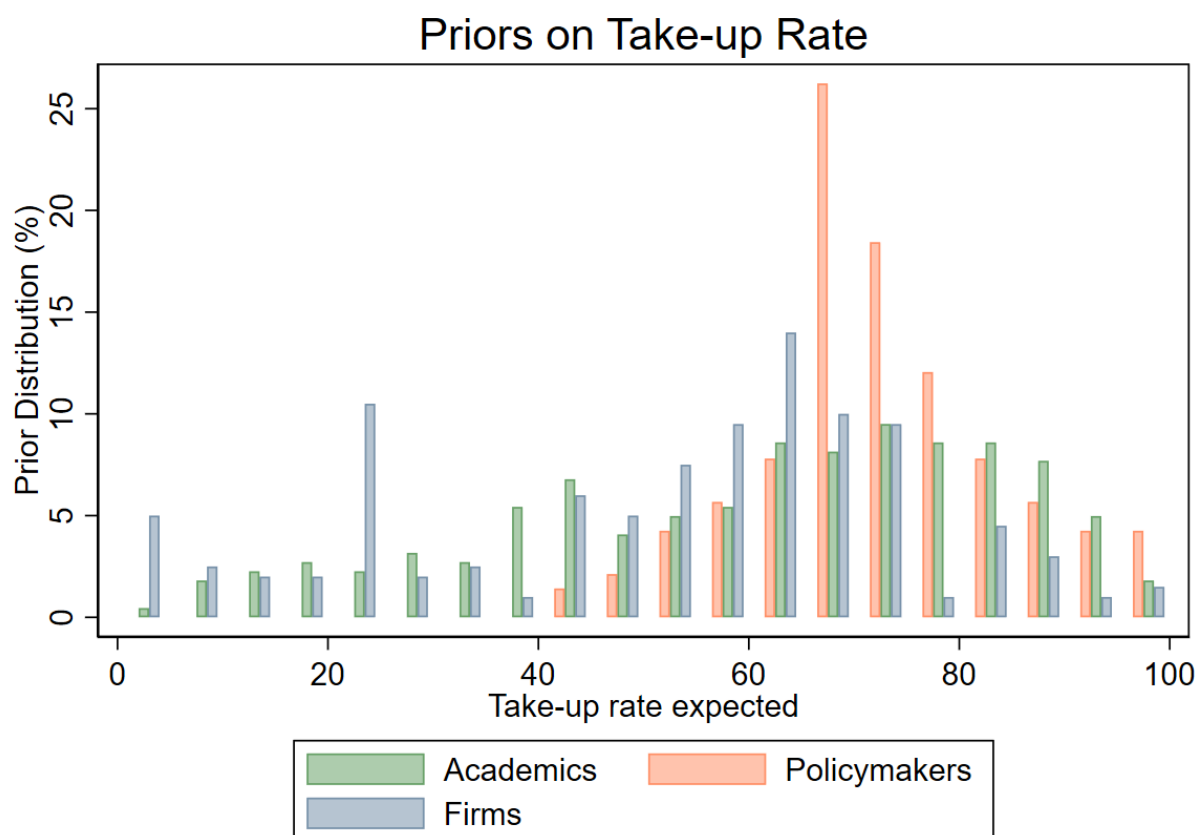
This document serves to pre-register the raw data collected from this prior elicitation, which is shown in the form of histograms. We will fit distributions on these histograms as the Bayesian analysis gets further developed, and register the fitted distributions before any outcome data are collected. Note that priors solicited distributions in ranges, but the histograms here show the mass at the midpoint of each range.

Beliefs About Program Take-up Amongst Those Offered

100 of the firms that had applied for the program were selected for the Benefits 2 package, meaning they get the full intervention. However, in order to receive this, firms have to pay 3 million pesos (\$1,035) if they have between \$125,000 and \$1.25 million in assets; and 6 million pesos (\$2,070) if they have at least \$1.25 million in assets.

Experts were then asked their priors on the take-up rate (“the number of firms out of 100 in the program that choose to pay their share of the cost and receive the full intervention”)

The figure below shows the priors elicited. The medians are 63% for Academics, 58% for Firms, and 73% for Policymakers.



