Online Appendix: Trade-induced structural change and the skill premium

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Appendix A Equilibrium

This Section characterizes the equilibrium of our quantitative model, and shows how to solve for the key variables of interest as a function of domestic expenditure shares, $\pi_{ii}^{j}(k)$, and ratios of net exports to aggregate revenues in each sector, λ_i^j. In addition, we provide the system of equations that we use for computing our counterfactual exercises.

A.1 Equilibrium

An equilibrium is a set of aggregate prices $\{P_i^C, w_i, s_i\}_{i\in I}$, and $\left\{P_i^j, c_i^j, p_{v,i}^j, p_{b,i}^j\right\}_{i\in I, j\in J}$, aggregate quantities $\left\{C_i^j, X_i^j, Y_i^j\right\}_{i\in I, j\in J}$ and $\left\{H_i^j, L_i^j\right\}_{i\in I, j\in J}$, and trade shares $\left\{\pi_{in}^j(k)\right\}_{i,n\in I, k\in K^j, j\in J}$, such that, given factor supplies $\{H_i, L_i\}_{i\in I}$, technologies $\left\{A_i^j(k)\right\}_{i\in I, k\in K^j, j\in J}$, trade costs $\left\{\tau_{in}^j(k)\right\}_{i,n\in I, k\in K^j, j\in J}$, and net exports $\{NX_i\}_{i\in I}$, the following are satisfied:

i. **Households maximize utility subject to their budget constraints.** This implies demands:

$$\frac{P_i^j C_i^j}{\sum_j P_i^j C_i^j} \quad = \quad \bar{\phi}_i^j \left[\frac{P_i^j}{P_i^C}\right]^{1-\rho} C_i^{\epsilon_j}, \tag{A.1}$$

where

$$P_i^C = \left[\sum_j \bar{\phi}_i^j \left[P_i^j\right]^{1-\rho} C_i^{\epsilon_j - [1-\rho]}\right]^{\frac{1}{1-\rho}} \tag{A.2}$$

is the consumption price index in country i, and the budget constraint is:

$$w_i L_i + s_i H_i = P_i^C C_i + NX_i. \tag{A.3}$$

ii. **Producers of intermediate varieties minimize costs.** Cost minimization implies that the prices of the input bundles are given by:

$$c_i^j \quad = \quad \bar{\beta}_i^j \left[p_{b,i}^j\right]^{1-\beta_j} \left[p_{v,i}^j\right]^{\beta_j} \tag{A.4}$$

$$p_{v,i}^j \quad = \quad \left[\bar{\mu}_i^j w_i^{1-\gamma} + \left[1-\bar{\mu}_i^j\right] s_i^{1-\gamma}\right]^{\frac{1}{1-\gamma}} \tag{A.5}$$

$$p_{b,i}^j \quad = \quad \left[\sum_{l=1}^{J} \bar{\alpha}_i^{lj} P_i^{l\,1-\rho_m}\right]^{\frac{1}{1-\rho_m}}. \tag{A.6}$$

Given these definitions, factor demands are given by:

$$
\begin{aligned}
w_i l_{in}^j(\omega,k) &= \bar{\mu}_i^j \left[\frac{p_{v,i}^j}{w_i}\right]^{\gamma-1} \beta_i^j p_n^j(\omega,k)\, q_{in}^j(\omega,k)\, \mathbb{I}_{in}^j(\omega,k) \\
s_i h_{in}^j(\omega,k) &= \left[1-\bar{\mu}_i^j\right] \left[\frac{p_{v,i}^j}{s_i}\right]^{\gamma-1} \beta_i^j p_n^j(\omega,k)\, q_{in}^j(\omega,k)\, \mathbb{I}_{in}^j(\omega,k) \\
P_i^l x_{in}^{lj}(\omega,k) &= \bar{\alpha}_i^{lj} \left[\frac{p_{b,i}^j}{P_i^l}\right]^{\rho_m-1} \left[1-\beta_i^j\right] p_n^j(\omega,k)\, q_{in}^j(\omega,k)\, \mathbb{I}_{in}^j(\omega,k),
\end{aligned}
$$

where $q_{in}^j(\omega,k)$ is the quantity of variety (ω,k) produced in country i and consumed in country n.

iii. **Cost minimization by producers of final goods.** Cost minimization implies that demand for variety (ω,k) is given by:

$$
p_i^j(\omega,k)\, q_i^j(\omega,k) = \left[\frac{p_i^j(\omega,k)}{P_i^j(k)}\right]^{1-\eta} \sigma_i^j(k)\, P_i^j Y_i^j.
$$

As shown in Eaton and Kortum (2002) under our same distributional assumptions, price indices for final goods are given by

$$
P_i^j = \bar{\sigma}_i^j \left[\prod_{k=1}^{K^j} P_i^j(k)^{\sigma_i^j(k)}\right]. \tag{A.7}
$$

where

$$
P_i^j(k) = \Xi_i^j(k) \left[\sum_{l=1}^{I} \left[\tau_{li}^j(k)\, \frac{c_l^j}{A_l^j(k)}\right]^{-1/\theta^j(k)}\right]^{-\theta^j(k)},
$$

where $\bar{\sigma}_i^j$ and $\Xi_i^j(k)$ are constants. Trade shares between any pair of countries are given by equation (8).

