Supplementary Appendix to "Does Importing Intermediates Increase the Demand for Skilled Workers? Plant-level Evidence from Indonesia"

Hiroyuki Kasahara*
Vancouver School of Economics
University of British Columbia

Yawen Liang
School of Economics and Wang Yanan Institute for Studies in Economics (WISE)
Xiamen University

Joel Rodrigue
Department of Economics
Vanderbilt University

A Data Description

A.1 Manufacturing Plant Data

Our plant level data comes from the Indonesian manufacturing census (Large and Medium Industrial Statistics) in years 1994-1996 and 2004-2007. This survey data covers all manufacturing plants in Indonesia with at least 20 employees. Key variables used in our study are described below.

Labor

For each plant, the survey records the education levels of all production and non-production workers. This dimension of the data allows us to compute the number of skilled and unskilled workers in each occupation category. We define production workers with more than high-school education or non-production workers with more than college education as skilled workers. Using this definition we count the number of skilled and unskilled workers for each occupation category and each plant.

Intermediate Goods and Capital

In order to estimate plant-specific productivity, we also need the intermediate goods and capital used for production. Intermediate goods includes imported raw materials, domestically purchased raw materials and expenditures on energy. The wholesale price index for manufactured goods is used to convert nominal values into real values.

We compute the real value of capital at the beginning of year t as

$$K_{it} = building_{it}/P_t^{build} + machine_{it}/P_t^{mach} + vehicle_{it} \times 100/P_t^{vehic} + (rent_{it}/0.1)/P_t^{rent},$$

*Address for correspondence: Hiroyuki Kasahara, Vancouver School of Economics, University of British Columbia, 6000 Iona Drive, Vancouver, BC, V6T 1L4 Canada.

where $building_{it}$, $machine_{it}$, and $vehicle_{it}$ are the nominal value of buildings, machines, and vehicles at the beginning of year t; $rent_{it}$ is equal to the reported value of rental payments for buildings and machines, where we divide the rental value by the depreciation rate (10 percent) to get the appropriate capitalized value. The capital price indices are obtained from Badan Pusat Statistik (BPS).[1] Since rent is only paid for buildings and machines, we compute price index for rented capital as

$$P_t^{rent} = \frac{\sum_i building_{it}}{\sum_i (building_{it} + machine_{it})} \times P_t^{build} + \frac{\sum_i machine_{it}}{\sum_i (building_{it} + machine_{it})} \times P_t^{mach}.$$

When the capital values are not reported in 1996 or 2006, we use the reported values of capital in 1994, 1995 and 1997 for constructing the 1996 capital value, and similarly, the reported values of capital in 2004, 2005 and 2007 for constructing the 2006 capital value by assuming $K_{it} = 0.9K_{it-1} + Investment_{it-1}$ with $Investment_{it} = Investment_{it}^{buildings} + Investment_{it}^{machines} + Investment_{it}^{vehicles}$, where $Investment_{it}^{building}$, $Investment_{it}^{machines}$, and $Investment_{it}^{vehicles}$ are the real values of net investment of buildings, machines, and vehicles in year t.

Some plants do not report capital values in any year between 2004 and 2007. For those plants, we impute the values of capital as follows. First, using the plant observations in 2005 for which capital values are constructed from the data between 2004 and 2007, we run the OLS regression $\log K_{i,2005} = X'_{i,2005}\alpha + \epsilon_{i,2005}$, where $K_{i,2005}$ is the beginning-of-period capital in 2005; X_{it-1} includes a constant, the ratio of investment to capital, the log of production workers, the log of non-production workers, the log of output, the log of intermediate goods, an import dummy, province dummies, industry dummies, plant age, plant age squared, a dummy variable for positive investment, a dummy variable for no hiring of production workers, and a dummy variable for no hiring of non-production workers. Then, given the OLS estimate of α, $\hat{\alpha}$, we compute the imputed value of capital at the beginning of year 2006 for plants with missing capital values as $K_{i,2006}^{impute} = 0.9\exp(X'_{i,2005}\hat{\alpha}) + Investment_{i,2005}$. For the sample of initial non-importers, we use the imputed values of capital for 11 percent of observations. For plants with missing capital values in 1996, we construct the imputed value of capital at the beginning of year 1996 using 1995 data in the same way.

Other Plant Variables

Other plant information contained in the data includes the percentage of foreign ownership, total expenses on research and development (R&D), and total expenses on training. Dummies variables for foreign ownership, R&D and training are defined as whether the above mentioned variables are greater than zero.

A.2 Regional Variables

The plants in our data locate across 33 provinces and 397 regions (kabupaten/kota) in Indonesia. This detailed location information allows us to take use of the variations in the local wages and the transportation cost.

Wage

We use the household survey data (SAKERNAS—Indonesian Labour Force Survey) to estimate the skill premium in each region after controlling for other personal characteristics of workers that may affect their

[1] Specifically, we use the price indices for construction goods, imported and domestic machines, and vehicles. The imported and domestic machines price indices are weighted according to the input-output table for manufactured goods to get one price index for machines. The building price index covers the period 1996-2006 and is extended to 2007; machine and vehicle price data only covers 1998 to 2005 and is extended to the period 1996-2007. The extension from 1998 to 1996 relies on the wholesale price of capital goods which is available during the 1992-1999 period. The GDP deflators of construction goods, machines and vehicles are used to extend the original price index to 2007.

wages. Specifically, using the sample of employed workers in the household survey for 1996 and 2006, we estimate the following Mincer regression:

$$\log(Wage_{ir}) = \beta_g Gender_i + \beta_x Experience_i + \beta_{x2} Experience^2 + \beta_s Skill_i + \beta_{sr} Skill \times D_r + \beta_r D_r,$$

where $Wage_{ir}$ is the reported wage for individual i in region r, $Gender_i$ represents individual i's gender, $Experience_i$ is the years of work experience, and D_r is a regional dummy for region r. $Skill_i$ is a skill dummy based on an education threshold of highschool or college. The estimated value of $\beta_s + \beta_{sr}$ is then used as our measure for the log of the relative wage ratios of skilled to unskilled workers in year 1996 or 2006, denoted by $\ln(W_s/W_u)_{96}$ or $\ln(W_s/W_u)_{06}$, respectively. These skill premium measures depend on whether an education threshold to define $Skill_i$ is highshool or college. The skill premium based on a threshold of highschool education are used for the regressions in columns (1)-(4) of Table 5 or columns (1)-(4), (9)-(12) of Table 6 while we use a threshold of college education for the regressions in columns (5)-(8) of Tables 5-6 .

Distance to Port

Among all ports in Indonesia, there are two large ports, sixteen medium-sized ports and all other ports are either small or very small, according to the World Port Source. The 18 large or medium sized ports are chosen to be the main destinations for our constructed measure of transportation cost. Specifically, given these destinations, and taking the geographical features of Indonesia into consideration, we compute the least-cost path from the center of every region to its nearest port by ArcGIS. The calculation divides the entire country into cells of size 1 km^2. Each cell contains a value representing the average elevation of that area. The travel cost of each cell depends on the slope from the cell to its adjacent cells and whether the cell locates on land or sea. ArcGIS determines the optimal route for each cell by finding the least-accumulative-cost path to its nearest major port. The transportation cost for a region is approximated by the the accumulative cost along the optimal route from the center cell of the region. For each plant, the proxy for its transportation cost is the transportation cost of the region in which the plant is located. Details about the process of computing this cost measure are described in the following paragraphs.

Three types of data are used in ArcGIS to generate the transportation cost: raster data (R), point data (P) and table data (T). Raster data consists of a matrix of cells (pixels) organized into a grid where each cell contains a value representing information. In our data, each cell represents a 1 km^2 square in the real world. Point data contains information for specific points. Each point is composed of one coordinate pair representing its location on the earth. Table data is used to store the attributes (e.g. names, locations, temperatures, etc.) of features.

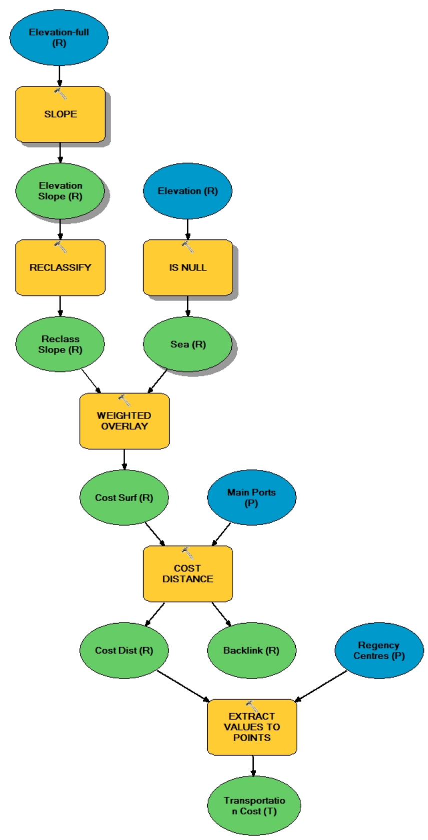
There are three main steps for computing the transportation cost. First, generate the cost raster for Indonesia which defines the cost to move planimetrically through each cell according to geographical features. Second, given a cost raster and the main ports as destination points, the "Cost Distance" tool generates the raster data in which the least accumulated cost distance for each cell to its nearest destination is calculated. Lastly, to get the measure of the transportation cost for each region, we extract the cost distance value for the cells located in the center of the regions from the raster data obtained from second step. Figure A.1 displays the process of this calculation. The ellipses in the flowchart represent data while the round-cornered squares represent tools.

Step 1. The travel cost of each cell depends on the slope from the cell to its adjacent cells and whether the cell is located on land or sea. "Elevation-full" is the Indonesia elevation data, the value of a cell in this raster data indicates the average elevation in the 1 km^2. Cells in the sea take a value of zero. The "SLOPE" tool generates the slope layer "Elevation Slope", in which a cell value indicates the maximum rate of change between the cell and its neighbors. A road which traverses less steep slopes is preferable. We reclassify the slope layer, slicing the values into 10 equal intervals. A value of 10 is assigned to the most costly slopes (steepest) and 1 is assigned to the least costly slope (flattest), values in between are ranked linearly. "Reclass Slope" is the raster data after re-classification. Each cell value between 1 and 10 indicates the difficulty of traveling over it. One problem with this surface is that traveling across the sea is considered costless since the elevation is zero (and so are the slopes) everywhere on the sea. To solve this problem, another layer "Sea" is created. The "Sea" raster assigns value 0 for land and 1 for sea. The last step for generating the cost raster overlays the rasters "Reclass Slope" and "Sea" using a common measurement scale and weights 50 percent on each layer. Specifically, scale values of the "Reclass Slope" layer are unchanged (10 for steepest and 1 for flattest), and scale values for "Sea" layer are set to be 1 for land (low cost) and 10 for sea (high cost), thus, the cost of travelling over cell i is $Cost_i = 0.5 \times ReclassSlope_i + 0.5 \times 10^{Sea_i}$. Putting all the cells on map forms the raster data "Cost Surf".

Step 2. Given the 18 main ports ("Main Ports") as destinations, the "COST DISTANCE" tool calculates the accumulated distance from each cell to its nearest destination along the optimal path, using the "Cost Surf" data obtained in step 1 to measure the cost of passing cells. The resulting raster data "Cost Dist" reports the transportation cost of all the cells.

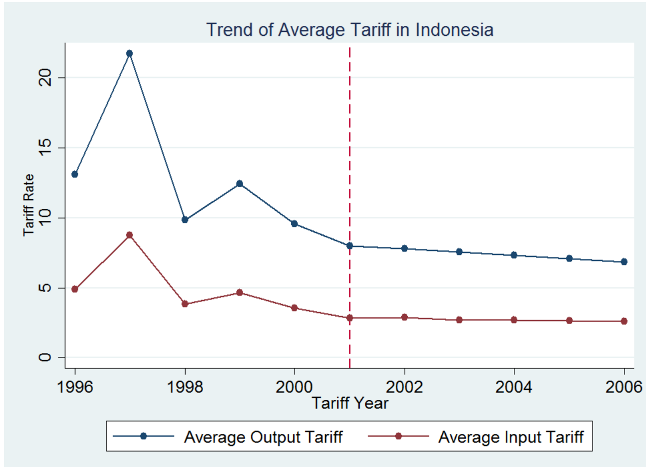
Step 3. We extract the values of the cells located in the center of administrative regencies from the transportation cost map "Cost Dist" using the tool "EXTRACT VALUES TO POINTS."

Figure A.1: Process of Measuring Transportation Cost



Notes: This figure displays the process of calculating the transportation cost for the regencies in Indonesia using ArcGIS. The ellipses in the flowchart represent data and the round-cornered squares represent tools.

Figure A.2: Trend of the Average Input and Output Tariff, 1996-2006



Notes: the industrial output tariffs are the effectively applied tariff provided by WITS. Industries are classified by 4-digit ISIC. The tariff of an industry is the simple average of the industry's tariffs charged to all trading countries.

A.3 Industrial Variables

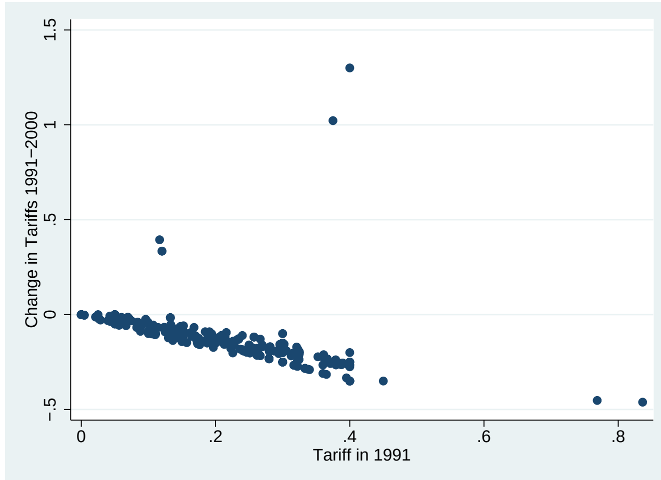
Tariffs

Tariff data are from Amiti and Konings (2007), where they constructed the input and output tariffs for 5-digit ISIC industries during 1996-2001 based on an input-output table that is not publicly available. We use the plants' 1996 industry affiliation to assign the tariff changes to individual plants. Using the initial industry affiliation prevents potential bias that would arise from plants which strategically switched to new industries in response to changes in the trade environment. One potential concern with this tariff data is that it does not cover the entire period we study (1996-2006). We use the tariff data from WITS that is reported at the 4-digit ISIC industry classification to check the tariff changes in the 2001-2006 period. Figure A.2 demonstrates that most of the reduction in Indonesian input and output tariffs occurred before 2001. Figure A.3 demonstrates that output tariffs have fallen across most industries in Indonesia over the 1991-2001 period and that there is substantial variation in the initial tariff levels and the subsequent fall across 5-digit industries over the following decade. Given that most of the tariff reductions had occurred by 2001 and are driven by the initial tariff levels, we choose to use the tariff rates constructed by Amiti and Konings because they are constructed at a more disaggregated industry level, and thus provide more variation in the tariff changes across plants.