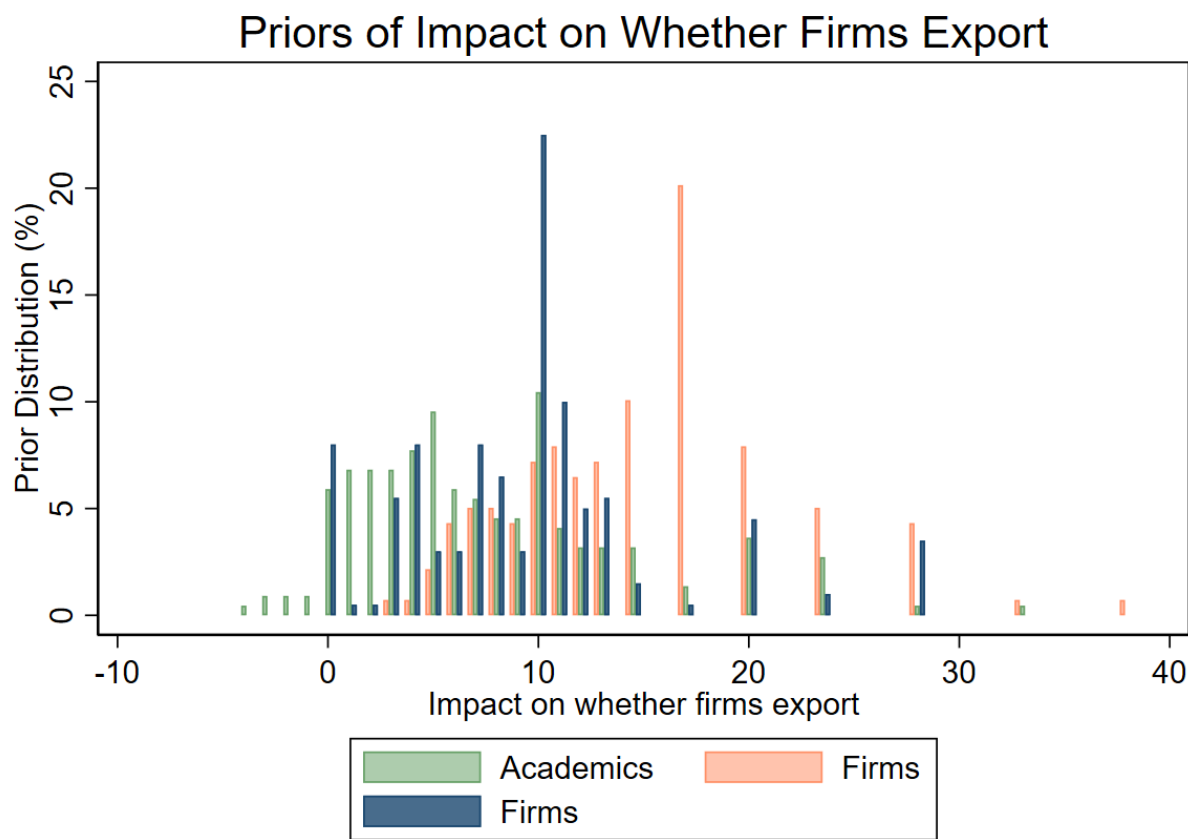
Note: take-up rate for policymakers jittered by -1 and for firms by +1 to ease visual comparison.

Priors on the Extensive Margin of Whether Firms Export in the Year After the Intervention Begins

The 190 hours of technical assistance will begin in the second half of 2018. 49 percent of the firms in the Benefits 2 (full intervention group) exported in 2017.

Experts were asked: “We want to know how much you think this will *CHANGE* for the group getting offered the full intervention compared to getting offered just the diagnostic and trade fair, over the first 12 months since firms start their implementation.”

The figure below shows the priors elicited. The medians are 6 percentage points for Academics, 10 percentage points for Firms, and 13 percentage points for Policymakers.