iv. **Aggregate factor market clearing.** Integrating factor demands across producers, adding across all destination countries n, substituting for the demand for each variety $q_i^j(\omega,k)$, using equation (7), and adding across industries and across sectors, factor market clearing requires that the total payments to each type of labor in country i equal total demand:

$$w_i L_i^j = \bar{\mu}_i^j \left[\frac{p_{v,i}^j}{w_i} \right]^{\gamma-1} \beta_i^j R_i^j \tag{A.8}$$

$$s_i H_i^j = \left[1 - \bar{\mu}_i^j \right] \left[\frac{p_{v,i}^j}{s_i} \right]^{\gamma-1} \beta_i^j R_i^j, \tag{A.9}$$

where $R_i^j = \sum_n \sum_{k \in K^j} \pi_{in}^j(k) P_n^j(k) Y_n^j(k)$ are aggregate revenues accruing from sales in sector j, and the demand for intermediate inputs in each sector l are given by:

$$P_i^l X_i^l = \sum_j \bar{\alpha}_i^{lj} \left[\frac{p_{b,i}^j}{P_i^l} \right]^{\rho_m - 1} \left[1 - \beta_i^j \right] R_i^j. \tag{A.10}$$

v. **Labor market clearing.**

$$H_i = \sum_j H_i^j \quad ; \quad L_i^j = \sum_j L_i^j. \tag{A.11}$$

vi. **Final goods market clearing.**

$$Y_i^j = C_i^j + X_i^j. \tag{A.12}$$

Note that, after choosing a numeraire, $(31 \times I - 1 + I \times I \times (K^S + K^G + K^F))$ aggregate variables must be determined in equilibrium. Equations (A.1)-(A.12) and (8) give a system of $(31 \times I - 1 + I \times I \times (K^S + K^G + K^F))$ independent equations, since the market clearing conditions together with the budget constraints and the definition of revenues make one budget constraint redundant.

A.2 Solving in terms of domestic expenditure shares and sectorial net exports

In this section we show how to solve for domestic variables as functions of industrial domestic expenditure shares, $\pi_{ii}^j(k)$, and net exports relative to aggregate revenues, λ_i^j. From equations, (8) and (A.7) we can write the industry-level price indices as functions of domestic expenditure shares:

$$P_i^j(k) = \Xi_i^j(k) \left[c_i^j / A_i^j(k) \right] \pi_{ii}^j(k)^{\theta^j(k)},$$

and the sectoral price indexes as:

$$P_i^j = \bar{\sigma}_i^j \prod_{k=1}^{K^j} \left[\Xi_i^j(k) \left[c_i^j / A_i^j(k) \right] \right] \pi_{ii}^j(k)^{\sigma_j(k)\theta^j(k)}. \quad \text{(A.13)}$$

Using equations (A.8) and (A.9) we can write

$$\left[\frac{s_i}{w_i}\right]^\gamma \frac{H_i}{L_i} = \frac{\sum_j \left[1 - \bar{\mu}_i^j\right] \left[p_{v,i}^j\right]^{\gamma-1} \beta_i^j r_i^j}{\sum_j \bar{\mu}_i^j \left[p_{v,i}^j\right]^{\gamma-1} \beta_i^j r_i^j}, \quad \text{(A.14)}$$

where $r_i^j \equiv R_i^j / R_i$ is the share of sector j in aggregate revenues. From the definition of λ_i^j, we can write r_i^j as:

$$r_i^j = \lambda_i^j - 1 + \frac{P_i^j Y_i^j}{R_i}. \quad \text{(A.15)}$$

Equation (A.12) implies

$$\frac{P_i^j Y_i^j}{R_i} = \frac{P_i^j C_i^j}{R_i} + \frac{P_i^j X_i^j}{R_i}. \quad \text{(A.16)}$$

Combining (A.1), (A.12), and the definition of λ_i^j, we obtain

$$\frac{P_i^j C_i^j}{R_i} = \bar{\phi}_i^j \left[\frac{P_i^j}{P_i^C}\right]^{1-\rho} C_i^{\epsilon_j} \left[4 - \sum_{j=1}^{3} \lambda_i^j - \frac{\sum_j P_i^j X_i^j}{R_i}\right], \quad \text{(A.17)}$$

where (A.10) implies:

$$\frac{\sum_l P_i^l X_i^l}{R_i} = \sum_l \sum_j \bar{\alpha}_i^{lj} \left[\frac{p_{b,i}^j}{P_i^l}\right]^{\rho_m - 1} \left[1 - \beta_i^j\right] r_i^j. \quad \text{(A.18)}$$

Given values for $\pi_{ii}^j(k)$ and λ_i^j, equations (A.2)-(A.6) and (A.13), -(A.18) give a system of 27 equations that can be used to solve for the 13 relative prices in the economy together with the consumption index C_i, the price index for the consumption bundle, P_i^C, the sectorial revenue shares r_i^j, the ratios of sectorial absorption to aggregate revenues $\frac{P_i^j Y_i^j}{R_i}$, the ratios of sectorial consumption to revenues $\frac{P_i^j C_i^j}{R_i}$, and the ratio of inputs to revenues in the economy $\frac{\sum_j P_i^j X_i^j}{R_i}$.