Import Heaviness and Airshare

This section describes our measures of the heaviness of imported inputs (import weight) and the fraction to of imported inputs shipped by air (import airshare) as described in the main text. We first create proxy variables for transport intensity at HS6 level for Indonesian imports using data on US and EU imports to Indonesia by mode of transportation for the year 2006. Detailed data for U.S. exports by commodity and transport mode are published by the US census at `http://www.census.gov/foreign-trade/reference/products/layouts/imdb.html#imp_detl`. Similar data for EU exports is taken from the EU International Trade Database ComExt which is published at `http://epp.eurostat.ec.europa.eu/newxtweb/`. The underlying data set for our EU instruments is collected in the dataset named 'EXTRA EU Trade Since 2000 By Mode of Transport (HS6) (DS-043328).' We then follow Cosar and Demir (2015)

Figure A.3: Change in Tariffs, 1991-2000, Relative to 1991 Level



Notes: Tariffs fell over the sample period in all industries with the exception of the liquors and wine industries (ISIC codes 31310, 31320) and rice milling industries (ISIC codes 31161, 31169).

to construct the heaviness and fraction of imports shipped to Indonesia at each HS6 commodity code for both the EU and US series separately.

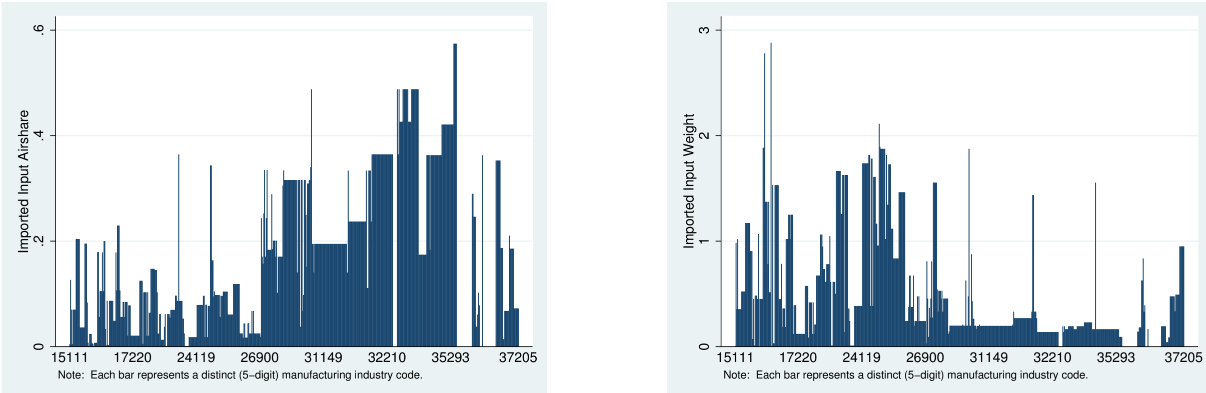
To create the measures of imported input heaviness and airshare we need to map the HS6 measures above to the import input-output matrix produced by BPS Indonesia. A key intermediate step in this process is linking the HS6 commodity codes to ISIC 3.0 industry classification in order to create industry-level import variables. To complete this task we use the correspondence table '2002_NAICS_to_ISIC_3.1' as published by the U.S. Census (`https://www.census.gov/cgi-bin/sssd/naics`) and the correspondence table 'isic31_to_isic3' from the United Nations Stats Division published online at `http://unstats.un.org/unsd/cr/registry/regot.asp?Lg=1`. For robustness, we repeat this concordance using the correspondence tables '2002_NAICS_to_ISIC_4', 'isic4_to_isic31' and 'isic31_to_isic3'. These produce similar results.

Last, we use the import Input-Output Table produced by BPS Indonesia (2000) to construct the imported input measures of heaviness and airshare. The input-output matrix provided by BPS Indonesia allows us to determine the share of import expenditures in each sector. Specifically, we subtract total domestic expenditures in any given sector from total expenditures in the same sector. For each sector we can then straightforwardly compute the share of total expenditures on imports from each individual sector.

The input-output tables also provide a concordance between ISIC 3.0 classifications and Indonesian IO sectors. The IO tables are comprised 175 distinct 'sectors' which typically aggregate several ISIC 3.0 classifications. To determine the sectoral heaviness or airshare, we assign equal shares to all ISIC 3.0 classifications assigned to the same sector. As described in the main text, we then use the sectoral import expenditures shares to construct a measure imported input weight and airshare.

Figure 1 documents the variation in the fraction imports shipped by air and differences in the weight of imported inputs across industries. It is clear that there exist substantial differences across industries and, not surprisingly, industries which tend to import lighter inputs are also more likely to have them shipped by air, where the correlation coefficient between these instruments is -0.4.

Figure A.4: Import Airshare and Weight Instruments Across Industries



(a) Fraction of Import Shipments by Air

(b) Weight of Import Shipments

B Estimating MTE and Treatment Effects

We estimate the MTE and treatment parameters following a procedure similar to that of Carneiro, Heckman, and Vytlacil (2011). Because the support of $P(Z)$ for each value of X is small, as in Carneiro, Heckman, and Vytlacil (2011), we assume that (X, Z) is independent of (U_1, U_0, U_D). Then, the MTE can be identified within the support of $P(Z)$ as $\Delta^{MTE}(x,p) = \bar{\beta}(x) + E[U_1 - U_0|U_D = p]$, where the term $\bar{\beta}(x)$ represents the average treatment effect when $X = x$ while $E[U_1 - U_0|U_D = p]$ represents the component of the MTE that depends on U_D. Furthermore, because X is a high-dimensional vector, allowing the value of $\bar{\beta}$ to depend on all variables in X leads to imprecise estimates of $\bar{\beta}(X)$. We set $\bar{\beta}(X) = \tilde{X}'\theta$, where $\tilde{X}$ contains the lagged dependent variable (e.g., $(L_s^p/(L_s^p + L_u^p))_{96}$) while it also contain dummies for plants that did not hire any skilled or unskilled workers, $d_s^j = 1(L_s^j = 0)$ and $d_u^j = 1(L_u^j = 0)$ in 1996 when we use the log of the skill ratios as the dependent variable.[2] Then,

$$E[S|X = x, P(Z) = p] = x'\gamma + p\tilde{x}'\delta + K(p), \quad \Delta^{MTE}(x,p) = \tilde{x}'\delta + K'(p), \tag{11}$$

where $K(p) = E[U_1 - U_0|U_D \le p]p$ and $K'(p)$ is the first derivative of $K(p)$. We estimate γ, δ, and $K(p)$ by a partially linear regression of S on X and $P(Z)$ (Robinson, 1988) with local polynomial regressions.

Specifically, we estimate γ, δ, and $K(p)$ by a partially linear regression of S on X and $P(Z)$ (Robinson, 1988) as follows.

Step 1: We estimate $P(Z)$ using a logit specification as described in the main text. Denote the estimated value by "hat" notation so that $\hat{P}(Z)$ denotes the estimate of $P(Z)$.

Step 2: Using the subsample of observations for which the outcome variable is measurable and for which estimated propensity scores $\hat{P}(Z_i)$'s are on the estimated common support, we estimate $E[S|P(Z)]$, $E[X|P(Z)]$, and $E[\tilde{X}|P(Z)]$ by local linear regressions of S, X, and $\tilde{X}$ on $\hat{P}(Z)$, respectively, where we use a normal kernel and choose their bandwidths by "leave-one-out" cross-validation.

Step 3: By regressing $S - \hat{E}[S|P(Z)]$ on $X - \hat{E}[X|P(Z)]$ and $P(Z)(\tilde{X} - \hat{E}[\tilde{X}|P(Z)])$ without an intercept, we obtain the estimate of γ and θ.

Step 4: We estimate $K(P(Z))$ and $K'(P(Z))$ by using a local quadratic regression of $S - X'\hat{\gamma} - \hat{P}(Z)\tilde{X}'\hat{\theta}$ on $\hat{P}(Z)$, where we use cross-validation to choose the bandwidth for the local quadratic regression.

[2] In our preliminary investigation, when we estimated (11) by setting $\tilde{X}$ equal to all variables in X except for the local wage ratios, industry dummies, and province dummies, we found that the interaction terms with other variables in X were rarely significant across different specifications.

Table B.1: Estimates of Skill Demand Equation

Occupation Threshold	Production Highschool		Non-Production College		All Highschool		All College		All Occupation	
Dependent Var.	$(L_s^p/(L_u^p+L_s^p))_{06}$		$(L_s^n/(L_u^n+L_s^n))_{06}$		$(L_s/(L_u+L_s))_{06}$		$(L_s/(L_u+L_s))_{06}$		$(L^n/(L^n+L^p))_{06}$	
Export	-0.0298	[0.0255]	-0.0155	[0.0194]	-0.0306	[0.0265]	-0.0294	[0.0058]	-0.0322	[0.0126]
Capital	0.0218	[0.0060]	0.0020	[0.0045]	0.0194	[0.0058]	0.0012	[0.0012]	0.0022	[0.0029]
Hicks-neutral φ	0.0035	[0.0124]	0.0072	[0.0104]	0.0007	[0.0119]	-0.0010	[0.0028]	-0.0068	[0.0060]
Foreign	-0.0389	[0.0437]	-0.0211	[0.0404]	-0.0366	[0.0398]	-0.0158	[0.0120]	-0.0269	[0.0192]
R&D	0.0191	[0.0258]	0.0150	[0.0219]	0.0240	[0.0233]	0.0149	[0.0071]	0.0243	[0.0134]
Training	0.0370	[0.0178]	0.0208	[0.0129]	0.0312	[0.0179]	0.0059	[0.0039]	0.0064	[0.0072]
$\log(W_s/W_u)_{06}$	-0.0107	[0.0409]	-0.0112	[0.0320]	0.0077	[0.0422]	-0.0008	[0.0085]	0.0095	[0.0188]
$\log(W_s/W_u)_{96}$	-0.1482	[0.0527]	-0.0385	[0.0407]	-0.1511	[0.0521]	0.0040	[0.0111]	0.0232	[0.0206]
$(L_s^j/(L_u^p+L_s^j))_{06}$	0.0449	[0.0172]	0.1067	[0.0171]	-0.0328	[0.0267]	0.0207	[0.0040]	0.2414	[0.0367]
$(L_s^j/(L_u^p+L_s^j))_{06}\times P(Z)$	-0.5867	[0.1629]	-0.5345	[0.1694]	-0.4451	[0.2022]	0.0266	[0.0455]	0.1619	[0.1883]
No. Obs.	3997		3992		3985		3967		4000	

Notes: $j=n,p$. The bootstrap standard errors are in square brackets. Province dummies and 3-digit ISIC industry dummies are also included.

To avoid numerical singularity, all continuous variables in Z, X, and $\tilde{X}$ are standardized by subtracting their means and then dividing by their sample standard deviations while all dummy variables are transformed into $\{-1,1\}$. Table B.2 reports the bandwidth choices using the standardized variables for Step 2 and Step 4. We set the maximum value of the bandwidth to one-half of the length of the common support of $\hat{P}(Z|D=0)$ and $\hat{P}(Z|D=1)$.

In column (3) of Table 11, we use a sieve estimator to estimate the partial linear regression. Specifically, we estimate $E[S|P(Z)]$, $E[X|P(Z)]$, and $E[\tilde{X}|P(Z)]$ in Step 2 by regressing S, X, and $\tilde{X}$ on the fourth order polynomials of $\hat{P}(Z)$ while we estimate $K(P(Z))$ and $K'(P(Z))$ by regressing $S-X'\hat{\gamma}-\hat{P}(Z)\tilde{X}'\hat{\theta}$ on the fourth order of polynomials in $\hat{P}(Z)$.

Table B.1 reports the estimates of the skill demand equation (11) using the sample of plants for which the estimated propensity scores are on the estimated common support when we use the share of skilled workers as the dependent variable. In the first three columns of Table B.1, the coefficient of the interaction term between the lagged dependent variable and the propensity score is negative and significant. One possible interpretation is that plants with high initial skill ratios may have already adopted relatively skill-biased technology and, as a result, further adoption of foreign technology induced by importing may not substantially increase their demand for skilled workers. The estimates of the other explanatory variables are similar to those of the IV regressions in Tables 5-6.

As in Heckman and Vytlacil (2005, 2007a, 2007b) and Carneiro, Heckman, and Vytlacil (2010) show, various treatment effects conditional on X can be expressed as weighted averages of the MTE as follows:

$$\begin{aligned} ATE(x) &= \int_0^1 \Delta^{MTE}(x,p)dp, & TT(x) &= \int_0^1 \Delta^{MTE}(x,p)h_{TT}(x,p)dp, \\ TUT(x) &= \int_0^1 \Delta^{MTE}(x,p)h_{TUT}(x,p)dp, & PRTE(x) &= \int_0^1 \Delta^{MTE}(x,p)h_{PRTE}(x,p)dp, \quad (12) \\ MPRTE(x) &= \int_0^1 \Delta^{MTE}(x,p)h_{PRTE}(x,p)dp, \end{aligned}$$

where

$$
\begin{aligned}
h_{TT}(x,p) &= \frac{1-F_P(p|X=x)}{E(P|X=x)}, \quad h_{TUT}(x,p) = \frac{F_P(p|X=x)}{E(1-P|X=x)}, \\
h_{PRTE}(x,p) &= \frac{F_{P^*}(p|X=x)-F_P(p|X=x)}{E(P|X=x)-E(P^*|X=x)}, \\
h_{MPRTE}(x,p) &= \lim_{\alpha\to 0}\frac{F_{P^*_\alpha}(p|X=x)-F_P(p|X=x)}{E(P|X=x)-E(P^*_\alpha|X=x)} = \frac{(\partial/\partial\alpha)F_{P^*_\alpha}(p|X=x)|_{\alpha=0}}{\int(\partial/\partial\alpha)F_{P^*_\alpha}(p|X=x)|_{\alpha=0}dp}.
\end{aligned}
\tag{13}
$$

$F_P(\cdot|X=x)$ and $F_{P^*}(\cdot|X=x)$ are the cumulative distributions of P and P^*, respectively, conditional on $X=x$, where P^* is the probability of importing under an alternative policy.