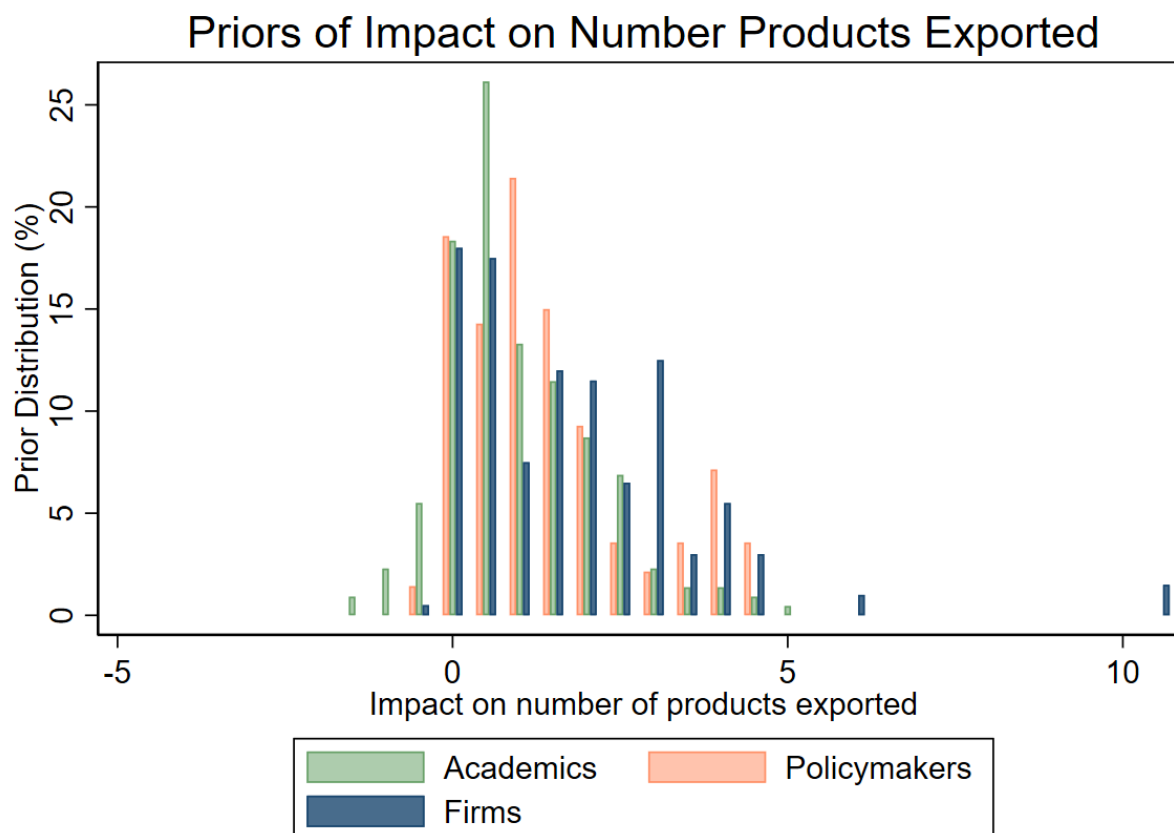
Note: percent exporting for policymakers jittered by -0.25 and for firms by +0.25 to ease visual comparison.

Priors on Impact on the Number of Different Products Exported in the Year After the Intervention Begins

Products are measured using the 6-digit product classification in the harmonized system for the Andean Community. Examples of products being exported by these firms include different tropical fruits (e.g. uchuva (cape gooseberry), granadilla (yellow passionfruit), gulupa (purple passionfruit), pitaya (dragonfruit), and tomate de arbol (tamarillo)), cotton t-shirts, long and short trousers for women and children, shirts and blouses of artificial or synthetic fiber, miscellaneous plastic products, and miscellaneous steel products. In 2017, on average the 100 firms offered the full intervention exported 3.4 different products. This is the average over both exporters and non-exporters, so includes zeros for the half of the firms that do not export.

Experts were asked: *We want to know how much you think this will CHANGE for the group getting offered the full intervention compared to getting offered just the diagnostic and trade fair, over the first 12 months since firms start their implementation.*

The figure below shows the priors elicited. The medians are 0.5 products for Academics, 1.5 products for Firms, and 1 product for Policymakers.