A.3 Solving for price changes

We now combine equations (A.4), (A.5), (A.6), (A.13), and (A.14) to solve for changes in sectorial value-added shares and the skill premium as a function of changes in domestic expenditure shares and the ratio of sectorial net exports relative to GDP. We solve for all the variables in changes following Dekle, Eaton and Kortum (2008). Define $\hat{x} \equiv x_1/x_0$. We can characterize the change in the skill premium as:

$$\left[\frac{\hat{s}_i}{\hat{w}_i}\right]^{\gamma}\frac{\hat{H}_i}{\hat{L}_i} = \frac{\sum_j \frac{H_i^j}{H_i}\hat{v}_i^{j\gamma-1}\hat{r}_i^j}{\sum_j \frac{L_i^j}{L_i}\hat{v}_i^{j\gamma-1}\hat{r}_i^j} \tag{A.19}$$

$$\hat{P}_i^j = \left[\hat{c}_i^j/\hat{A}_i^j\right]\prod_{k=1}^{K_j}\hat{\pi}_{ii}^j(k)^{\sigma_i^j(k)\theta^j(k)} \tag{A.20}$$

$$\hat{c}_i^j = \left[\hat{p}_{b,i}^j\right]^{1-\beta_i^j}\left[\hat{p}_{v,i}^j\right]^{\beta_i^j} \tag{A.21}$$

$$\hat{p}_{b,i}^j = \left[\sum_l \alpha_i^{lj}\left[\hat{P}_i^l\right]^{1-\rho_m}\right]^{\frac{1}{1-\rho_m}} \tag{A.22}$$

$$\hat{p}_{v,i}^j = \left[\mu_i^j\hat{w}_i^{1-\gamma} + \left[1-\mu_i^j\right]\hat{s}_i^{1-\gamma}\right]^{\frac{1}{1-\gamma}} \tag{A.23}$$

and

$$\hat{r}_i^j = \frac{\lambda_i^j}{r_i^j}\hat{\lambda}_i^j - 1 + \frac{P_i^jY_i^j}{R_i^j}\frac{\widehat{P_i^jY_i^j}}{\hat{R}_i} \tag{A.24}$$

$$\frac{\widehat{P_i^jY_i^j}}{\hat{R}_i} = \left[1-\psi_i^j\right]\left[\frac{\widehat{P_i^jC_i^j}}{R_i}\right] + \psi_i^j\left[\frac{\widehat{P_i^jX_i^j}}{R_i}\right] \tag{A.25}$$

$$\frac{\widehat{P_i^jC_i^j}}{R_i} = = \left[\frac{\widehat{P_i^j}}{P_i^C}\right]^{1-\rho}\hat{C}_i^{\epsilon_j}\frac{\sum_l P_i^lY_i^l}{P_i^CC_i}\left[\frac{\sum_j\left[r_i^j\hat{r}_i^j + 1 - \lambda_i^j\hat{\lambda}_i^j\right]}{\sum_j\left[r_i^j + 1 - \lambda_i^j\right]} - \sum_l\frac{P_i^lY_i^l}{\sum_l P_i^lY_i^l}\psi_i^l\left[\frac{\widehat{P_i^lX_i^l}}{R_i}\right]\right] \tag{A.26}$$

$$\widehat{P_i^cC_i} = \mu_i\hat{w}_i\hat{L}_i + \left[1-\mu_i\right]\hat{s}_i\hat{H}_i \tag{A.27}$$

$$\hat{P}_i^c = \left[\sum_j\omega_i^j\left[\hat{P}_i^j\right]^{1-\rho}\hat{C}^{\epsilon_j-[1-\rho]}\right]^{\frac{1}{1-\rho}} \tag{A.28}$$

$$\frac{\widehat{P_i^lX_i^l}}{R_i} = \sum_j\Phi_i^{lj}\left[\frac{\widehat{p_{b,i}^j}}{P_i^l}\right]^{\rho_m-1}\hat{r}_i^j \tag{A.29}$$

where $\alpha_i^{lj} \equiv \bar{\alpha}_i^{lj} \left[\frac{b_i^j}{P_i^j}\right]^{\rho_m - 1}$ is the share of sector $l's$ inputs in total sector $j's$ input usage, and $\Phi_i^{lj} = \frac{\alpha_i^{lj}\left[1-\beta_i^j\right] r_i^j}{\sum_j \alpha_i^{lj}\left[1-\beta_i^j\right] r_i^j}$, is the share of good l intermediate inputs used by sector j.

Equations (A.19)-(A.29) give a system of 27 equations that can be used to solve for the changes in the 13 relative prices in the economy, together with the changes in consumption index $\hat{C}_i$, the change in the price index for the consumption bundle, $\hat{P}_i^C$, the changes in sectorial revenue shares $\hat{r}_i^j$, the ratios of sectorial absorption to aggregate revenues $\widehat{\frac{P_i^j Y_i^j}{R_i}}$, the ratios of sectorial consumption to revenues $\widehat{\frac{P_i^j C_i^j}{R_i}}$, and the ratio of inputs to revenues in the economy $\widehat{\frac{P_i^l X_i^l}{R_i}}$, as a function of changes in domestic technologies, $\hat{A}_i^j(k)$, domestic expenditure shares, $\hat{\pi}_{ii}^j(k)$ and sectoral transfers $\hat{\lambda}_i^l$, and of sectoral factor shares μ_i^j, the skilled and unskilled labor shares, shares $\frac{H_i^j}{H_i}$, and $\frac{L_i^j}{L_i}$, the share of value-added in each sector, β_i^j, the share of absorption used as intermediate inputs in each sector ψ_i^j, Φ_i^{lj}, the elasticities of substitution ρ, ρ_m and γ, and the income elasticities ϵ_j's.