Treatment effects can be computed by integrating conditional treatment effects in (12) using the appropriate distribution of X. Because X is high dimensional, however, it is not computationally feasible to estimate the conditional density function of P given X. For this reason, exploiting the fact that $f_p(P|X) = f_p(P|X'\theta)$ implies $E[\log(P/(1-P))|X] = E[\log(P/(1-P))|X'\theta]$, we regress $\log(\hat{P}/(1-\hat{P}))$ on X and obtain a single index of X, $X'\hat{\theta}$. The conditional density function of P given $X'\theta$, denoted by $f_P(p|x'\theta)$, is estimated by the ratio of the joint density of P and $X'\hat{\theta}$ to the marginal density of $X'\theta$ using 'double-kernel' local linear regression, where we choose the bandwidth by the cross-validation following the suggestion of Fan and Yim (2004).

We compute weights $h_{TT}(x'\theta,p)$, $h_{TUT}(x'\theta,p)$, $h_{PRTE}(x'\theta,p)$, and $h_{MPRTE}(x'\theta,p)$ as $h_{TT}(x,p)$, $h_{TUT}(x,p)$, $h_{PRTE}(x,p)$, and $h_{MPRTE}(x'\theta,p)$ in the formula (13) but using $F_P(p|X'\theta=x'\theta) = \int_0^p f_P(u|X'\theta = x'\theta)du$ in place of $F_P(p|X=x)$. To apply (12) to compute treatment effects conditioning on the single index $X'\theta$, we evaluate the MTE at $X'\theta = x'\theta$ instead of $X=x$. To do so, we estimate $E[\tilde{X}'\delta|X'\theta]$ by local linear regression and define the MTE at $X'\theta = x'\theta$ as $\hat{\Delta}^{MTE}(x'\theta,p) = \hat{E}[\tilde{x}'\delta|X'\theta = x'\theta] + \hat{K}'(p)$. Integrating $\hat{\Delta}^{MTE}(x'\theta,p)$ using weights $h_{TT}(x'\theta,p)$, $h_{TUT}(x'\theta,p)$, $h_{PRTE}(x'\theta,p)$, and $h_{MPRTE}(x'\theta,p)$ gives our estimates of the $TT(x'\theta)$, $TUT(x'\theta)$, $PRTE(x'\theta)$, and $MPRTE(x'\theta)$. To obtain the unconditional version of treatment effects, we integrate $X'\theta$ from $TT(X'\theta)$, $TUT(X'\theta)$, $PRTE(X'\theta)$, and $MPRTE(X'\theta)$ using the marginal distribution of $X'\theta$, denoted by $f_{X'\theta}(x'\theta)$, which is estimated by local linear regression. The last three rows of Table B.2 report the bandwidth choices associated with estimating $f_P(p|x'\theta)$ and $f_{X'\theta}(x'\theta)$. Figure 4 shows estimated weights for ATE, TT, TUT, MPRTEs, and PRTE when dependent variable is $\ln(L_s^p/L_u^p)$.

Finally, because the full support condition is violated, we report estimates of ATE, TT, TUT, PRTE, and MPRTE when we restrict the weights to integrate to one in the restricted support of the MTE as described in the main text. As discussed in Heckman and Vytlacil (2005) and Carneiro, Heckman and Vytlacil (2010), the PRTE cannot be identified without strong support conditions. We compute the estimate of what the PRTE would be when we restrict the support of P and P^* to the restricted support for which minimum and maximum values are given by the 1^{st} and the 99^{th} percentiles of the common support. When the value of P^* is above the maximum value of the support, the maximum value of P^* is set to the maximum value of the restricted support.

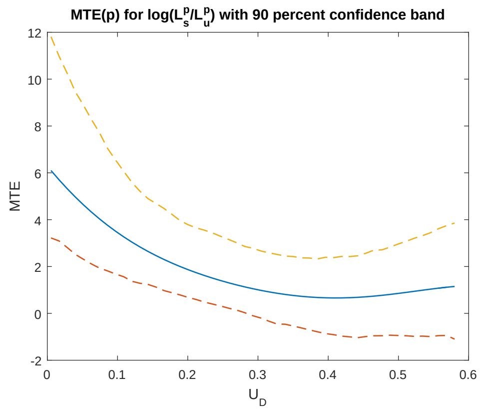
We use 500 bootstrap replications to construct equal-tailed bootstrap confidence bands for $\hat{\Delta}^{MTE}(x'\theta,p)$ and the standard errors for treatment effects. In each bootstrap iteration we re-estimate $P(Z)$ so all standard errors account for the fact that $P(Z)$ is estimated.

C Estimating Hicks-Neutral Productivity

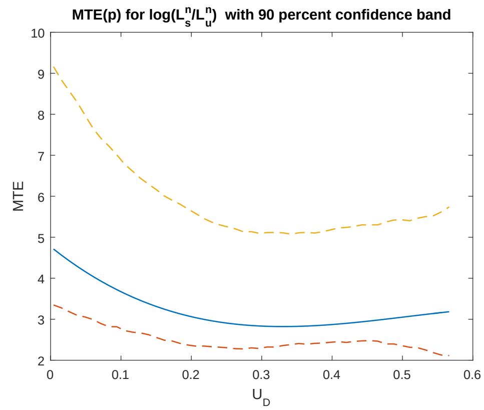
Our model implies that Hicks-neutral productivity differences are potentially among the most important determinants of plant-level import decisions. Unfortunately, the data do not provide a convenient measure of Hicks-neutral productivity. Moreover, standard productivity estimation methods do not consider how we might separately identify skill-biased and Hicks-neutral productivity.[3] Accordingly, we develop an

[3] Doraszelski and Jaumandreu (2014) is a key exception.

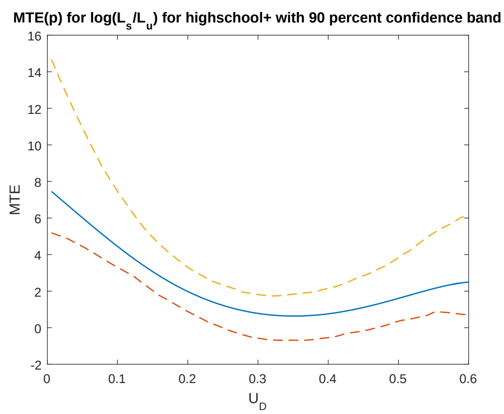
Figure B.5: Estimated MTE



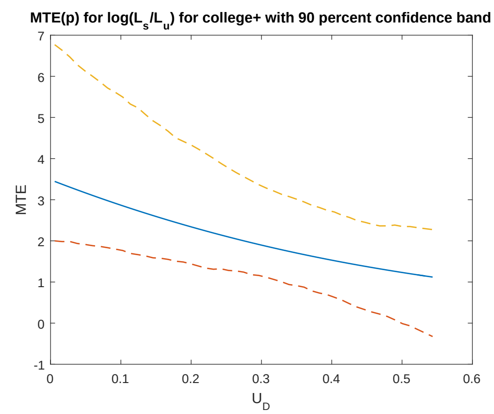
(a) Production, Highschool



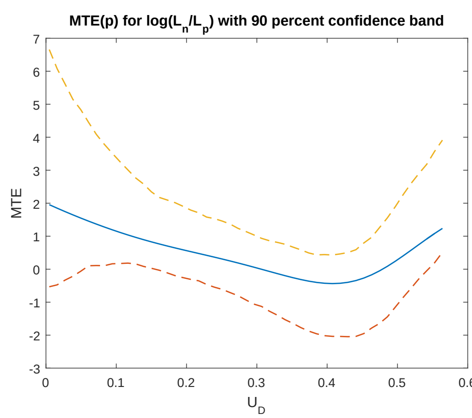
(b) Non-Production, College



(c) All, Highschool



(d) All, College



(e) All, Occupation

Table B.2: Bandwidth Choices by Cross-validation

Occupation Threshold	Production Highschool		Non-Production College	
Dependent Var.	$\ln\left(\frac{L_s^p}{L_u^p}\right)_{06}$ (1)	$\left(\frac{L_s^p}{L_u^p+L_s^p}\right)_{06}$ (2)	$\ln\left(\frac{L_s^n}{L_u^n}\right)_{06}$ (3)	$\left(\frac{L_s^n}{L_u^n+L_s^n}\right)_{06}$ (4)
Step 2: $E[S\|P]$	0.03	0.03	0.21	0.05
$E[\text{Export}\|P]$	0.03	0.05	0.07	0.05
$E[\text{Capital}\|P]$	0.05	0.01	0.03	0.03
$E[\varphi\|P]$	0.03	0.05	0.05	0.05
$E[\text{Foreign}\|P]$	0.42	0.03	0.33	0.43
$E[\text{R\&D}\|P]$	0.17	0.03	0.21	0.19
$E[\text{Training}\|P]$	0.03	0.05	0.05	0.05
$E[\ln(W_s/W_u)_{06}\|P]$	0.42	0.03	0.42	0.05
$E[\ln(W_s/W_u)_{96}\|P]$	0.07	0.01	0.11	0.03
$E[\ln(L_s^j/L_u^j)_{96}\|P]$	0.25	0.07		
$E[d_{u,96}^j\|P]$	0.42	0.01		
$E[d_{s,96}^j\|P]$	0.01	0.05		
$E[(L_s^j/(L_s^j+L_u^j)_{96}\|P]$			0.11	0.01
$E[\text{industry/province}\|P]^{(a)}$	0.03	0.03	0.09	0.03
Step 4: $E[S - X'\gamma - P(Z)\check{X}'\theta\|P]$	0.15	0.11	0.23	0.13
Bandwidth for P of $f_P(p\|x'\theta)$	0.01	0.01	0.01	0.01
Bandwidth for $X'\theta$ of $f_P(p\|x'\theta)$	0.01	0.02	0.02	0.01
Bandwidth for $f_{X'\theta}(x'\theta)$	0.02	0.03	0.04	0.02

Notes: $j = p, n$. Columns (1)-(4) reports the cross-validation bandwidth choices that are used to estimate the treatment effects reported in columns (1)-(4) of Table 10, respectively. (a) We choose the common bandwidth for industry/province dummies by minimizing the sum of cross-validation criterion functions over industry/province dummies.

extension of the control function methods pioneered by Olley and Pakes (1996) [OP, hereafter], Levinsohn and Petrin (2003) [LP, hereafter] and Ackerberg, Caves and Frazer (2006), among others, to estimate a Hicks-neutral productivity series for each plant in our data.[4]

We assume that the firm's production function is specified as

$$Y_{it} = e^{\varepsilon_{it}} Q_{it}, \quad \text{where} \quad Q_{it} = e^{\alpha_0 + \omega_{it}} K_{it}^{\alpha_k} M_{it}^{\alpha_m} L_{p,it}^{\alpha_p} L_{n,it}^{\alpha_n} \tag{14}$$

where ω_{it} is the part of the Hicks-neutral productivity shock that is observed/anticipated by firm i at the time which it makes input decisions while ε_{it} captures either measurement error or an *iid* unanticipated shock that is not observed at the time which it makes input decisions. The variables $L_{p,it}$ and $L_{n,it}$ represent the aggregate labor inputs for production and non-production activities, respectively, and are defined by

$$L_{j,it} = \left((A_j L_{j,it}^s)^{\frac{\sigma_j - 1}{\sigma_j}} + (L_{j,it}^u)^{\frac{\sigma_j - 1}{\sigma_j}} \right)^{\frac{\sigma_j}{\sigma_j - 1}} \quad \text{for } j = p, n. \tag{15}$$

Here, $L_{j,it}^s$ and $L_{j,it}^u$ represent the number of skilled workers and that of unskilled workers, respectively, in occupation j, where the subscript "p" indicates production workers while the subscript "n" captures non-production workers. We assume that ω_{it} follows a first order Markov process.

To estimate the production function coefficients, including the elasticity of substitution parameters, we use the implications of plant profit maximization behavior.[5] The first order conditions with respect

[4] Other important contributions to this literature include Wooldridge (2009), De Loecker (2011), De Loecker et al. (2012) and Doraszelski and Jaumandreu (2014).

[5] Our method is broadly based on the ideas contained in Gandhi, Navarro, and Rivers (2013), but our production function is specified using a simple Cobb-Douglas form with CES aggregators for production and non-production

Table B.3: Import Decision Model using Logit for the Sample of Production Workers

Outcome Variable	$\ln(L_s^p/L_u^p)$				$L_s^p/(L_s^p+L_u^p)$			
	Coeff.	S.E.	Ave. Deriv.	S.E.	Coeff.	S.E.	Ave. Deriv.	S.E.
TC	-0.4082	[0.1605]	-0.0275	[0.0107]	-0.5104	[0.1693]	-0.0346	[0.0115]
Air	0.3666	[0.1352]	0.3142	[0.1129]	0.4482	[0.1465]	0.3862	[0.1244]
Wgt	-0.0091	[0.1613]	-0.0007	[0.0127]	0.0682	[0.1519]	0.0055	[0.0121]
$TC \times \log(\frac{L_s^p}{L_u^p})_{96}$	0.0412	[0.1217]	0.0014	[0.0041]				
$TC \times d_{u,96}^p$	-0.0132	[0.2417]	-0.0046	[0.0816]				
$TC \times d_{s,96}^p$	-0.1476	[0.1350]	-0.0162	[0.0146]				
$Air \times \log(\frac{L_s^p}{L_u^p})_{96}$	0.2962	[0.1380]	0.0973	[0.0444]				
$Air \times d_{u,96}^p$	0.0415	[0.1216]	0.1054	[0.3048]				
$Air \times d_{s,96}^p$	-0.0683	[0.1779]	-0.0778	[0.1994]				
$Wgt \times \log(\frac{L_s^p}{L_u^p})_{96}$	0.141	[0.1751]	0.0049	[0.0060]				
$Wgt \times d_{u,96}^p$	0.0313	[0.1447]	0.0113	[0.0515]				
$Wgt \times d_{s,96}^p$	0.0526	[0.1954]	0.0046	[0.0167]				
$TC \times (L_s^p/(L_s^p+L_u^p))_{96}$					0.0407	[0.1586]	0.004	[0.0156]
$Air \times (L_s^p/(L_s^p+L_u^p))_{96}$					-0.2712	[0.1469]	-0.2989	[0.1605]
$Wgt \times (L_s^p/(L_s^p+L_u^p))_{96}$					-0.1838	[0.1726]	-0.0196	[0.0183]
Export	0.373	[0.0742]	0.0525	[0.0104]	0.3857	[0.0696]	0.0545	[0.0099]
Capital	0.4058	[0.0855]	0.0122	[0.0025]	0.4306	[0.0842]	0.013	[0.0026]
Hicks-neutral φ	0.147	[0.0756]	0.0139	[0.0071]	0.1522	[0.0754]	0.0145	[0.0072]
Foreign	0.1389	[0.0479]	0.0542	[0.0181]	0.1398	[0.0496]	0.0549	[0.0192]
R&D	0.0765	[0.0540]	0.0172	[0.0121]	0.0818	[0.0546]	0.0185	[0.0123]
Training	0.1858	[0.0739]	0.0221	[0.0087]	0.2087	[0.0793]	0.025	[0.0095]
$\log(\frac{W_s}{W_u})_{06}$	0.0403	[0.0866]	0.0127	[0.0271]	0.041	[0.0941]	0.013	[0.0298]
$\log(\frac{W_s}{W_u})_{96}$	0.0282	[0.0919]	0.0117	[0.0377]	0.0109	[0.0884]	0.0045	[0.0367]
$\log(\frac{L_s^p}{L_u^p})_{96}$	-0.2394	[0.2104]	-0.0097	[0.0084]				
$d_{u,96}^p$	0.0276	[0.2414]	0.0115	[0.0996]				
$d_{s,96}^p$	0.0479	[0.2828]	0.0057	[0.0329]				
$(L_s^p/(L_s^p+L_u^p))_{96}$					0.1916	[0.2243]	0.0276	[0.0321]
No. Obs.	4064				4064			