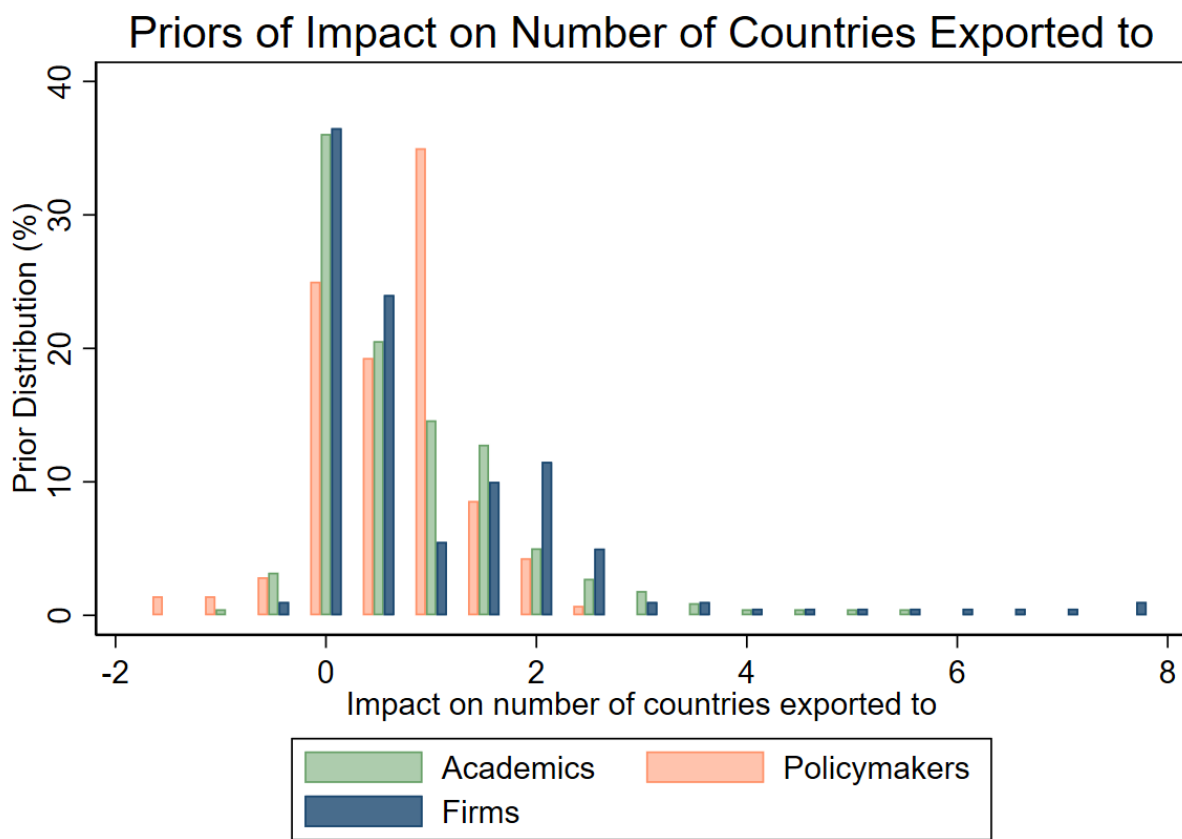
Note: number of products for policymakers jittered by -0.1 and for firms by +0.1 to ease visual comparison.

Priors on Impact on Number of Countries Exported to in the Year After Intervention Begins

In 2017, on average the 100 firms offered the full intervention exported to 1.7 different countries. This is the average over both exporters and non-exporters, so includes zeros for the half of the firms that do not export.

Experts were asked “We want to know how much you think this will change for the group getting offered the full intervention compared to getting offered just the diagnostic and trade fair, over the first 12 months since firms start implementation”

The figure below shows the priors elicited. The medians are 0.5 countries for Academics, 0.5 countries for Firms, and 0.5 countries for Policymakers.



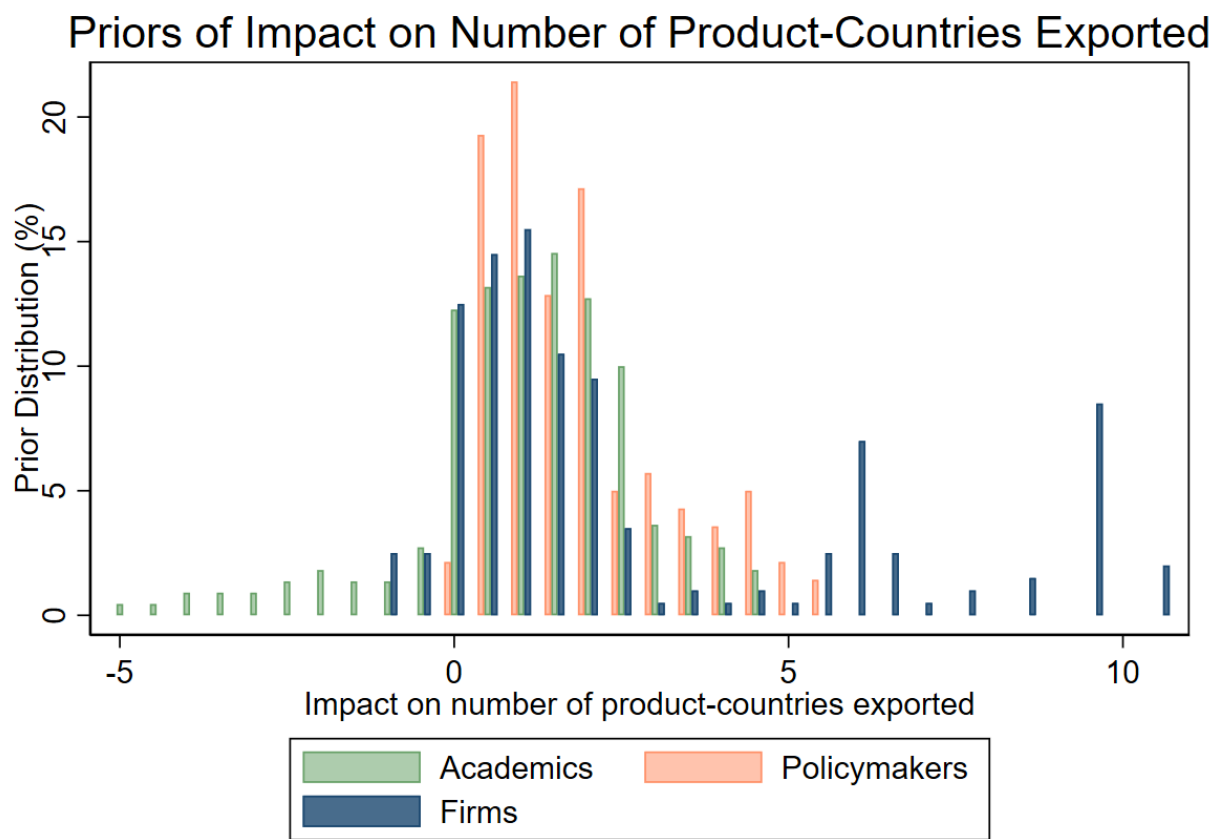
Note: number of countries for policymakers jittered by -0.1 and for firms by +0.1 to ease visual comparison.