Changes in value-added and employment shares The change in the share of value-added in sector j in total value-added is given by

$$\hat{v}_i^j = \frac{\hat{r}_i^j}{\sum_l \frac{\beta_i^j r_i^l}{\sum_l \beta_i^j r_i^l} \hat{r}_i^j}. \tag{A.30}$$

Finally, note that we can write the change in the share of skilled and unskilled workers employed in sector j, $\omega_{L,i}^j \equiv \frac{L_i^j}{L_i}$, and $\omega_{H,i}^j \equiv \frac{H_i^j}{H_i}$, as:

$$\widehat{\omega_{L,i}^j} = \frac{\hat{\mu}_i^j \hat{r}_i^l}{\sum_j \omega_{L,i}^l \hat{\mu}_i^j \hat{r}_i^l}$$

$$\widehat{\omega_{H,i}^j} = \frac{\left[\widehat{1-\mu_i^j}\right] \hat{r}_i^l}{\sum_j \omega_{H,i}^j \left[\widehat{1-\mu_i^j}\right] \hat{r}_i^l}$$

with:

$$\hat{\mu}_i^j = \left[\left[1-\mu_i^j\right]\left[\widehat{\frac{s_i}{w_i}}\right]^{1-\gamma} + \mu_i^j\right]^{-1}$$

$$\left[\widehat{1-\mu_i^j}\right] = \left[\mu_i^j\left[\widehat{\frac{s_i}{w_i}}\right]^{\gamma-1} + \left[1-\mu_i^j\right]\right]^{-1}.$$

Changes in total sectorial employment shares, $\omega_{E,i}^j \equiv \frac{L_i^j+H_i^j}{L_i+H_i}$ are given by:

$$\widehat{\omega_{E,i}^j} = \frac{L_i^j}{L_i^j+H_i^j}\widehat{\omega_{L,i}^j} + \frac{H_i^j}{L_i^j+H_i^j}\widehat{\omega_{H,i}^j}.$$

Appendix B Proofs

In this section we log-linearize the equilibrium conditions around the initial equilibrium and derive equations (14), (15), (16), and (17) in the paper.

Derivation of Equation (14)

We start by deriving equation (14). To a first order approximation, equation (13) can be written as:

$$\tilde{s}_i - \tilde{w}_i = \sum_j \left[\frac{H_i^j}{H_i} - \frac{L_i^j}{L_i}\right]\tilde{v}_i^j - \sum_j \frac{1}{1-\mu_i}\frac{L^j}{L}\tilde{\mu}_i^j - \left[\tilde{H}_i - \tilde{L}_i\right]. \tag{B.1}$$

Log-differentiating μ_i^j we obtain:

$$\tilde{\mu}_i^j = -\mu_i^j\frac{s_iH_i^j}{w_iL_i^j}\left[\widetilde{\frac{s_iH_i^j}{w_iL_i^j}}\right] = -\left[1-\mu_i^j\right]\left[1-\gamma\right]\left[\tilde{s}_i - \tilde{w}_i\right], \tag{B.2}$$

where the second equality follows from the factor demand equations. Substituting in equation (B.1) and solving for $\tilde{s}_i - \tilde{w}_i$ we obtain equation (14) in the text.

Derivation of Equation (15)

To derive equation (15), we start by differentiating (A.1) and (A.24) around $\lambda_i^j = 1$ for the case $\beta_i^j = 1$:

$$\tilde{r}_i^j = [1-\rho]\left[\tilde{P}_i^j - \tilde{P}_i^c\right] + \frac{\tilde{\lambda}_i^j}{r_i^j} - \sum_j \tilde{\lambda}_i^j + \left[\epsilon_j - \epsilon_j\right]\tilde{C}_i. \tag{B.3}$$

Differentiating (A.28) we obtain

$$\tilde{P}_i^c = \sum_j v_i^j \tilde{P}_i^j + \left[\frac{\bar{\epsilon}}{1-\rho} - 1\right] \tilde{C}_i \tag{B.4}$$

Noting that $v_i^j = r_i^j$ when $\beta_i^j = 1$ and substituting B.4 in the equation above, we obtain equation (15) in the text.