Notes: Estimates are from the sample which uses the log of the production skill ratio as an outcome variable. Bootstrap standard errors are in square brackets. Province dummies and 3-digit ISIC industry dummies are also included. The sample excludes plants that belong to a 3-digit ISIC industry or province within which there is no variation in import status because, in such cases, the estimated coefficient of the corresponding industry or province dummy in the logit model would be either infinity or minus infinity.

to $L^u_{j,it}$ and $L^s_{j,it}$ are given by

$$\frac{W^u_t L^u_{j,it}}{Q_{it}} = \alpha_j \frac{(L^u_{j,it})^{\frac{\sigma_j-1}{\sigma_j}}}{(A_j L^s_{j,it})^{\frac{\sigma_j-1}{\sigma_j}} + (L^u_{j,it})^{\frac{\sigma_j-1}{\sigma_j}}} \quad \text{and} \quad \frac{W^s_t L^s_{j,it}}{Q_{it}} = \alpha_j \frac{(A_j L^s_{j,it})^{\frac{\sigma_j-1}{\sigma_j}}}{(A_j L^s_{j,it})^{\frac{\sigma_j-1}{\sigma_j}} + (L^u_{j,it})^{\frac{\sigma_j-1}{\sigma_j}}}, \tag{16}$$

respectively, so that

$$\left(\frac{L^u_{j,it}}{L^s_{j,it}}\right)^{\frac{1}{\sigma}} A_j^{\frac{\sigma_j-1}{\sigma_j}} = \frac{W^s_t}{W^u_t} \quad \text{for } j = p, n, \tag{17}$$

where W^s_t and W^u_t represent the wages in year t for skilled and unskilled workers, respectively. We assume that there is no unanticipated ex-post shock to A_j, W^s_t, and W^u_t. Substituting (17) into (15), we get

$$L_{j,it} = X_{j,it}^{-\frac{\sigma_j}{\sigma_j-1}} L^u_{j,it}, \quad \text{where} \quad X_{j,it} \equiv \frac{W^u_t L^u_{j,it}}{W^s_t L^s_{j,it} + W^u_t L^u_{j,it}}.$$

Substituting the above equation for $L_{j,it}$ into (14) and taking the logarithm gives

$$y_{it} = \alpha_{0,t} + \alpha_k k_{it} + \alpha_m m_{it} + \alpha_p l^u_{p,it} + \beta_p x_{p,it} + \alpha_n l^u_{n,it} + \beta_n x_{n,it} + \omega_{it} + \epsilon_{it} \tag{18}$$

where $\beta_j = -\frac{\sigma_j \alpha_j}{\sigma_j - 1}$ for $j = p, n$, and lower case letters represent the logarithm of the upper case letters (e.g., $y_{it} \equiv \ln(Y_{it})$). Note that, if we can consistently estimate α_j and β_j, then we also have a consistent estimate of σ_j because $-\beta_j/\alpha_j = \frac{\sigma_j}{\sigma_j-1}$.

We recover the estimates in two stages. In the first stage, following LP, we write ω_{it} as a function of m_{it}, k_{it}: $\omega_{it} = \omega^*_t(m_{it}, k_{it})$. Taking an expectation of (18) conditional on (m_{it}, k_{it}), and subtracting it from (18) gives

$$\begin{aligned} y_{it} - E[y_{it}|m_{it}, k_{it}] &= \alpha_p\{l^u_{p,it} - E[l^u_{p,it}|m_{it}, k_{it}]\} + \beta_p\{x_{p,it} - E[x_{p,it}|m_{it}, k_{it}]\} \\ &\quad + \alpha_n\{l^u_{n,it} - E[l^u_{n,it}|m_{it}, k_{it}]\} + \beta_n\{x_{n,it} - E[x_{n,it}|m_{it}, k_{it}]\} + \epsilon_{it}. \end{aligned} \tag{19}$$

where $E[\epsilon_{it}|m_{it}, k_{it}] = 0$ under the assumption that ϵ_{it} is mean zero random variable and that ϵ_{it} is not observed yet when a plant makes intermediate input decision.

The parameters α_p, β_p, α_n, and β_p are estimated by (i) first estimating the functions $E[y_{it}|m_{it}, k_{it}]$, $E[\ell^u_{p,it}|m_{it}, k_{it}]$, $E[\ell^u_{n,it}|m_{it}, k_{it}]$, $E[x_{p,it}|m_{it}, k_{it}]$ and $E[x_{n,it}|m_{it}, k_{it}]$ and then (ii) running a no-intercept OLS regression of (19) using the estimate of the conditional expectation terms. Note that, even though we consider the possibility of endogenous plant exit, the first stage procedure is identical to that of LP.

In the second stage we identify the remaining production function parameters α_k and α_m. To accomplish this, we first define

$$\phi_t(m_{it}, k_{it}) \equiv \alpha_{0,t} + \alpha_k k_{it} + \alpha_m m_{it} + \omega^*_t(m_{it}, k_{it})$$

and

$$x_{it} \equiv y_{it} - \{\alpha_p l^u_{p,it} + \beta_p x_{p,it} + \alpha_n l^u_{n,it} + \beta_n x_{n,it}\}.$$

Further, let $\chi_{it} = 1$ indicate plant survival in year t. We assume that a firm stays in the market if and only if $\omega_{it} \geq \underline{\omega}_t(k_{it})$ as in OP. Then, we may write (18) as

$$\begin{aligned} x_{it} &= \alpha_{0,t} + \alpha_k k_{it} + \alpha_m m_{it} + E[\omega_{it}|\omega_{it-1}, \chi_{it} = 1] + \xi_{it} + \epsilon_{it} \\ &= \alpha_k k_{it} + \alpha_m m_{it} + g_t(\underline{\omega}_t(k_{it}), \omega_{it-1}) + \xi_{it} + \epsilon_{it} \end{aligned} \tag{20}$$

where $\xi_{it} = \omega_{it} - E[\omega_{it}|\omega_{it-1}, \chi_{it} = 1]$ and $g_t(\underline{\omega}_t(k_{it}), \omega_{it-1}) \equiv \alpha_{0,t} + E[\omega_{it}|\omega_{it-1}, \chi_{it} = 1]$.

labor inputs so that our analysis is substantially simpler than theirs.

The survival probability conditional on ω_{t-1} is given by

$$\begin{aligned}\Pr\{\chi_{it}=1|\omega_{it-1},k_{it-1},m_{it-1}\} &= \Pr\{\omega_t \geq \underline{\omega}_t(k_{it})|\omega_{it-1},m_{it-1},k_{it-1}\} \\ &= \int_{\underline{\omega}_t(k_{it}(m_{it-1},k_{it-1}))}^{\infty} F(d\omega_{it}|\omega^*_{t-1}(m_{it-1},k_{it-1})) \\ &= P^{\chi}_{it}. \end{aligned} \tag{21}$$

where $F(\cdot)$ represents the law of motion for ω_{it}. The capital stock follows $k_{it}=(1-\delta)k_{it-1}+\iota_{it}$ where ι_{it} is the amount of investment between $t-1$ and t, δ is the depreciation rate, and we assume that ι_{it} is a function of $(\omega_{it-1},k_{it-1})=(\omega^*_t(m_{it-1},k_{it-1}),k_{it-1})$ so that we may write k_{it} as a function of m_{it-1} and k_{it-1}, i.e., $k_{it}(m_{it-1},k_{it-1})$ in the second line of (21). We estimate the survival probability (21) using a probit with third order polynomials in (m_{it-1},k_{it-1}). Given $\omega^*_{t-1}(m_{it-1},k_{it-1})$, we may invert (21) with respect to $\underline{\omega}_t$; therefore, we may write $\underline{\omega}_t$ as a function of survival probabilities, P^{χ}_{it}, and $\omega^*_{t-1}(m_{it-1},k_{it-1})$ as in $\underline{\omega}_t(P^{\chi}_{it},\omega^*_{t-1}(m_{it-1},k_{it-1}))$.

Then, we may express $g_t(\underline{\omega}_t(k_{it}),\omega_{it-1})$ in (20) as a (year-specific) nonlinear function of $(P^{\chi}_{it},\omega^*_{t-1}(m_{it-1},k_{it-1}))$ as

$$\begin{aligned} & g_t(\underline{\omega}_t(P^{\chi}_{it},\omega^*_{t-1}(m_{it-1},k_{it-1})),\omega^*_{t-1}(m_{it-1},k_{it-1})) \\ &\quad =\alpha_{0,t}+\int_{\underline{\omega}_t(P^{\chi}_{it},\omega^*_{t-1}(m_{it-1},k_{it-1}))}^{\infty} \omega_{it}\frac{F(d\omega_{it}|\omega^*_{t-1}(m_{it-1},k_{it-1}))}{\int_{\underline{\omega}_t(P^{\chi}_{it},\omega^*_{t-1}(m_{it-1},k_{it-1}))}^{\infty} F(d\omega_{it}|\omega^*_{t-1}(m_{it-1},k_{it-1}))}. \end{aligned}$$

Define

$$q_t(P^{\chi}_t,\alpha_{0,t-1}+\omega^*_{t-1}(m_{it-1},k_{it-1}))\equiv g_t(\underline{\omega}_t(P^{\chi}_{it},\omega^*_{t-1}(m_{it-1},k_{it-1})),\omega^*_{t-1}(m_{it-1},k_{it-1})),$$

and substituting this equation into (20) and using $\alpha_{0,t-1}+\omega^*_{t-1}(m_{it-1},k_{it-1})=\phi_{t-1}(m_{it-1},k_{it-1})-\alpha_k k_{it-1}-\alpha_m m_{it-1}$, we have

$$x_{it}=\alpha_k k_{it}+\alpha_m m_{it}+q_t(P^{\chi}_t,h_{it-1})+\xi_{it}+\epsilon_{it}, \tag{22}$$

where $h_{it}=\phi_t(m_{it},k_{it})-\alpha_k k_{it}-\alpha_m m_{it}$. This equation corresponds to equation (12) in OP.

Given the above definitions, we recover α_k and α_m in three distinct steps. First, let $\hat{x}_{it}=y_{it}-\{\hat{\alpha}_p l^u_{p,it}+\hat{\beta}_p x_{p,it}+\hat{\alpha}_n l^u_{n,it}+\hat{\beta}_n x_{n,it}\}$, where $(\hat{\alpha}_p,\hat{\alpha}_n,\hat{\beta}_p,\hat{\beta}_n)$ are the first stage estimates of the corresponding parameters. Then we estimate $\phi(m_{it},k_{it})$ by regressing $\hat{x}_{it}$ on third order polynomials in (m_{it},k_{it}). Second, we estimate the survival probability by estimating the probit for survival ($\chi_{it}=1$) conditional on (m_{it-1},k_{it-1}) using third order polynomials. Third, for each candidate value of (α_k,α_m), we compute $\hat{h}_{it}(\alpha_k,\alpha_m)=\hat{\phi}_{it}-\alpha_k k_{it}-\alpha_m m_{it}$ and regress $\hat{x}_{it}-\{\alpha_k k_{it}+\alpha_m m_{it}\}$ on third order polynomials in $(\hat{P}^{\chi}_{it},\hat{h}_{it-1})$ to obtain the estimate of $q_t(P^{\chi}_{it},h_{it-1})$ as its predicted value, denoted by $\hat{q}_{it}(\alpha_k,\alpha_m)$. Denoting $(\widehat{\xi_{it}+\epsilon_{it}})(\alpha_k,\alpha_m)=\hat{x}_{it}-\{\alpha_k k_{it}+\alpha_m m_{it}-\hat{q}_{it}(\alpha_k,\alpha_m)\}$, we estimate (α_k,α_m) using the moment conditions $E[(\xi_{it}+\epsilon_{it})m_{it-1}]=0$ and $E[(\xi_{it}+\epsilon_{it})k_{it-1}]=0$. Note that we do not use k_{it} as an instrument because k_{it} will be correlated with ξ_{it} given that we take long differences.

We apply the above estimation procedure to the two years of data from 1996 and 2006 so that the time subscripts $t-1$ and t correspond to 1996 and 2006, respectively. The Hicks-neutral productivity, including both the unexpected shock ϵ_{it} and the year-specific constant $\alpha_{0,t}$, is computed as

$$\varphi_{it}\equiv\alpha_{0,t}+\omega_{it}+\epsilon_{it}=y_{it}-(\hat{\alpha}_k k_{it}+\hat{\alpha}_m m_{it}+\hat{\alpha}_p l^u_{p,it}+\hat{\beta}_p x_{p,it}+\hat{\alpha}_n l^u_{n,it}+\hat{\beta}_n x_{n,it}).$$

We find that $(\alpha_k,\alpha_m,\alpha_p,\alpha_n,\beta_p,\beta_n)$ is estimated as $(0.017, 0.602, 0.152, 0.110, -0.253, -0.138)$. Note the production function parameters are very similar to those estimated elsewhere (e.g. See Amiti and Konings (2007)). Our estimates further imply that the elasticity of substitution parameters among production and non-production workers (σ_p,σ_n) are estimated to be (1.664,1.255).