Priors on Impact on Number of Distinct Product-Country Combinations Exported in the Year After the Intervention Starts

This outcome combines the number of distinct products with the number of countries. For example, a firm that exports cotton t-shirts to Brazil and Argentina will have 2 product-country combinations, as would a firm that exports both gulupa (purple passionfruit) and pitaya (dragonfruit) to the United States. In 2017, on average the 100 firms offered the full intervention exported 9.8 different country-product combinations. This is the average over both exporters and non-exporters, so includes zeros for the half of the firms that do not export.

Experts were asked “We want to know how much you think this will change for the group getting offered the full intervention compared to getting offered just the diagnostic and trade fair, over the first 12 months since firms start their implementation.”

The figure below shows the priors elicited. The medians are 1 product-country for Academics, 1.5 product-countries for Firms, and 1.5 product-countries for Policymakers.



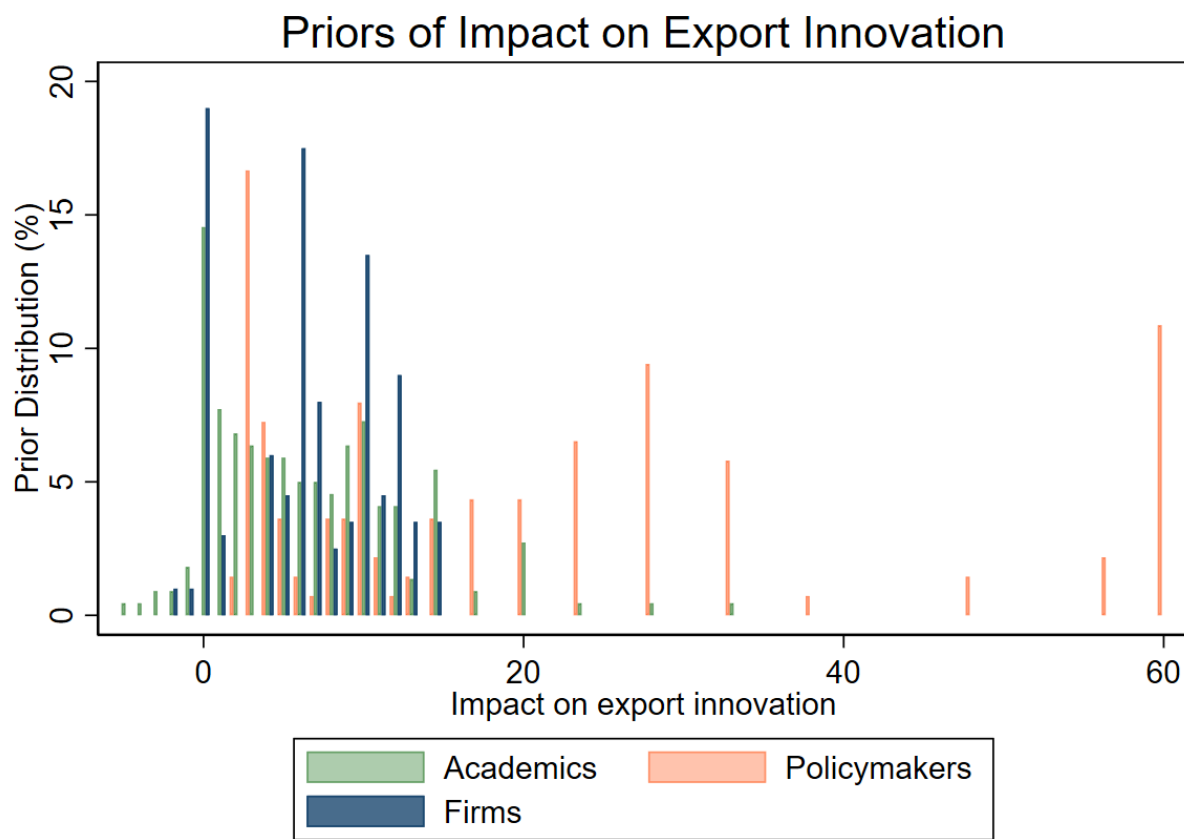
Note: number of product-countries for policymakers jittered by -0.1 and for firms by +0.1 to ease visual comparison.