Derivation of equation (16)

We now derive equation (16) in the text in the special version of the model with $\beta_i^j = 1$. Substituting equation (15) into (14) with $\tilde{H}_i = \tilde{L}_i = 0$ we can write:

$$[\tilde{s}_i - \tilde{w}_i]\,\bar{\gamma} = \sum_j \left[\frac{H_i^j}{H_i} - \frac{L_i^j}{L_i}\right] \left[[1-\rho]\,\tilde{P}_i^j + \frac{\tilde{\lambda}_i^j}{v_i^j} + \epsilon_j \tilde{C}_i\right]. \tag{B.5}$$

Log-linearizing equations (A.4)-(A.6) and (A.20) in the case of $\beta_i^j = 1$, we obtain:

$$\tilde{P}_i^j = \left[1 - \mu_i^j\right] [\tilde{s}_i - \tilde{w}_i] + \tilde{w}_i - \tilde{A}_i^j + \tilde{\pi}_{ii}^j. \tag{B.6}$$

And log-linearizing (A.3) gives

$$\tilde{C}_i = [1 - \mu_i] [\tilde{s}_i - \tilde{w}_i] + \tilde{w}_i - \tilde{P}_i^c - \sum_j \tilde{\lambda}_i^j. \tag{B.7}$$

Substituting equations (B.4), (B.6), and (B.7) back into equation (B.5) and solving for $\tilde{s}_i - \tilde{w}_i$ gives the expression in the text.

Derivation of equations (17) and expression for employment shares

To obtain equation (17), we substitute equations (B.4), (B.6), and into (15) and solve for $\tilde{v}_i^j$. We can also derive and analogous expression for the employment shares. To do so, define sectorial employment by $E_i^j \equiv L_i^j + H_i^j$ and note that

$$\omega_{E,i}^j = \tilde{E}_i^j - \sum_l \omega_{E,i}^l \tilde{E}_i^l. \tag{B.8}$$

Log-linearizing sectorial employment we obtain:

$$\tilde{E}_i^j = \frac{L_i^j}{L_i + H_i^j} \tilde{L}_i^j + \frac{H_i^j}{L_i^j + H_i^j} \tilde{H}_i^j \quad ,$$

which can be written as:

$$\tilde{E}_i^j \;= \frac{L_i^j}{L_i^j+H_i^j}\left[\tilde{L}_i^j + \tilde{w}_i - \tilde{w}_i - \tilde{v}_i^j\right] + \frac{H_i^j}{L_i^j+H_i^j}\left[\tilde{H}_i^j + \tilde{s}_i - \tilde{s}_i - \tilde{v}_i^j\right] + \tilde{v}_i^j$$

or:

$$\tilde{E}_i^j \;= \frac{L_i^j}{L_i^j+H_i^j}\left[\tilde{\mu}_i^j - \tilde{w}_i\right] + \frac{H_i^j}{L_i^j+H_i^j}\left[\widetilde{\left[1-\mu_i^j\right]} - \tilde{s}_i\right] + \tilde{v}_i^j \quad . \tag{B.9}$$

Appendix C Data and Parameterization

This section first describes our data sources and then explains how these are combined to parameterize our model.

C.1 Data Sources

Our main sample combines two data sources. We use the IO tables from the World Input Output Database (WIOD) to construct changes in domestic expenditure shares, net export to aggregate revenue ratios, intermediate input shares β^j and α^{ij}, and sectorial value-added shares. We use the Socio Economic Accounts included in the WIOD (SEA) to calculate baseline employment shares, H_i^j/H_i and and aggregate employment shares.

In Section D.4, to extend our sample backward in time, we also bring in data on IO tables from the OECD IO tables (1995 version) and data on employment and labor compensation from KLEMS. We use these data in the same way as described in the previous paragraph.

Table OA.3 provides our own concordance to aggregate industries across datasets and levels of aggregation, and the trade elasticity in each industry and sector. We use different levels of aggregation in the paper, depending on the calculation. The column "Category" lists our most disaggregated industries, which correspond with the index k in the paper. The next column, "One Digit", aggregates the sector G industries that correspond to manufacturing; we use this classification for illustration purposes in Figures 1 and 3. Finally, the column "Sector" classifies industries into goods, unskilled and skilled labor intensive services.

Next we describe the datasets and their use in detail.

World Input-Output Tables For each year between 1995 and 2007, we observe the input output tables and bilateral trade shares from the World Input-Output Tables Database (WIOD), with industries disaggregated according to ISIC rev 3. These data are available at http://www.wiod.org/new_site/database/niots.htm. Column "WIOD code" in Table OA.3 lists the original industrial classification of the dataset and how we use it to compute industry and sector aggregates. We exclude "Private Households with Employed Persons (P)" from the calculations.

The WIOD also extends the labor and compensation data from KLEMS in its own Socio Economic Accounts module. For each year, we observe the share of total hours employed in each industry, corresponding to the hours of each skill type in {Low, Medium, High}, where "High" includes workers with a college degree. We also observe, for each industry, the total hours employed, which allows us to calculate, for each labor type, the total hours of employment.

OECD Input-Output Tables We download the data from http://www.oecd.org/trade/input-outputtables.htm, 1995 edition (ISIC Rev 2). Coverage for the US starts in 1977. Column "OECD Description" in Table OA.3 lists all disaggregated industries in this dataset and shows how we aggregate them into the sectors and industries of our model. We exclude the categories "Other producers" , "Statistical discrepancies", and "Private household activities" from the analysis.

One limitation of this dataset is that Education and Health are aggregated into the category "Community, social & personal services." Since we interpret Education as skilled labor intensive and Other services as unskilled labor intensive, we split this category into sectors S and F according to the 1995 share of Education in Education + Other Services for the US, 0.75, from WIOD.