As an alternative measure of productivity, we also estimate the "conventional" measure of total factor productivity (TFP) under the assumption that skilled and unskilled workers are perfect substitutes with a Cobb-Douglas production function given by

$$Y_{it} = e^{\varepsilon_{it}} Q_{it}, \quad \text{where} \quad Q_{it} = e^{\alpha_0 + \omega_{it}} K_{it}^{\alpha_k} M_{it}^{\alpha_m} \tilde{L}_{p,it}^{\alpha_p} \tilde{L}_{n,it}^{\alpha_n} \tag{23}$$

where $\tilde{L}_{p,it} = L_{p,it}^{s} + L_{p,it}^{u}$ and $\tilde{L}_{n,it} = L_{n,it}^{s} + L_{n,it}^{u}$. Repeating our estimation exercise under this restriction we again recover the parameters $(\alpha_k, \alpha_m, \alpha_p, \alpha_n)$ as $(0.030, 0.908, 0.065, 0.074)$. We also use this alternative structure and estimates to construct a second measure of productivity. In the main text this second measure is denoted as "conventional" TFP.

D First Differences, IV and Bias

This following derivations are an extension of Section 5.4 of Angrist and Pischke (2008). Consider a setting where β is constant parameter and that the data are generated from

$$Y_{it} = \alpha + \rho Y_{it-1} + \beta D_{it} + \epsilon_{it},$$

where $E[D_{it}\epsilon_{it}] \neq 0$ and $E[\epsilon_{it}|Z_{it}] = 0$ so that we may consistently estimate β by instrumental variable regression. Suppose that we mistakenly estimate a first-differenced equation using Z_{it} as IV using the sample of initial non-importers so that so that $D_{it} - D_{it-1} = D_{it}$ for every observation in the sample. The first-differenced IV estimator will converge in probability to $\frac{Cov(Y_{it}-Y_{it-1}, Z_{it})}{Cov(D_{it}, Z_{it})}$. Because $Y_{it} - Y_{it-1} = \alpha + (\rho - 1)Y_{it-1} + \beta D_{it} + \epsilon_{it}$,

$$\frac{Cov(Y_{it} - Y_{it-1}, Z_{it})}{Cov(D_{it}, Z_{it})} = \beta - (1-\rho)\frac{Cov(Y_{it-1}, Z_{it})}{Cov(D_{it}, Z_{it})}.$$

For our transport cost instrument, Z, we can empirically confirm that $\frac{Cov(Y_{it-1}, Z_{it})}{Cov(D_{it}, Z_{it})} > 0$ since $Cov(Y_{it-1}, Z_{it}) < 0$ and $Cov(D_{it}, Z_{it}) < 0$. Given that ρ is consistently estimated to lie between 0 and 1 in Tables 5 and 6 we expect that the β estimated in the first differenced IV regressions in Table 7 will be biased downwards.

E Capital-Skill Complementarity

We first extend our model in Section XX to include capital-skill complementarity by considering the following production function: $f(K, M, L_s, L_u, A, \varphi) = \varphi(V^p)^{\alpha_p}(V^n)^{\alpha_n}M^{\alpha_m}$, where φ is the firm's Hicks-Neutral productivity shock while V^j is a CES aggregator given by $V^j = [(A_j(L_s^j)^{\beta}(K^j)^{1-\beta})^{1/\rho_j} + (L_u^j)^{1/\rho_j}]^{\rho_j}$ with $\rho_j = \sigma_j/(\sigma_j - 1)$ for $j = \{n, p\}$. As before, A^j captures skill-biased technological change as in our benchmark model. However, in this case, it augments both skilled labor, L_s^j, and capital, K^j through the composite input $(L_s^j)^{\beta}(K^j)^{1-\beta}$. Minimizing the firm's costs, the relative demand for skilled labor can be written as:

$$\frac{L_s^j}{L_u^j} = \left(\beta\frac{W_u}{W_s}\right)^{\sigma_j} (A^j)^{\sigma_j - 1}\left(\frac{K^j}{L_s^j}\right)^{(\sigma_j-1)(1-\beta)}, \tag{24}$$

where we again assume that skill-biased technology is potentially a function of the firm's import decision as written in equation (2).

There are three issues here which merit comment. First, equation (24) demonstrates that if capital-skill complementarity is an important mechanism among Indonesian manufacturers our benchmark specification may potentially suffer from omitted variable bias. Second, the relative demand for skill equation (24) implies that we need to partition capital into production and non-production components (K^p and K^n). While the data do not provide a natural decomposition of capital across occupation, our model implies that we can decompose capital using the firm's first order conditions. Specifically, the firm's cost minimization problem implies that we can write the following relationships between capital and labor of each type:

$$K^p = \left(\frac{W_s}{W_k}\right)\left(\frac{1-\beta}{\beta}\right)L_s^p \quad \text{and} \quad K^n = \left(\frac{W_s}{W_k}\right)\left(\frac{1-\beta}{\beta}\right)L_s^n.$$

Therefore, total capital is related to total skilled labor as

$$K = K^n + K^p = \left(\frac{W_s}{W_k}\right)\left(\frac{1-\beta}{\beta}\right)(L_s^p + L_s^n), \tag{25}$$

and it follows that the fraction of total capital allocated to occupation $j \in \{n, p\}$ can be determined by dividing K^n or K^p by equation (25) as

$$\frac{K^j}{K} = \frac{L_s^j}{L_s^j + L_u^j}.$$

Note that this result is sensitive to the assumption that the share of skilled labor and capital, β, is equal across occupations. However, the alternative assumption that β varies across occupations but capital is allocated in a fashion such that each firm has the same ratio of production to non-production capital (i.e., $K^n = \gamma K$ and $K^p = (1-\gamma)K$ for some $\gamma \in (0,1)$) results in a nearly identical empirical structure. We do not find any significant difference using this alternative assumption and, as such, we omit further discussion hereafter.

Finally, it is clear that capital-skill complementarity implies adding one additional variable to our benchmark empirical specification, the log ratio of capital to total (production and non-production) skilled labor, $\ln(K/(L_s^p + L_s^n))$. As noted in the main text, when including the endogenous capital-skill control variable we also use lagged (i.e., 1996) values of $\ln(K/(L_s^p + L_s^n))$ as an additional instrument along with interactions of $\ln(K/(L_s^p + L_s^n))$ with our benchmark instruments.

F Investigating Differences with Amiti and Cameron (2012)

Column 1 of Table F.4 is our best replication of column 2 of Table 8 in Amiti and Cameron (2012). In this exercise we regress $\textit{Relative education intensity}_{f,i,2006}$ as defined in Amiti and Cameron (2012) on import and export dummies in 1996 and include all plants in the balanced panel. As in the Amiti and Cameron result, we estimate a negative and significant coefficient on the initial import status. In column (2), we also include the dummies for import and export status in 2006 and find that the import status in 2006 is positive but not significant. In column (3), we investigate the relationship between the relative education intensity and a full set of import status changes: 1. $\textit{import}_{96} = 0$, $\textit{import}_{06} = 0$ (baseline group); 2. $\textit{import}_{96} = 0$, $\textit{import}_{06} = 1$; 3. $\textit{import}_{96} = 1$, $\textit{import}_{06} = 0$; 4. $\textit{import}_{96} = 1$, $\textit{import}_{06} = 1$. We observe a positive but insignificant coefficient for firms which start importing while the coefficient for firms which quit importing is found to be negative and significant.

In columns (4), (5) and (6) we repeat each experiment, but add a control variable which captures the firm's relative education intensity in 1996, REI_{96}. We observe that the coefficients associated with 1996 import status are now significantly positive in columns (4) and (6) while the coefficient of starting to import is substantially larger and is much more precisely estimated in column (6). These results suggest that the negative coefficient on the 1996 import dummy in Amiti and Cameron's original specification may be driven by the positive correlation between 1996 import status and the firm's initial level of relative education intensity.

In column (7) we replace import and export status with the change in import and export status, which is our preferred specification because we think that the first differenced specification is less subject to endogeneity than the specifications in columns (1)-(6). In this case, we again estimate a *positive* and significant coefficient on the change in import status. One possible interpretation of this positive correlation between the change in relative education intensity and the change in import status in column (7) is that starting to import induces more education-upgrading within production workers than within non-production workers.

Table G.4: Investigating Differences with Amiti and Cameron (2012)

Dependent Var.	Δ Relative Education Intensity (1996-2006)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
export_{96}	-0.085***	-0.061**	-0.061**	0.051***	0.028*	0.029*	
	(0.025)	(0.028)	(0.028)	(0.015)	(0.017)	(0.017)	
export_{06}		-0.066**	-0.066**		0.037**	0.036**	
		(0.028)	(0.028)		(0.017)	(0.017)	
import_{96}	-0.083***	-0.088***		0.045***	0.003		
	(0.025)	(0.028)		(0.015)	(0.017)		
import_{06}		0.022			0.092***		
		(0.029)			(0.017)		
$(1\text{-import}_{96})\times\text{import}_{06}$			0.026			0.137***	
			(0.041)			(0.025)	
$\text{import}_{96}\times(1\text{-import}_{06})$			-0.085**			0.035*	
			(0.034)			(0.021)	
$\text{import}_{96}\times\text{import}_{06}$			-0.067**			0.085***	
			(0.031)			(0.019)	
REI_{96}				-0.925***	-0.928***	-0.929***	
				(0.008)	(0.008)	(0.008)	
Δexport							0.006
							(0.023)
Δimport							0.058**
							(0.024)
No. of Obs	7,192	7,192	7,192	7,192	7,192	7,192	7,192
R^2	0.087	0.087	0.087	0.666	0.668	0.668	0.083
Industry. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	All	All	All	All	All

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. Column (1) replicates column (1) of Table 8 in Amiti and Cameron (2012) using import status in 1996. Column (7) considers a specification where we replace import and export status with the change in import and export status.

Table G.5: A Decomposition of Plant-Level Skill Growth by Import Status

Panel A: Skilled Workers, Highschool+						
	All		Initial Non-importers			
			switchers		non-switchers	
	1996	2006	1996	2006	1996	2006
Levels						
L_s/L	0.3221	0.4667	0.4115	0.5751	0.2588	0.4013
L_s^p/L^p	0.2749	0.4234	0.3666	0.5381	0.2117	0.3569
L_s^n/L^n	0.6846	0.7629	0.7281	0.7885	0.6518	0.7315
L^n/L	0.1646	0.1687	0.1684	0.1912	0.1495	0.1543
Decomposition of the overall changes						
$\Delta(L_s/L)$	0.1446		0.1636		0.1425	
within prod.	0.1248		0.1409		0.1235	
within non-prod.	0.0137		0.0113		0.0128	
between	0.0060		0.0114		0.0062	
Obs.	10,537		658		7,464	

Panel B: Skilled Workers, College+						
	All		Initial Non-importers			
			switchers		non-switchers	
	1996	2006	1996	2006	1996	2006
Levels						
L_s/L	0.0325	0.0500	0.0458	0.0727	0.0219	0.0363
L_s^p/L^p	0.0134	0.0209	0.0221	0.0313	0.0081	0.0141
L_s^n/L^n	0.1376	0.1964	0.1750	0.2490	0.1096	0.1618
L^n/L	0.1646	0.1687	0.1684	0.1912	0.1495	0.1543
Decomposition of the overall changes						
$\Delta(L_s/L)$	0.0175		0.0270		0.0144	
within prod.	0.0058		0.0067		0.0048	
within non-prod.	0.0106		0.0147		0.0085	
between	0.0011		0.0056		0.0011	
Obs.	10,537		658		7,464	

[a] Source: Indonesia Manufacturing Survey in 1996 and 2006.

[b] Skilled workers are defined as workers with education no less than highschool in top panel and workers with no less than college in the bottom panel. Plants with no production workers in 1996 or 2006 are excluded (only three observations). Plants with no non-production worker in either period are treated as having zero within-non-production changes, and the mean value of skill share in non-production sector $(\overline{L_s^n/L^n})$ is computed using the period when the number of non-production workers is positive. Plants with no non-production workers in both 1990 and 2006 simply have a zero within non-production component and zero between component.

Table G.6: Robustness Checks: Dropping Capital, R&D, and Training

Occupation	Production				Non-Production			
Threshold	Highschool				College			
Dependent Variable	$\ln(L_s^p/L_u^p)$		$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$		$\ln(L_s^n/L_u^n)$		$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Import Status	0.597***	3.680***	0.077***	0.967***	0.247***	3.401***	0.041***	0.681***
	[0.108]	[1.258]	[0.018]	[0.273]	[0.092]	[1.055]	[0.015]	[0.228]
Export Status	0.111	-0.181	0.054***	-0.034	-0.174**	-0.546***	0.046***	-0.022
	[0.071]	[0.147]	[0.012]	[0.032]	[0.074]	[0.158]	[0.012]	[0.028]
Hicks-neutral, φ	-0.141***	-0.254***	0.017**	-0.009	0.016	-0.117*	0.048***	0.026**
	[0.046]	[0.070]	[0.008]	[0.012]	[0.048]	[0.070]	[0.008]	[0.012]
Foreign-Owned	0.111	-0.207	0.016	-0.096*	0.121	-0.297	0.022	-0.060
	[0.153]	[0.250]	[0.030]	[0.057]	[0.145]	[0.254]	[0.029]	[0.048]
Wage^j_{06}	-0.102	-0.177	-0.008	-0.016	-0.059	-0.189	-0.035**	-0.028
	[0.167]	[0.193]	[0.023]	[0.029]	[0.120]	[0.145]	[0.016]	[0.019]
Wage^j_{96}	-0.556***	-0.657***	-0.116***	-0.137***	0.332**	0.203	0.024	0.011
	[0.190]	[0.224]	[0.030]	[0.040]	[0.133]	[0.173]	[0.018]	[0.022]
$\ln(L_s^j/L_u^j)_{96}$	0.396***	0.353***			0.280***	0.226***		
	[0.023]	[0.031]			[0.031]	[0.041]		
d_u^j	0.269	0.030			-0.022	-0.023		
	[0.211]	[0.266]			[0.124]	[0.145]		
d_s^j	-1.175***	-1.049***			-0.443***	-0.264**		
	[0.073]	[0.098]			[0.074]	[0.104]		
$\left(\frac{L_s^j}{L_s^j+L_u^j}\right)_{96}$			0.497***	0.413***			0.214***	0.172***
			[0.019]	[0.036]			[0.026]	[0.032]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.324	0.114	0.376		0.168		0.126	
No. Obs	3,139	3,111	4,445	4,410	2,108	2,089	4,021	3,988

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. The education threshold used to determine a skilled production worker is a highschool diploma, while the threshold used for a skilled non-production worker is a college degree. Import status is treated as an endogenous variable in columns (2), (4), (6) and (8). It is instrumented with both the distance to port and the share of imports shipped by air.