Priors on Impact on Export Innovation in the Year After the Intervention Begins

In 2017, 34% of the 100 firms offered the full intervention innovated by exporting a new product-country combination that they had not previously exported.

We want to know how much you think this will change for the group getting offered the full intervention compared to getting just the diagnostic and trade fair, over the first 12 months since firms start their implementation.

The figure below shows the priors elicited. The medians are 5 percentage points for Academics, 6 percentage points for Firms, and 13 percentage points for Policymakers.



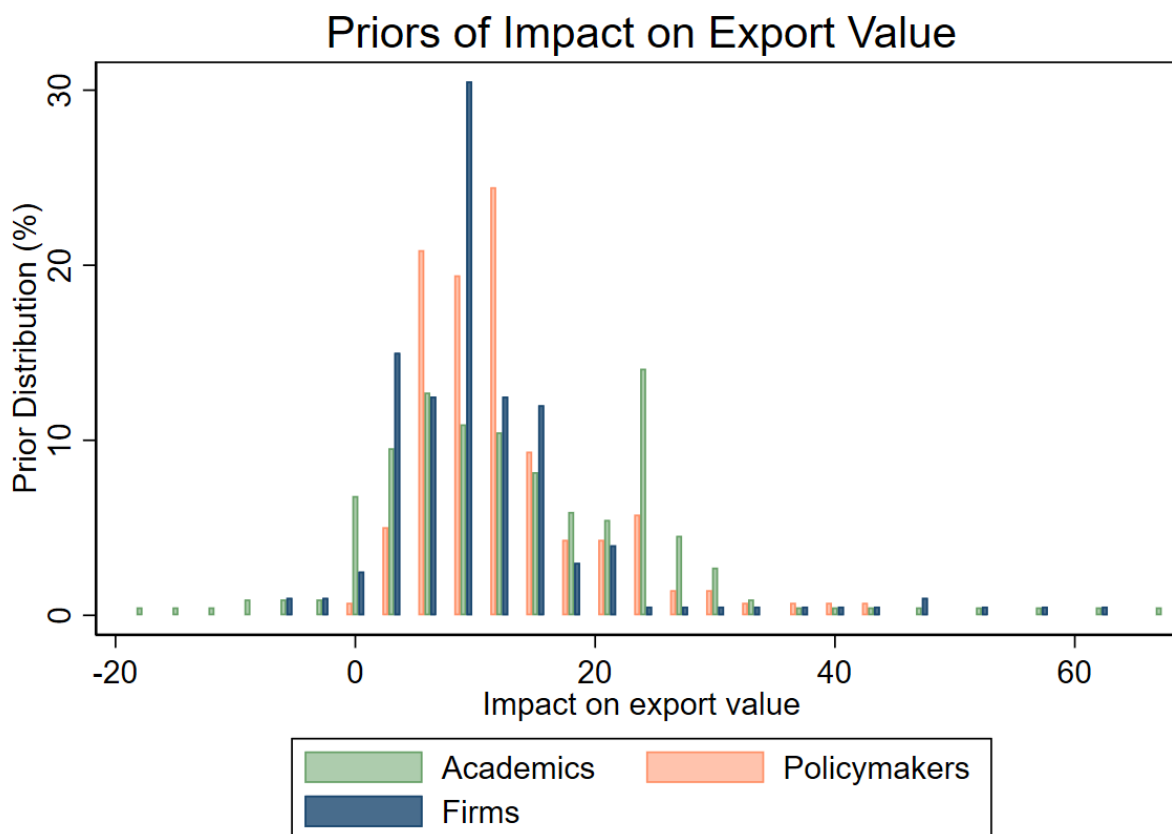
Note: export innovation for policymakers jittered by -0.25 and for firms by +0.25 to ease visual comparison.

Priors on Impact on Export Value in the Year After the Intervention Begins

In 2017, on average the 100 firms offered the full intervention exported US\$341,000 of goods. This is the average over both exporters and non-exporters, so includes zeros for the half of the firms that do not export.