KLEMS We downloaded data at http://www.euklems.net/, March 08 release: (i) Labour input files and (ii) Country basic files. KLEMS provides yearly data from 1970 to 2005, disaggregated by ISIC Rev. 3 industries. We treat these data just as the WIOD SEA data. Finally, we also obtain data on total revenue and absorption. Column "KLEMS Code" in Table OA.3 relates the original industrial classification in KLEMS to ours. We drop Private Households with Employed Persons (P).

C.2 Data construction

In this section, we discuss details on data construction not contained in the main body of the paper.

C.2.1 Sample

Table OA.4 reports the countries in our main sample, all of them starting in 1995 and ending in 2007. The resulting sample is the largest possible panel for which we could obtain data on both employment shares and input-output data. We provide next the details of the construction of our variables and the splicing across datasets.

C.2.2 Constructing sectoral changes in trade shares and net exports to total revenue ratios

Table OA.3 shows the correspondence between the classification in the OECD IO data and the classification in the WIOD data. The table also reports the classification we constructed to bridge the different levels of aggregation of these two classifications (which correspond to k in our model), and how we associated industries to the trade elasticities from Caliendo and Parro (2015). The calculation of the sectoral trade shares requires choosing a single elasticity for the "Auto and Other Transport" and "Electrical, Communication and Medical", and "Basic Metals and Metal Products" categories. In these cases, we chose the average elasticity.

C.2.3 Share of intermediate inputs in total revenue $\left(1-\beta^{j}\right)$ and share of each sector in the intermediate input bundle $\left(\alpha^{lj}\right)$

For each country and sector, we calculate at the beginning of the sample,

$$1-\beta^{j}=\frac{\text{Sector } j\text{'s Total Intermediate Use}}{\text{Sector } j's \text{ Total Intermediate Use} + \text{Sector } j's \text{ Value Added}},$$

where Sector $j's$ Total Intermediate Use is measured as Total Intermediate Use of S, G, and F (Imported and Domestic). Sector $j's$ value-added is measured as Sector $j's$ Total Output less **all** inputs purchased by aggregate sector j.

We measure the share of sector l in the intermediate input bundle used in sector j, which we denote by α^{lj}, as

$$\alpha^{lj}=\frac{\text{Sector } j\text{'s Total Intermediate Use of } l}{\text{Sector } j\text{'s Total Intermediate Use}}$$

C.3 Estimating the elasticity of substitution across sectors

To estimate equations (18) and (19), we measure expenditure shares in a way that is consistent with our model, which requires measuring how *gross output* of each sector, valued at *producer prices* (i.e. before distribution margins are applied), is used in the economy. We measure expenditure shares at producer prices using the US Input-Output Use Tables for every year in the 1977-2012 period. In particular, we group the sectors in the Input-Output Tables into the sectors of our model following the definitions from Appendix C and compute the share of each sector in total consumption expenditures and in total intermediate inputs used by the goods, unskilled and skilled intensive service sectors. We construct sector specific price indexes from the Chain-Type Price Indexes for Gross Output by NAICS 2-digit Industry published by the BEA. We aggregate these prices using the yearly expenditure shares of the US Input-Output Tables to construct chain-weighted price indexes for the three broad sectors in our model. We compute aggregate consumption expenditures per capita, C_i, from the Input-Output data Chain-Type Price index data. In particular, we aggregate final private consumption at producer prices and aggregate the Chain-Type Price Indexes using the consumption expenditure shares to construct an aggregate price index for consumption at producers prices that is consistent with our other data. We compute $C_{i,t}$ as final consumption divided by the price index, divided by population.

Appendix D Additional exercises

D.1 Within-sector skill upgrading

This section describes in detail our calculations for figure OA.7. We decompose changes in the share of skilled labor in employment, $H_{E,i} \equiv \frac{H_i}{H_i+L_i}$, into changes in skilled labor shares within each industry, $H^j_{E,i} \equiv \frac{H^j_i}{H^j_i+L^j_i}$, and changes in employment shares $\omega^j_{E,i}$ between industries. That is:

$$\Delta H_{E,i} = \underbrace{\sum_j \Delta H^j_{E,i} \bar{\omega}^j_{E,i}}_{\text{within}} + \underbrace{\sum_j \Delta \omega^j_{E,i} \bar{H}^j_{E,i}}_{\text{between}}, \tag{D.1}$$

where $\Delta x \equiv x_{t_1} - x_{t_0}$ denotes the change of a variable between periods t_1 and t_0, and $\bar{x} \equiv \frac{x_{t_1}+x_{t_0}}{2}$ is the average value of the variable across periods. We compare the outcomes of this decomposition in the data and in a version of the counterfactual that incorporates changes in factor supplies.

D.2 Global productivity growth in the goods sector

In this counterfactual we augment Counterfactual 1 with global productivity growth. That is, in addition to declines in trade costs obtained from (20), we assign $\hat{A}^G_i = \hat{A}^G$ to every country i, and we calibrate $\hat{A}^G$ such that the model exactly replicates the decline in the US employment share in the goods sector between 1995 and 2007.