G Additional Tables

Table G.7: Robustness Checks: Skill Threshold Definitions

Occupation	Production				Non-Production			
Threshold	College				Highschool			
Dependent Variable	$\ln(L_s^p/L_u^p)$		$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$		$\ln(L_s^n/L_u^n)$		$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Import Status	0.262**	4.471*	0.011**	0.068**	0.213*	2.434**	-0.028	0.582**
	[0.133]	[2.588]	[0.005]	[0.035]	[0.127]	[1.019]	[0.018]	[0.253]
Export Status	-0.364***	-0.668***	-0.008***	-0.012***	0.051	-0.123	0.019	-0.029
	[0.098]	[0.229]	[0.002]	[0.004]	[0.095]	[0.135]	[0.013]	[0.026]
Wage_{06}^j	-0.210	-0.757**	-0.001	-0.001	-0.044	-0.069	0.079**	0.073*
	[0.157]	[0.367]	[0.002]	[0.002]	[0.210]	[0.222]	[0.036]	[0.039]
Capital	-0.038	-0.150*	0.003***	0.002***	0.116***	0.075**	0.015***	0.006
	[0.027]	[0.078]	[0.001]	[0.001]	[0.021]	[0.032]	[0.003]	[0.005]
Hicks-neutral, φ	-0.073	-0.173	0.003**	0.002	-0.161***	-0.221***	0.010	-0.000
	[0.060]	[0.106]	[0.001]	[0.001]	[0.055]	[0.062]	[0.009]	[0.011]
Foreign-Owned	0.121	-0.815	0.003	-0.004	0.236	-0.120	0.006	-0.075
	[0.195]	[0.639]	[0.007]	[0.008]	[0.197]	[0.259]	[0.028]	[0.049]
R&D	0.232**	0.098	0.012***	0.010**	0.253**	0.064	0.004	-0.032
	[0.109]	[0.199]	[0.004]	[0.004]	[0.126]	[0.163]	[0.018]	[0.025]
Training	-0.168**	-0.255*	0.009***	0.007***	0.133*	0.132	0.008	-0.009
	[0.084]	[0.139]	[0.002]	[0.002]	[0.077]	[0.086]	[0.012]	[0.015]
Wage_{96}^j	0.361**	0.270	0.006**	0.005	-0.310	-0.335	-0.091**	-0.094**
	[0.171]	[0.273]	[0.003]	[0.003]	[0.240]	[0.253]	[0.038]	[0.043]
$\ln(L_s^j/L_u^j)_{96}$	0.244***	0.124			0.319***	0.286***		
	[0.047]	[0.105]			[0.036]	[0.039]		
d_u^j					0.239***	0.218***		
					[0.064]	[0.069]		
d_s^j	-0.906***	-0.313			-0.384***	-0.392***		
	[0.184]	[0.478]			[0.086]	[0.089]		
$\left(\frac{L_s^j}{L_s^j+L_u^j}\right)_{96}$			0.096***	0.077**			0.210***	0.211***
			[0.032]	[0.034]			[0.017]	[0.018]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.314	—	0.111	—	0.255	—	0.167	—
Hansen J p-value	—	0.252	—	0.052	—	0.337	—	0.366
No. Obs	959	947	4,445	4,410	1,631	1,619	4,021	3,988

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. The education threshold used to determine a skilled production worker is a college degree, while the threshold used for a skilled non-production worker is a highschool diploma. Import status is treated as an endogenous variable in columns (2), (4), (6) and (8). It is instrumented with both the distance to port and the share of imports shipped by air. The variable d_u^p is dropped from regressions (1) and (2) due to collinearity (It takes the same value in 99.999 percent of all observations using the college threshold as a definition of skill).

Table G.8: First Stage Results: Import Status

Occupation Threshold	Production Highschool		Non-Production College		All Highschool		All College		All Occupation	
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)	OLS (6)	OLS (7)	OLS (8)	OLS (9)	OLS (10)
Distance to Port	-0.031***	-0.031***	-0.029***	-0.030***	-0.027***	-0.031***	-0.035***	-0.030***	-0.032***	-0.032***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.009]	[0.008]	[0.013]	[0.008]	[0.008]	[0.008]
Import Airshare	0.399***	0.404***	0.388***	0.440***	0.401**	0.399***	0.677***	0.393***	0.447***	0.411***
	[0.143]	[0.143]	[0.144]	[0.153]	[0.159]	[0.143]	[0.232]	[0.143]	[0.153]	[0.144]
Export Status	0.084***	0.082***	0.084***	0.082***	0.085***	0.083***	0.103***	0.084***	0.084***	0.083***
	[0.014]	[0.014]	[0.014]	[0.014]	[0.014]	[0.014]	[0.019]	[0.014]	[0.014]	[0.014]
Wage^j_{06}	0.019	0.019			0.030	0.018			0.019	0.021
	[0.019]	[0.019]			[0.022]	[0.019]			[0.021]	[0.019]
Capital	0.014***	0.013***	0.014***	0.015***	0.016***	0.013***	0.021***	0.014***	0.016***	0.015***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.004]	[0.003]	[0.003]	[0.003]
Hicks-neutral, φ	0.011	0.010	0.012	0.012	0.011	0.010	0.015	0.011	0.013	0.011
	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.008]	[0.011]	[0.008]	[0.008]	[0.008]
Foreign-Owned	0.122***	0.124***	0.121***	0.126***	0.123***	0.125***	0.153***	0.122***	0.130***	0.126***
	[0.041]	[0.041]	[0.041]	[0.042]	[0.042]	[0.041]	[0.049]	[0.041]	[0.042]	[0.042]
R&D	0.046**	0.045**	0.047**	0.048**	0.048**	0.046**	0.042	0.045**	0.050**	0.049**
	[0.022]	[0.022]	[0.022]	[0.023]	[0.023]	[0.022]	[0.027]	[0.023]	[0.023]	[0.022]
Training	0.028***	0.026***	0.030***	0.029***	0.025**	0.027***	0.038**	0.029***	0.033***	0.031***
	[0.009]	[0.009]	[0.010]	[0.010]	[0.010]	[0.009]	[0.015]	[0.009]	[0.010]	[0.009]
Wage^j_{96}	0.036	0.038	0.002	-0.006	0.035	0.038	0.015	0.001	0.036	0.036
	[0.028]	[0.028]	[0.019]	[0.021]	[0.032]	[0.028]	[0.036]	[0.019]	[0.031]	[0.028]
$\ln(L^j_s/L^j_u)_{96}$	0.008**		0.013**		0.008**		0.015**			
	[0.004]		[0.006]		[0.004]		[0.007]			
d^j_u	0.075*		-0.010		-0.002		-0.033			
	[0.040]		[0.009]		[0.008]		[0.028]			
d^j_s	-0.008		-0.025**		0.011		0.007			
	[0.009]		[0.012]		[0.009]		[0.018]			
$\left(\frac{L^j_s}{L^j_s+L^j_u}\right)_{96}$		0.054***		0.031		0.047**		0.191*		
		[0.019]		[0.024]		[0.019]		[0.099]		
$\ln(L^n/L^p)_{96}$									-0.005	
									[0.004]	
d^p									0.012	
									[0.008]	
d^n									0.009	
									[0.009]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										-0.030
										[0.023]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-stat Exc. IVs.	11.75	11.83	10.73	10.38	8.04	11.58	8.23	11.16	11.35	12.62
No. Obs	4,410	4,410	4,410	3,988	3,756	4,410	2,004	4,410	3,988	4,410

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions.

Table G.9: First Stage Results: Export Status

Occupation Threshold	Production Highschool		Non-Production College		All Highschool		All College		All Occupation	
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance to Port	0.001	0.001	0.002	-0.005	-0.007	0.002	-0.017	0.000	-0.010	-0.001
	[0.014]	[0.014]	[0.013]	[0.014]	[0.015]	[0.014]	[0.023]	[0.013]	[0.014]	[0.014]
Import Airshare	-0.770***	-0.767***	-0.777***	-0.745***	-0.740***	-0.774***	-0.603*	-0.740***	-0.712***	-0.735***
	[0.203]	[0.202]	[0.202]	[0.216]	[0.225]	[0.203]	[0.330]	[0.205]	[0.212]	[0.205]
Δ Output Tariff	-0.005***	-0.005***	-0.005***	-0.005***	-0.006***	-0.005***	-0.009***	-0.005***	-0.005***	-0.005***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]
Δ Market Access	-0.005	-0.005	-0.006*	-0.005	-0.005	-0.005	-0.008	-0.005	-0.005	-0.004
	[0.003]	[0.003]	[0.003]	[0.004]	[0.004]	[0.003]	[0.007]	[0.003]	[0.004]	[0.003]
Control Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-stat Exc. IVs.	16.89	17.57	17.66	16.78	16.83	17.86	10.45	17.51	14.85	16.98
No. Obs	3,498	3,498	3,498	3,208	3,048	3,498	1,612	3,498	3,208	3,498

Notes: $***p < 0.01$, $**p < 0.05$, $*p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions.

Table G.10: First Stage Results: Import Status, Large Instrument Set

Occupation Threshold	Production Highschool		Non-Production College		All Highschool		All College		All Occupation	
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distance to Port	-0.031***	-0.032***	-0.031***	-0.030***	-0.027***	-0.031***	-0.036***	-0.030***	-0.033***	-0.033***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.009]	[0.008]	[0.013]	[0.008]	[0.008]	[0.008]
Import Airshare	0.392***	0.393***	0.404***	0.438***	0.401**	0.388**	0.684***	0.380**	0.454***	0.403***
	[0.150]	[0.150]	[0.151]	[0.161]	[0.167]	[0.150]	[0.239]	[0.151]	[0.161]	[0.151]
Import Weight	-0.005	-0.005	-0.005	-0.007	-0.007	-0.004	-0.010	-0.004	-0.008	-0.004
	[0.008]	[0.008]	[0.008]	[0.009]	[0.009]	[0.008]	[0.016]	[0.008]	[0.009]	[0.008]
Δ Import Tariff	0.000	0.001	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Control Vars.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-stat Exc. IVs.	6.42	6.63	6.35	5.75	4.43	6.45	4.28	6.29	6.00	6.80
No. Obs	4,408	4,408	4,408	3,986	3,754	4,408	2,002	4,408	3,986	4,408

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions.

Table G.11: Robustness Check: Skill Supply Control

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	2.448*	0.778***	3.783***	0.513**	3.388**	0.660***	3.041**	0.226***	0.786	0.024
	[1.364]	[0.274]	[1.344]	[0.231]	[1.684]	[0.238]	[1.268]	[0.070]	[0.812]	[0.120]
Skill Supply$_{06}$	0.244***	0.050***	0.131**	0.017**	0.185***	0.053***	0.029	0.004*	0.035	0.003
	[0.070]	[0.012]	[0.061]	[0.008]	[0.065]	[0.011]	[0.059]	[0.002]	[0.039]	[0.006]
Export Status	-0.157	-0.035	-0.470***	-0.017	-0.202	-0.028	-0.509***	-0.025***	-0.165*	-0.016
	[0.128]	[0.027]	[0.168]	[0.023]	[0.159]	[0.024]	[0.157]	[0.007]	[0.087]	[0.012]
Wage$^j_{06}$	-0.452	-0.028	-0.282	-0.038	-0.368	-0.004	-0.198	-0.011*	0.024	0.000
	[0.333]	[0.034]	[0.231]	[0.024]	[0.313]	[0.031]	[0.187]	[0.006]	[0.120]	[0.015]
Capital	0.095***	0.014***	-0.071**	0.007	0.072**	0.013***	-0.033	0.002*	0.013	0.004*
	[0.029]	[0.005]	[0.036]	[0.005]	[0.034]	[0.004]	[0.037]	[0.001]	[0.017]	[0.002]
Hicks-neutral, φ	-0.314***	-0.020**	-0.058	0.022**	-0.254***	-0.022**	-0.047	0.001	-0.125***	-0.006
	[0.056]	[0.010]	[0.064]	[0.010]	[0.056]	[0.009]	[0.058]	[0.003]	[0.034]	[0.005]
Foreign-Owned	-0.035	-0.066	-0.291	-0.039	-0.145	-0.046	-0.366	-0.019	-0.160	-0.014
	[0.222]	[0.052]	[0.295]	[0.044]	[0.247]	[0.046]	[0.296]	[0.015]	[0.146]	[0.021]
R&D	-0.084	-0.001	-0.128	-0.001	0.040	0.005	0.030	0.013	0.144	0.026**
	[0.139]	[0.027]	[0.164]	[0.022]	[0.152]	[0.024]	[0.121]	[0.008]	[0.088]	[0.013]
Training	0.176**	0.034**	-0.077	0.032***	0.234***	0.033***	0.011	0.011***	0.049	0.013*
	[0.075]	[0.014]	[0.087]	[0.012]	[0.071]	[0.013]	[0.089]	[0.004]	[0.048]	[0.007]
Skill Supply$_{96}$	-0.006	-0.008	-0.075	0.009	0.019	-0.006	0.038	0.003	0.052	0.006
	[0.083]	[0.015]	[0.073]	[0.008]	[0.080]	[0.013]	[0.068]	[0.002]	[0.045]	[0.006]
$\ln(L_s/L_u)_{96}$	0.338***		0.123***		0.407***		0.316***			
	[0.027]		[0.034]		[0.031]		[0.044]			
d_u	0.070		0.125*		-0.081		-0.232			
	[0.237]		[0.070]		[0.055]		[0.182]			
d_s	-0.960***		0.107		0.022		0.097			
	[0.101]		[0.136]		[0.070]		[0.078]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.385***		0.160***		0.432***		0.229***		
		[0.029]		[0.028]		[0.025]		[0.047]		
$\ln(L^n/L^p)_{96}$									0.391***	
									[0.020]	
d^p									-0.116**	
									[0.036]	
d^n									0.082**	
									[0.033]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.363***
										[0.022]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.289	0.242	0.551	0.425	0.419	0.529	0.913	0.459	0.746	0.731
No. Obs	3,109	4,408	2,087	3,986	3,403	4,408	1,639	4,408	3,986	4,408

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.12: Robustness Check: Large Instrument Set