We want to know how much you think this will change for the group getting offered the full intervention compared to getting just the diagnostic and trade fair, over the first 12 months since firms start their implementation. We want you to think about this in terms of the PERCENTAGE CHANGE in average exports.

The figure below shows the priors elicited. The medians are 12 percentage points for Academics, 9 percentage points for Firms, and 12 percentage points for Policymakers.



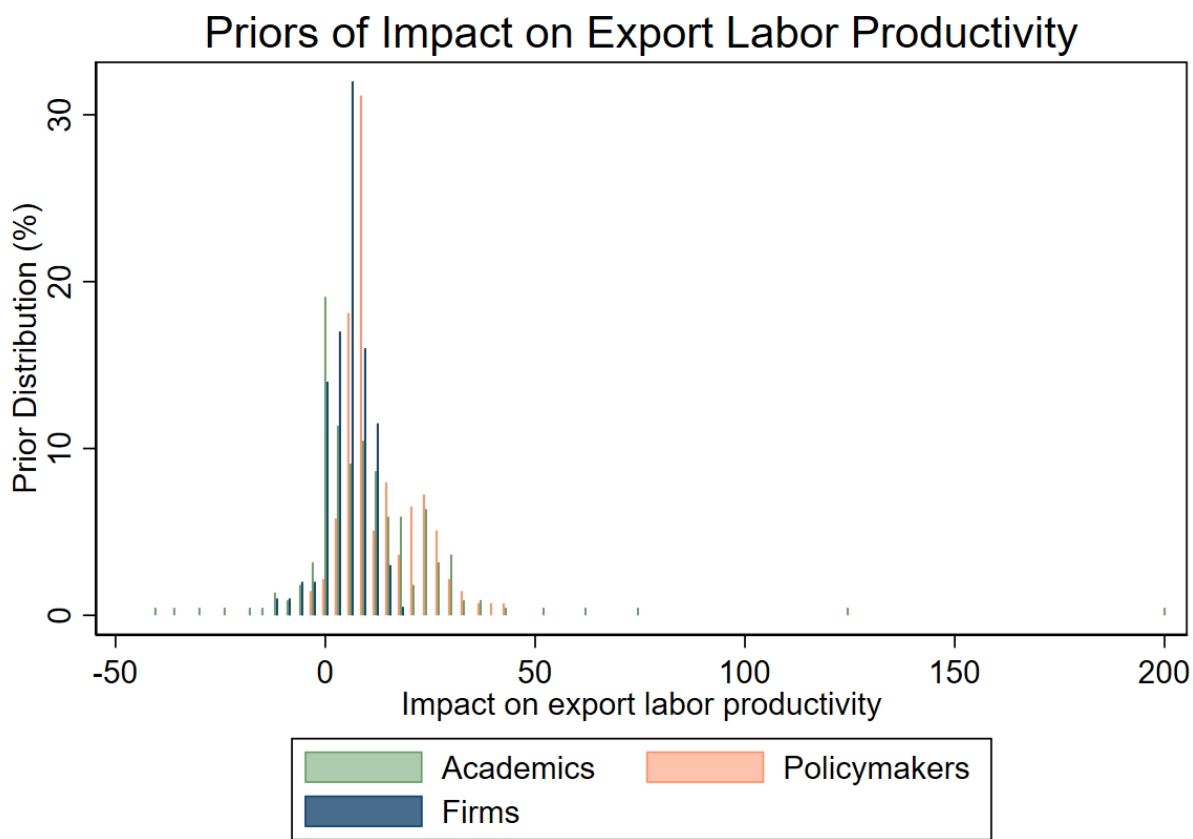
Note: export value for policymakers jittered by -0.5 and for firms by +0.5 to ease visual comparison.

Priors on Impact on Export Labor Productivity in the Year After the Intervention Begins

In 2017, on average the 100 firms offered the full intervention exported US\$15,000 of goods per worker employed in the firm. This is the average over both exporters and non-exporters, so includes zeros for the half of the firms that do not export.

We want to know how much you think this export labor productivity will change for the group getting offered the full intervention compared to getting just the diagnostic and trade fair, over the first 12 months since firms start their implementation. We want you to think about this in terms of the PERCENTAGE CHANGE in average exports.

The figure below shows the priors elicited. The medians are 9 percentage points for Academics, 6 percentage points for Firms, and 9 percentage points for Policymakers.