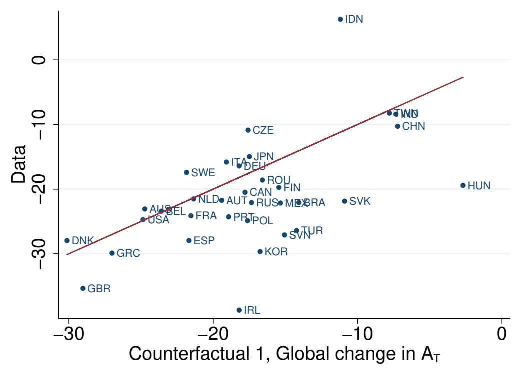
Figure OA.1 compares the results of this counterfactual to the data, with a 45-degree line as a reference. The figure shows that once we allow for global productivity change to account for the changes in good employment in the US, then the counterfactual can account quite well for the decline in the share of employment in the goods sector in most countries.

D.3 Measuring the skill premium using the factor content of trade

This section by assesses, in the context of our model, an alternative approach that has been used in the literature to measure the impact of trade on factor prices: the factor content of trade (FCT).[28] The FCT measures the quantity of a factor that is embodied in a country's net exports. Intuitively, an increase in the trade-adjusted supply of a factor should decrease the factor's price. We first use our model to measure changes in the FCT implied by Counterfactuals 1 and 2. Then we show that these measured changes greatly underestimate the model's predictions for the changes in the skill premium.

[28] See e.g. Katz and Murphy (1992).

Figure OA.1: Changes in goods employment shares (Counterfactual 1 with global productivity growth)



Notes: The x-axis shows the percent change in the sector's share in employment in a version of Counterfactual 1 that includes productivity growth. The y-axis reports the percent change in the sector's share in employment between 1995-2007 in the WIOD data.

We start by deriving an expression that formally links the FCT to the skill premium. We start by writing equations (A.8) and (A.9), summing over j, as:

$$s_i H_i = \sum_j \left[1 - \mu_i^j\right] \beta_i^j R_i^j = \sum_j \left[1 - \mu_i^j\right] \beta_i^j Y_i^j + s_i FCT_i^H$$
$$w_i L_i = \sum_j \mu_i^j \beta_i^j R_i^j = \sum_j \mu_i^j \beta_i^j Y_i^j + w_i FCT_i^L,$$

where skilled- and unskilled-labor content of trade are $FCT_i^H \equiv \frac{1}{s_i} \sum_j \left(1 - \mu_i^j\right) \beta_i^j \left[R_i^j - Y_i^j\right]$ and $FCT_i^L \equiv \frac{1}{w_i} \sum_j \mu_i^j \beta_i^j \left[R_i^j - Y_i^j\right]$. Solving for the wages s_i and w_i and taking ratios we can write the skill premium as

$$\frac{s_i}{w_i} = \frac{L_i - FCT_i^L}{H_i - FCT_i^H} \times \Phi_i, \tag{D.2}$$

where we defined $\Phi_i \equiv \frac{\sum_j \left(1-\mu_i^j\right) \beta_i^j Y_i^j}{\sum_j \mu_i^j \beta_i^j Y_i^j}$. Deardorff and Staiger (1988) and Burstein and Vogel (2011) show in a class of models that, if factor shares, μ_i^j, are fixed in each sector and sectoral absorption shares, Y_i^j, are constant, then Φ_i is constant and changes in the skill premium are proportional to changes in factor supplies and the FCT, captured by $\left(L_i - FCT_i^L\right) / \left(H_i - FCT_i^H\right)$. In that context, changes in the FCT are sufficient statistics for the effect of trade on the skill premium. Clearly, these conditions are not satisfied in our model, where both sectoral absorption shares and factor shares change in response to changes in trade patterns.[29] The FCT approach, therefore, does not capture all of the effects of trade on the skill premium.

We next show how we measure changes in the FCT in the model, starting with the expression above in changes:

$$\frac{s_i}{w_i}\frac{\widehat{s_i}}{w_i} = \frac{L\hat{L}}{H\hat{H}} \frac{1 - \frac{FCT_i^L \widehat{FCT_i^L}}{L\hat{L}}}{1 - \frac{FCT_i^H \widehat{FCT_i^H}}{H\hat{H}}} \Phi_i \hat{\Phi}_i.$$

We next impose that $\hat{\Phi}_i = 1$, to obtain

$$\frac{\widehat{s_i}}{w_i}^{FC} = \frac{\left(1 - \frac{FCT_i^L \widehat{FCT_i^L}}{L\hat{L}}\right) / \left(1 - \frac{FCT_i^L}{L}\right)}{\left(1 - \frac{FCT_i^H \widehat{FCT_i^H}}{H\hat{H}}\right) / \left(1 - \frac{FCT_i^H}{H}\right)}.$$