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	3.240***	0.864***	3.498***	0.672***	4.105***	0.818***	3.191***	0.267***	1.557**	0.116
	[1.247]	[0.254]	[1.049]	[0.230]	[1.496]	[0.235]	[1.072]	[0.069]	[0.746]	[0.108]
Export Status	-0.236*	-0.044*	-0.454***	-0.032	-0.265*	-0.044*	-0.532***	-0.029***	-0.235***	-0.025**
	[0.122]	[0.026]	[0.137]	[0.023]	[0.146]	[0.024]	[0.136]	[0.007]	[0.083]	[0.011]
Wage^j_{06}	-0.149	-0.014	-0.200	-0.026	-0.149	0.004	-0.175	-0.008	0.046	-0.001
	[0.184]	[0.027]	[0.145]	[0.019]	[0.166]	[0.026]	[0.141]	[0.005]	[0.106]	[0.014]
Capital	0.080***	0.013***	-0.067**	0.005	0.056*	0.011**	-0.039	0.002	0.001	0.003
	[0.028]	[0.005]	[0.030]	[0.005]	[0.031]	[0.004]	[0.033]	[0.001]	[0.016]	[0.002]
Hicks-neutral, φ	-0.306***	-0.019*	-0.042	0.020**	-0.252***	-0.022**	-0.048	0.000	-0.131***	-0.007
	[0.059]	[0.010]	[0.060]	[0.010]	[0.059]	[0.010]	[0.057]	[0.003]	[0.036]	[0.005]
Foreign-Owned	-0.194	-0.089*	-0.251	-0.063	-0.280	-0.077	-0.393	-0.025	-0.268*	-0.026
	[0.234]	[0.052]	[0.255]	[0.046]	[0.254]	[0.049]	[0.273]	[0.016]	[0.149]	[0.020]
R&D	-0.140	-0.008	-0.104	-0.009	-0.014	-0.006	0.026	0.011	0.097	0.021
	[0.142]	[0.028]	[0.149]	[0.024]	[0.154]	[0.026]	[0.121]	[0.009]	[0.091]	[0.013]
Training	0.140*	0.029**	-0.070	0.026**	0.212***	0.026*	0.001	0.010***	0.016	0.009
	[0.076]	[0.014]	[0.080]	[0.013]	[0.072]	[0.013]	[0.084]	[0.004]	[0.047]	[0.006]
Wage^j_{96}	-0.642***	-0.134***	0.186	0.013	-0.751***	-0.131***	0.226	0.012*	0.029	0.025
	[0.217]	[0.038]	[0.179]	[0.023]	[0.209]	[0.035]	[0.173]	[0.006]	[0.126]	[0.016]
$\ln(L_s/L_u)_{96}$	0.338***		0.127***		0.412***		0.314***			
	[0.028]		[0.032]		[0.032]		[0.043]			
d_u	0.070		0.136**		-0.063		-0.234			
	[0.251]		[0.068]		[0.058]		[0.183]			
d_s	-0.954***		0.078		0.026		0.105			
	[0.083]		[0.132]		[0.072]		[0.080]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.389***		0.164***		0.441***		0.227***		
		[0.029]		[0.030]		[0.027]		[0.049]		
$\ln(L^n/L^p)_{96}$									0.397***	
									[0.020]	
d^p									-0.132***	
									[0.038]	
d^n									0.080**	
									[0.035]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.368***
										[0.022]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.001	0.001	0.134	0.268	0.067	0.001	0.231	0.081	0.558	0.328
No. Obs	3,109	4,408	2,087	3,986	3,403	4,408	1,639	4,408	3,986	4,408

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.13: Robustness Check: Import Intensity

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	7.309*	1.640**	5.498	1.420**	8.128*	1.458**	3.825	0.445**	2.945	0.148
	[3.974]	[0.658]	[3.640]	[0.675]	[4.632]	[0.600]	[2.554]	[0.179]	[1.936]	[0.238]
Import Share	-8.143	-1.479	-2.563	-1.445	-7.487	-1.200	-0.715	-0.354	-3.417	-0.116
	[8.230]	[1.365]	[6.897]	[1.323]	[8.824]	[1.233]	[3.979]	[0.375]	[3.768]	[0.475]
Export Status	-0.288*	-0.066**	-0.566***	-0.053*	-0.387*	-0.062**	-0.569***	-0.033***	-0.216**	-0.021*
	[0.151]	[0.032]	[0.161]	[0.030]	[0.207]	[0.030]	[0.160]	[0.009]	[0.094]	[0.012]
Wage^j_{06}	-0.452	-0.028	-0.282	-0.038	-0.368	-0.004	-0.198	-0.011*	0.024	0.000
	[0.333]	[0.034]	[0.231]	[0.024]	[0.313]	[0.031]	[0.187]	[0.006]	[0.120]	[0.015]
Capital	0.064*	0.010*	-0.089**	0.001	0.035	0.008	-0.048	0.001	-0.002	0.003
	[0.036]	[0.006]	[0.040]	[0.006]	[0.041]	[0.005]	[0.037]	[0.002]	[0.019]	[0.002]
Hicks-neutral, φ	-0.392***	-0.032**	-0.090	0.015	-0.352***	-0.035***	-0.041	-0.001	-0.146***	-0.008
	[0.090]	[0.015]	[0.085]	[0.014]	[0.091]	[0.014]	[0.081]	[0.004]	[0.046]	[0.006]
Foreign-Owned	-0.451	-0.123*	-0.403	-0.100	-0.582	-0.107	-0.538	-0.034*	-0.300	-0.026
	[0.433]	[0.074]	[0.345]	[0.065]	[0.428]	[0.067]	[0.373]	[0.020]	[0.190]	[0.023]
R&D	-0.198	-0.020	-0.198	-0.020	-0.115	-0.017	-0.005	0.009	0.110	0.023*
	[0.194]	[0.037]	[0.195]	[0.033]	[0.219]	[0.033]	[0.135]	[0.011]	[0.103]	[0.013]
Training	0.104	0.026	-0.098	0.022	0.184*	0.022	-0.025	0.008*	0.014	0.009
	[0.101]	[0.018]	[0.103]	[0.017]	[0.097]	[0.016]	[0.119]	[0.005]	[0.053]	[0.007]
Wage^j_{96}	-0.757***	-0.180***	0.114	-0.001	-0.919***	-0.169***	0.203	0.008	-0.055	0.023
	[0.275]	[0.053]	[0.253]	[0.033]	[0.283]	[0.049]	[0.195]	[0.008]	[0.160]	[0.019]
$\ln(L_s/L_u)_{96}$	0.321***		0.116***		0.391***		0.298***			
	[0.039]		[0.037]		[0.045]		[0.061]			
d_u	0.148		0.151*		-0.063		-0.169			
	[0.340]		[0.082]		[0.071]		[0.201]			
d_s	-0.966***		0.044		-0.057		0.103			
	[0.101]		[0.154]		[0.104]		[0.087]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.381***		0.142***		0.439***		0.203***		
		[0.037]		[0.042]		[0.033]		[0.060]		
$\ln(L^n/L^p)_{96}$									0.398***	
									[0.022]	
d^p									-0.141***	
									[0.042]	
d^n									0.079**	
									[0.039]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.370***
										[0.022]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs	3,024	4,287	2,038	3,876	3,308	4,287	1,604	4,287	3,876	4,287

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.14: Robustness Check: TFP Measurement

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	3.151***	0.947***	3.885***	0.724***	3.968***	0.885***	3.264***	0.275***	1.226*	0.089
	[1.211]	[0.270]	[1.133]	[0.238]	[1.451]	[0.248]	[1.072]	[0.071]	[0.729]	[0.105]
Export Status	-0.255**	-0.051*	-0.495***	-0.033	-0.276*	-0.051**	-0.537***	-0.029***	-0.223***	-0.023**
	[0.121]	[0.027]	[0.147]	[0.024]	[0.143]	[0.025]	[0.137]	[0.007]	[0.082]	[0.011]
Wage^j_{06}	-0.108	-0.014	-0.209	-0.027	-0.119	0.005	-0.171	-0.008	0.056	-0.001
	[0.183]	[0.028]	[0.150]	[0.019]	[0.164]	[0.026]	[0.141]	[0.005]	[0.104]	[0.014]
Capital	0.055**	0.011**	-0.078**	0.006	0.041	0.009*	-0.044	0.002	-0.004	0.003
	[0.028]	[0.005]	[0.034]	[0.005]	[0.031]	[0.005]	[0.034]	[0.001]	[0.016]	[0.002]
Solow Residual	0.001	0.011	0.023	0.014	0.022	0.008	0.031	0.003	-0.032	-0.000
	[0.044]	[0.009]	[0.050]	[0.008]	[0.046]	[0.008]	[0.048]	[0.002]	[0.027]	[0.004]
Foreign-Owned	-0.240	-0.104*	-0.315	-0.068	-0.317	-0.090*	-0.413	-0.027*	-0.244*	-0.024
	[0.233]	[0.056]	[0.273]	[0.048]	[0.250]	[0.052]	[0.275]	[0.016]	[0.144]	[0.020]
R&D	-0.180	-0.016	-0.141	-0.009	-0.051	-0.014	0.011	0.010	0.097	0.021
	[0.142]	[0.030]	[0.159]	[0.025]	[0.152]	[0.027]	[0.123]	[0.009]	[0.088]	[0.013]
Training	0.114	0.025*	-0.086	0.026**	0.192***	0.022	-0.008	0.010**	0.016	0.009
	[0.076]	[0.015]	[0.084]	[0.013]	[0.071]	[0.014]	[0.085]	[0.004]	[0.047]	[0.006]
Wage^j_{96}	-0.644***	-0.137***	0.168	0.011	-0.743***	-0.133***	0.220	0.011*	0.045	0.026*
	[0.216]	[0.040]	[0.188]	[0.023]	[0.207]	[0.037]	[0.175]	[0.006]	[0.123]	[0.016]
$\ln(L_s/L_u)_{96}$	0.340***		0.126***		0.412***		0.314***			
	[0.027]		[0.033]		[0.031]		[0.043]			
d_u	0.076		0.134*		-0.053		-0.233			
	[0.249]		[0.071]		[0.057]		[0.186]			
d_s	-0.944***		0.081		0.031		0.104			
	[0.083]		[0.137]		[0.071]		[0.081]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.384***		0.163***		0.435***		0.225***		
		[0.031]		[0.031]		[0.028]		[0.050]		
$\ln(L^n/L^p)_{96}$									0.395***	
									[0.020]	
d^p									-0.123***	
									[0.037]	
d^n									0.088**	
									[0.034]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.367***
										[0.022]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.087	0.107	0.519	0.184	0.157	0.154	0.777	0.229	0.327	0.834
No. Obs	3,112	4,411	2,090	3,989	3,406	4,411	1,642	4,411	3,989	4,411

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.15: Robustness Check: Instrumenting Export Status

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	2.977**	0.909***	4.240**	0.888***	4.446**	0.947***	0.933	0.191**	0.739	0.014
	[1.289]	[0.305]	[1.701]	[0.330]	[1.840]	[0.300]	[0.893]	[0.075]	[0.825]	[0.121]
Export Status	-0.551	0.073	0.232	0.136	0.142	0.088	-1.419***	-0.019	-0.719	-0.093
	[0.558]	[0.124]	[0.859]	[0.116]	[0.620]	[0.120]	[0.492]	[0.029]	[0.470]	[0.070]
Wage^j_{06}	-0.168	-0.011	-0.224	-0.023	-0.275	0.003	-0.009	-0.007	-0.227*	-0.037**
	[0.206]	[0.033]	[0.172]	[0.025]	[0.193]	[0.033]	[0.125]	[0.005]	[0.112]	[0.016]
Capital	0.098**	0.009	-0.115*	-0.005	0.037	0.004	0.040	0.003	0.035	0.007*
	[0.041]	[0.008]	[0.065]	[0.009]	[0.049]	[0.008]	[0.032]	[0.002]	[0.029]	[0.004]
Hicks-neutral, φ	-0.326***	-0.024*	-0.100	0.011	-0.284***	-0.028**	0.010	0.002	-0.088**	-0.001
	[0.075]	[0.014]	[0.100]	[0.015]	[0.081]	[0.014]	[0.062]	[0.003]	[0.044]	[0.007]
Foreign-Owned	-0.240	-0.141*	-0.451	-0.115	-0.470	-0.143*	0.263	-0.016	-0.110	-0.010
	[0.305]	[0.078]	[0.470]	[0.079]	[0.372]	[0.077]	[0.262]	[0.020]	[0.204]	[0.030]
R&D	0.016	-0.021	-0.226	-0.038	-0.047	-0.034	0.321***	0.016	0.198	0.038**
	[0.174]	[0.040]	[0.272]	[0.040]	[0.214]	[0.040]	[0.116]	[0.011]	[0.122]	[0.018]
Training	0.133	0.013	-0.200	0.002	0.117	0.006	0.200**	0.012*	0.110	0.021*
	[0.119]	[0.025]	[0.166]	[0.025]	[0.130]	[0.025]	[0.093]	[0.006]	[0.083]	[0.012]
Wage^j_{96}	-0.374	-0.123***	0.114	0.020	-0.642***	-0.118***	0.314**	0.016***	0.139	0.036*
	[0.244]	[0.046]	[0.233]	[0.029]	[0.241]	[0.045]	[0.146]	[0.006]	[0.141]	[0.019]
$\ln(L_s/L_u)_{96}$	0.336***		0.090**		0.397***		0.297***			
	[0.030]		[0.042]		[0.036]		[0.045]			
d_u	0.193		0.106		-0.102		-0.237			
	[0.281]		[0.086]		[0.066]		[0.161]			
d_s	-0.903***		0.194		0.087		0.066			
	[0.099]		[0.163]		[0.093]		[0.078]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.371***		0.087**		0.416***		0.262***		
		[0.036]		[0.044]		[0.034]		[0.053]		
$\ln(L^n/L^p)_{96}$									0.378***	
									[0.025]	
d^p									-0.112**	
									[0.045]	
d^n									0.034	
									[0.040]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.365***
										[0.026]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.151	0.343	0.569	0.704	0.510	0.609	0.225	0.084	0.073	0.279
No. Obs	2,529	3,498	1,703	3,208	2,756	3,498	1,325	3,498	3,208	3,498

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.16: Robustness Check: Standards