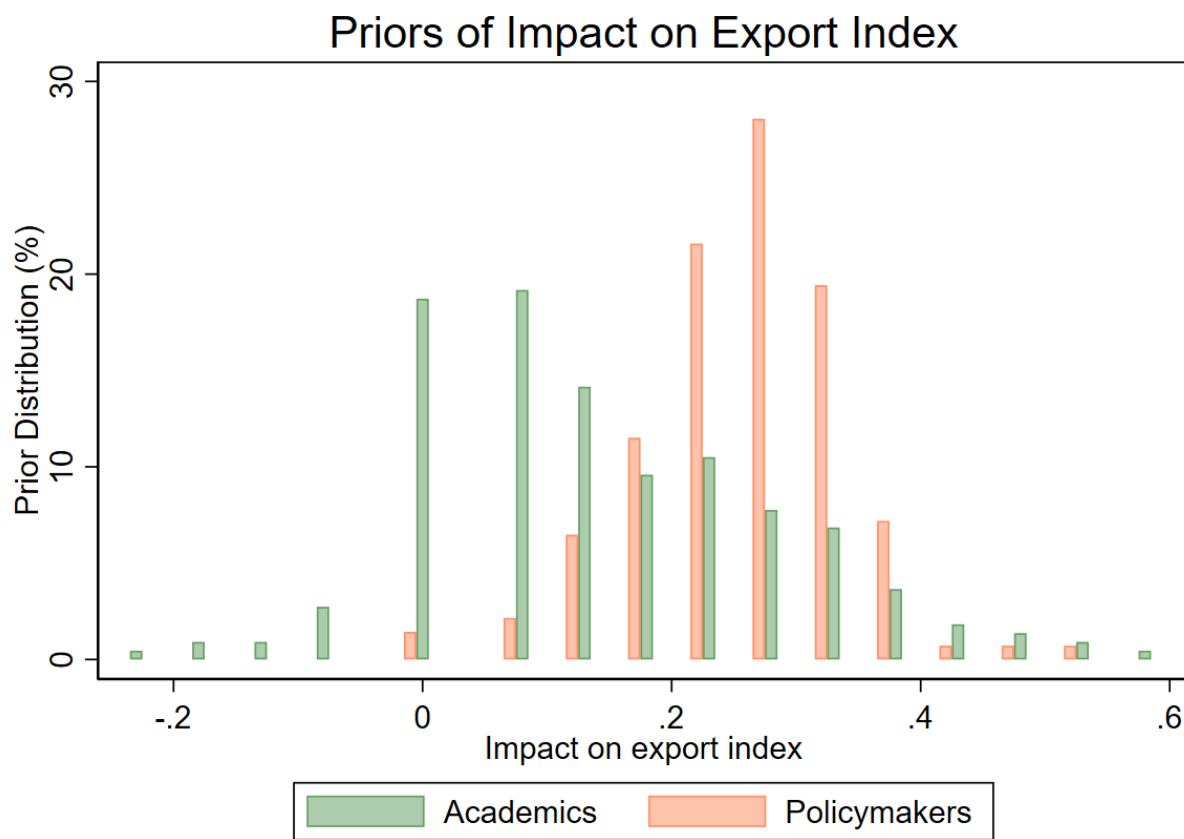
Note: export labor productivity value for policymakers jittered by -0.5 and for firms by +0.5 to ease visual comparison.

Priors for Average Impact on Different Export Outcomes

The different export outcomes can be combined into a summary index by normalizing each effect in terms of standard deviations. Across the 7 outcomes above, the standard deviation is approximately 1.5 times the mean. A 10% increase in the mean is thus approximately a 0.15 standard deviation increase in this average index. A common rule of thumb is that changes below 0.2 standard deviations are considered “small” increases, a change of 0.2 to 0.5 standard deviation is considered a “medium” increase, and a change above 0.5 is considered a “large” increase.

Experts were asked “We want to know how much you think this average index of export outcomes will change for the group getting offered the full intervention compared to getting just the diagnostic and trade fair, over the first 12 months since firms start their implementation.”

Note that this question proved too difficult in testing to elicit from firms, so is asked from academics and policymakers only. The figure below shows the priors elicited. The medians are 0.13 s.d. for Academics, and 0.28 s.d. for Policymakers.



Priors for Beliefs about the Correlation in Export Performance

Finally experts were also asked “We also would like to ask your beliefs about the correlation you would expect to see in firm outcomes with and without the full program. Imagine you were to rank the 100 firms offered the full program in terms of their export performance if they were not offered the program, and then rank them again in terms of their export performance with the program. If you think the exact same firms with the highest export performance without the program will also be the ones with the highest export performance with the program, then the correlation will be 1; if you think there is no relationship between the rank with the program and without the program, the correlation will be 0; and if you think the firms will reverse ranks then the correlation will be negative.”

Note that this question proved too difficult in testing to elicit from firms, so is asked from academics and policymakers only. The figure below shows the priors elicited. The medians are 0.655 for Academics, and 0.655 for Policymakers.