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Standards	5.354*	1.365**	1.931*	0.828**	5.976*	1.220**	0.502	0.222**	1.053	-0.078
	[3.000]	[0.618]	[1.148]	[0.393]	[3.083]	[0.559]	[0.816]	[0.093]	[1.230]	[0.178]
Wage_{06}^j	0.319	0.105	-0.262	-0.028	0.481	0.118	-0.526***	-0.005	0.208	-0.006
	[0.446]	[0.084]	[0.186]	[0.035]	[0.439]	[0.076]	[0.157]	[0.009]	[0.173]	[0.023]
Capital	-0.051	-0.011	-0.060	-0.007	-0.075	-0.011	0.028	-0.000	0.003	0.008
	[0.108]	[0.018]	[0.045]	[0.013]	[0.104]	[0.016]	[0.031]	[0.003]	[0.037]	[0.006]
Hicks-neutral, φ	-0.414***	-0.050**	-0.109	-0.003	-0.317***	-0.053**	-0.040	-0.005	-0.139***	-0.003
	[0.125]	[0.026]	[0.085]	[0.019]	[0.118]	[0.023]	[0.070]	[0.005]	[0.052]	[0.008]
Foreign-Owned	-0.337	-0.091	0.350	-0.069	-0.490	-0.067	0.137	-0.022	-0.159	-0.012
	[0.672]	[0.132]	[0.392]	[0.085]	[0.729]	[0.115]	[0.217]	[0.022]	[0.205]	[0.030]
R&D	-0.752	-0.173	-0.268	-0.095	-0.502	-0.143	0.121	0.003	0.058	0.048
	[0.546]	[0.113]	[0.278]	[0.076]	[0.490]	[0.103]	[0.133]	[0.020]	[0.219]	[0.033]
Training	-0.176	-0.076	-0.128	-0.042	-0.271	-0.066	0.150	-0.004	-0.039	0.020
	[0.313]	[0.071]	[0.160]	[0.051]	[0.368]	[0.065]	[0.110]	[0.011]	[0.151]	[0.021]
Wage_{96}^j	-0.426	-0.083	0.441**	0.043	-0.432	-0.082	0.802***	0.024***	0.151	0.046**
	[0.359]	[0.067]	[0.217]	[0.036]	[0.356]	[0.060]	[0.198]	[0.008]	[0.140]	[0.018]
$\ln(L_s/L_u)_{96}$	0.307***		0.138***		0.416***		0.392***			
	[0.058]		[0.040]		[0.054]		[0.034]			
d_u	0.344		0.247***		0.187		-0.323			
	[0.423]		[0.091]		[0.164]		[0.225]			
d_s	-0.751***		0.151		0.292**		0.166			
	[0.178]		[0.137]		[0.146]		[0.121]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.309***		0.160***		0.385***		0.249***		
		[0.081]		[0.042]		[0.070]		[0.051]		
$\ln(L^n/L^p)_{96}$									0.412***	
									[0.023]	
d^p									-0.077	
									[0.049]	
d^n									0.111**	
									[0.052]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.389***
										[0.027]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.707	0.643	0.541	0.640	0.993	0.550	0.653	0.662	0.496	0.322
No. Obs	2,186	3,329	1,318	2,958	2,435	3,329	924	3,329	2,958	3,329

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.17: Robustness Check: Capital-Skill Complementarity

Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
Dependent Variable	$\ln(L_s^p/L_u^p)$	$\left(\frac{L_s^p}{L_s^p+L_u^p}\right)$	$\ln(L_s^n/L_u^n)$	$\left(\frac{L_s^n}{L_s^n+L_u^n}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L_s/L_u)$	$\left(\frac{L_s}{L_s+L_u}\right)$	$\ln(L^n/L^p)$	$\left(\frac{L^n}{L^n+L^p}\right)$
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	5.716***	1.476***	3.639*	0.525	7.500***	1.460***	3.113**	0.273**	2.609**	0.184
	[2.130]	[0.464]	[2.060]	[0.378]	[2.901]	[0.465]	[1.521]	[0.137]	[1.159]	[0.126]
Capital-Skill Comp.	0.388	0.081	-0.021	-0.017	0.513	0.114	-0.143	0.002	0.246	0.004
	[0.511]	[0.090]	[0.567]	[0.093]	[0.862]	[0.108]	[0.423]	[0.031]	[0.189]	[0.016]
Export	-0.141	-0.035	-0.498***	-0.077***	-0.166	-0.014	-0.559***	-0.043***	-0.124	-0.025*
	[0.315]	[0.062]	[0.143]	[0.024]	[0.504]	[0.073]	[0.137]	[0.009]	[0.130]	[0.015]
Wage^j_{06}	-0.176	-0.057	-0.097	-0.017	-0.216	-0.045	-0.088	-0.009	-0.056	-0.007
	[0.286]	[0.053]	[0.210]	[0.037]	[0.300]	[0.055]	[0.181]	[0.011]	[0.147]	[0.017]
Capital	-0.230	-0.054	-0.045	-0.003	-0.351	-0.081	0.081	-0.004	-0.185	-0.002
	[0.378]	[0.065]	[0.454]	[0.075]	[0.636]	[0.078]	[0.342]	[0.025]	[0.142]	[0.012]
Hicks-neutral, φ	-0.265***	-0.004	-0.038	0.014	-0.219*	-0.004	-0.060	-0.000	-0.093*	-0.007
	[0.098]	[0.022]	[0.090]	[0.016]	[0.120]	[0.024]	[0.089]	[0.005]	[0.052]	[0.006]
Foreign-Owned	-0.527	-0.139*	-0.288	-0.051	-0.607	-0.124	-0.373	-0.031	-0.376**	-0.030
	[0.366]	[0.076]	[0.291]	[0.057]	[0.419]	[0.076]	[0.248]	[0.020]	[0.188]	[0.022]
R&D	-0.161	-0.007	-0.047	-0.016	-0.005	0.008	-0.050	0.007	0.145	0.018
	[0.226]	[0.050]	[0.245]	[0.040]	[0.325]	[0.053]	[0.159]	[0.014]	[0.116]	[0.014]
Training	0.212	0.051	-0.082	-0.031	0.440	0.065	-0.039	0.003	0.103	0.008
	[0.231]	[0.051]	[0.224]	[0.038]	[0.468]	[0.061]	[0.160]	[0.012]	[0.100]	[0.011]
Wage^j_{96}	-0.993*	-0.214**	0.226	0.042	-1.255*	-0.236**	0.214	0.021	-0.260	0.002
	[0.515]	[0.092]	[0.223]	[0.038]	[0.746]	[0.102]	[0.202]	[0.013]	[0.212]	[0.022]
$\ln(L_s/L_u)_{96}$	0.379***		0.134*		0.485***		0.298***			
	[0.078]		[0.071]		[0.165]		[0.047]			
d_u	-0.267		0.169**		-0.138		-0.358			
	[0.402]		[0.075]		[0.158]		[0.229]			
d_s	-1.098***		0.309*		-0.209		0.176			
	[0.329]		[0.172]		[0.359]		[0.163]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.418***		0.114*		0.516***		0.218**		
		[0.329]		[0.068]		[0.137]		[0.087]		
$\ln(L^n/L^p)_{96}$									0.413***	
									[0.032]	
d^p									-0.233**	
									[0.119]	
d^n									0.060	
									[0.046]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.380***
										[0.029]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.101	0.291	0.636	0.763	0.021	0.164	0.954	0.834	0.022	0.070
No. Obs	2,542	3,244	1,795	2,036	3,012	3,244	1,487	2,082	3,115	3,244

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.18: Importing and Standardized Production

Dep. Var.	Standards									
Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	1.491*	1.425*	1.819*	1.622*	2.268	1.395*	1.113	1.851*	1.467*	1.517*
	[0.877]	[0.851]	[1.002]	[0.966]	[2.112]	[0.843]	[1.282]	[1.055]	[0.850]	[0.826]
Wage^j_{06}	-0.114**	-0.114**	-0.060	-0.039	-0.136	-0.114***	-0.059	-0.060	-0.117**	-0.114**
	[0.045]	[0.045]	[0.039]	[0.040]	[0.098]	[0.044]	[0.099]	[0.039]	[0.052]	[0.046]
capital	0.014	0.014	0.007	0.013	0.005	0.014	0.012	0.011	0.011	0.014
	[0.010]	[0.009]	[0.011]	[0.012]	[0.025]	[0.009]	[0.020]	[0.012]	[0.011]	[0.010]
Hicks-neutral, φ	0.008	0.010	0.002	0.006	-0.000	0.010	0.033	0.005	0.006	0.009
	[0.020]	[0.020]	[0.023]	[0.024]	[0.034]	[0.019]	[0.038]	[0.023]	[0.022]	[0.020]
Foreign-Owned	0.052	0.046	0.031	0.043	0.066	0.048	0.030	0.039	0.052	0.046
	[0.104]	[0.102]	[0.118]	[0.111]	[0.119]	[0.101]	[0.105]	[0.117]	[0.104]	[0.105]
R&D	0.121**	0.122**	0.102	0.117*	0.072	0.122**	0.078	0.115*	0.117*	0.119**
	[0.059]	[0.057]	[0.065]	[0.063]	[0.089]	[0.057]	[0.061]	[0.066]	[0.060]	[0.060]
Training	0.077***	0.078***	0.063*	0.084**	0.076	0.079***	0.088**	0.072**	0.080***	0.077***
	[0.029]	[0.028]	[0.034]	[0.033]	[0.047]	[0.028]	[0.044]	[0.034]	[0.031]	[0.030]
Wage^j_{96}	-0.032	-0.029	-0.006	0.007	-0.074	-0.029	-0.049	-0.007	-0.005	-0.032
	[0.059]	[0.058]	[0.043]	[0.046]	[0.091]	[0.057]	[0.086]	[0.043]	[0.064]	[0.059]
$\ln(L_s/L_u)_{96}$	0.007		-0.018		0.005		-0.024			
	[0.009]		[0.012]		[0.012]		[0.021]			
d_u	-0.132				-0.024		0.070			
	[0.107]				[0.024]		[0.104]			
d_s	-0.033		-0.038		-0.003		-0.072			
	[0.023]		[0.044]		[0.031]		[0.047]			
$\left(\frac{L_s}{L_s+L_u}\right)_{96}$		0.042		0.009		0.051		-0.088		
		[0.055]		[0.046]		[0.049]		[0.270]		
$\ln(L^n/L^p)_{96}$									0.001	
									[0.008]	
d^p									-0.028*	
									[0.017]	
d^n									-0.040**	
									[0.018]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										0.072
										[0.051]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.460	0.428	0.399	0.379	0.647	0.421	0.202	0.411	0.472	0.426
No. Obs	3,329	3,329	3,329	2,958	2,720	3,329	1,194	3,329	2,958	3,329

Notes: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. The education threshold used to determine a skilled production worker is a highschool diploma, while the threshold used for a skilled non-production worker is a college degree. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.

Table G.19: Exporting, Initial Skill-Levels, and SBTC

Dep. Var.	Export Status									
Occupation	Production		Non-Production		All		All		All	
Threshold	Highschool		College		Highschool		College		Occupation	
	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Import Status	-0.579	-0.580	-0.739	-0.553	-0.532	-0.584	-0.264	-0.681	-0.342	-0.530
	[0.413]	[0.408]	[0.478]	[0.432]	[0.544]	[0.412]	[0.450]	[0.462]	[0.359]	[0.386]
Wage^j_{06}	0.035	0.035	-0.025	-0.028	0.061	0.035	-0.005	-0.026	0.038	0.035
	[0.031]	[0.031]	[0.025]	[0.026]	[0.045]	[0.031]	[0.047]	[0.025]	[0.032]	[0.031]
Capital	0.033***	0.033***	0.035***	0.036***	0.037***	0.033***	0.033***	0.036***	0.032***	0.035***
	[0.007]	[0.007]	[0.008]	[0.008]	[0.010]	[0.007]	[0.012]	[0.008]	[0.007]	[0.007]
Hicks-neutral, φ	0.029**	0.029**	0.030**	0.034**	0.034**	0.029**	0.004	0.032**	0.030**	0.030**
	[0.012]	[0.012]	[0.013]	[0.013]	[0.014]	[0.012]	[0.017]	[0.013]	[0.012]	[0.012]
Foreign-Owned	0.246***	0.246***	0.260***	0.237***	0.244***	0.248***	0.201**	0.259***	0.220***	0.245***
	[0.086]	[0.087]	[0.096]	[0.087]	[0.092]	[0.087]	[0.092]	[0.093]	[0.077]	[0.085]
R&D	0.112***	0.112***	0.118***	0.114***	0.115**	0.114***	0.084**	0.121***	0.106***	0.118***
	[0.042]	[0.041]	[0.046]	[0.043]	[0.045]	[0.042]	[0.042]	[0.044]	[0.039]	[0.041]
Training	0.082***	0.082***	0.086***	0.085***	0.079***	0.084***	0.087***	0.090***	0.078***	0.087***
	[0.020]	[0.019]	[0.023]	[0.021]	[0.022]	[0.020]	[0.027]	[0.022]	[0.019]	[0.020]
Wage^j_{96}	0.064	0.064	0.016	0.025	0.077*	0.063	0.004	0.015	0.073*	0.060
	[0.040]	[0.040]	[0.028]	[0.030]	[0.046]	[0.040]	[0.053]	[0.028]	[0.039]	[0.039]
$\ln(L^p_s/L^p_u)_{96}$	0.009		-0.001		0.004		-0.029**			
	[0.006]		[0.012]		[0.006]		[0.012]			
d^p_u	0.040		0.018		-0.012		0.033			
	[0.065]		[0.016]		[0.011]		[0.054]			
d^p_s	-0.033**		-0.043*		-0.012		-0.049*			
	[0.014]		[0.023]		[0.014]		[0.028]			
$\left(\frac{L^p_s}{L^p_s+L^p_u}\right)_{96}$		0.067**		0.065*		0.053*		0.025		
		[0.033]		[0.035]		[0.031]		[0.107]		
$\ln(L^n/L^p)_{96}$									-0.013**	
									[0.005]	
d^p									-0.017*	
									[0.010]	
d^n									-0.025**	
									[0.011]	
$\left(\frac{L^n}{L^n+L^p}\right)_{96}$										-0.074**
										[0.036]
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hansen J p-value	0.199	0.195	0.358	0.289	0.273	0.192	0.356	0.323	0.118	0.170
No. Obs	3,619	3,619	3,619	3,226	2,994	3,619	1,395	3,619	3,226	3,619

Notes: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Robust standard errors are in square brackets. The sample of initial non-importers is used in all regressions. The education threshold used to determine a skilled production worker is a highschool diploma, while the threshold used for a skilled non-production worker is a college degree. Import status is treated as an endogenous variable in all columns. It is instrumented with both the distance to port and the share of imports shipped by air.