Now, since

$$\frac{FCT_i^L}{L} = \sum_j \frac{L_i^j}{L}\left[1 - \frac{1}{\lambda_i^j}\right] = 1 - \sum_j \frac{L_i^j}{L}\frac{1}{\lambda_i^j}$$

and

$$\frac{FCT_i^L}{L}\frac{\widehat{FCT_i^L}}{L} = \sum_j \frac{L_i^j}{L}\left[\frac{\hat{L}_i^j}{L}\right]\left[1 - \frac{1}{\lambda_i^j \hat{\lambda}_i^j}\right] = \left[1 - \sum_j \frac{L_i^j}{L}\left[\frac{\hat{L}_i^j}{L}\right]\frac{1}{\lambda_i^j \hat{\lambda}_i^j}\right],$$

we finally obtain

$$\frac{\widehat{s_i}}{w_i}^{FC} = \frac{\left(\sum_j \frac{H_i^j}{H}\frac{1}{\lambda_i^j}\right) \times \left(\sum_j \frac{L_i^j}{L}\left[\frac{\hat{L}_i^j}{L}\right]\frac{1}{\lambda_i^j \hat{\lambda}_i^j}\right)}{\left(\sum_j \frac{L_i^j}{L}\frac{1}{\lambda_i^j}\right) \times \left(\sum_j \frac{H_i^j}{H}\left[\frac{\hat{H}_i^j}{H}\right]\frac{1}{\lambda_i^j \hat{\lambda}_i^j}\right)}.$$

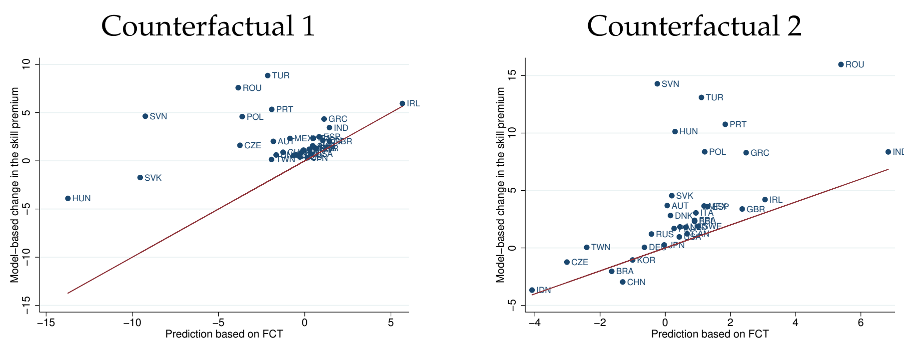
Figure OA.2 compares the counterfactual change in the skill premium to the changes in the skill premium that we measure from the counterfactual changes in the first term of equation (D.2).[30] The figures show that the change in the FCT greatly underestimates the counterfactual changes in the skill premium in our model in almost every country. In fact, the FCT-based measure moves in the opposite direction to the counterfactual skill

[29] Burstein and Vogel (2016) also note that the FCT cannot be measured from sectoral data if exporters and domestic firms use different technologies. While the FCT is not a sufficient statistic for the skill premium in their context (the term Φ_i is not constant in their framework), they show that if measured accurately, the FCT does provide a good approximation to the effect of trade on the skill premium. This not the case in our context, even if the FCT is perfectly measured.

[30] That is, we use data generated in the counterfactuals to measure how $\left(L_i - FCT_i^L\right) / \left(H_i - FCT_i^H\right)$ changes, while keeping Φ_i constant.

premium for about half the countries in Counterfactual 1, and for about fifteen percent of the countries in Counterfactual 2.

Figure OA.2: Predictions based on the factor content of trade



Notes: This figure compares the change in the skill premium implied by each of our counterfactuals (y-axis) to the change in the skill premium implied by the right hand side of equation (D.2) (x-axis).

D.4 Trade patterns, structural change and the skill premium over longer horizons

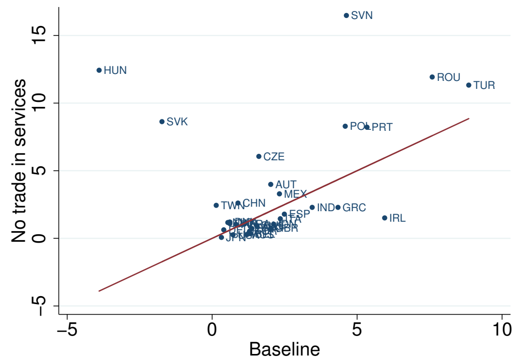
We conclude this section by extending the second counterfactual for the US starting in 1977.[31] Given the large reallocation of activity away from the goods sectors in the US in the decades before 1995, our previous exercise might underestimate the role that trade has played there. The sufficient statistic approach allows us to compute this counterfactual individually for the US.The decline in domestic expenditure shares is over this longer period is 11 percent. As a consequence the associated decline in value-added and employment shares in the goods sector are larger than those in Figure 7. The manufacturing employment share declines by 20 percent in this counterfactual, relative to the 45 percent that we see in the data over this period. In addition, since the share of employment in the goods sector was larger at the beginning of this sample than in 1995, the elasticity of the skill premium with respect to changes in domestic expenditure shares in the goods sector is larger than in the previous counterfactual (see equation 16). Therefore, the associated increase in the skill-premium is also larger, and equals 3.1 percent. However, it is still small relative to the 40 percent estimated by Krueger et al. (2010) for the 1980-2006 period.

D.5 Additional robustness exercises

This section report our counterfactuals under alternative calibrations where (i) Services are not traded, (ii) the shares $\sigma_i^j(k)$ are the same across all countries and equal to those in the US.

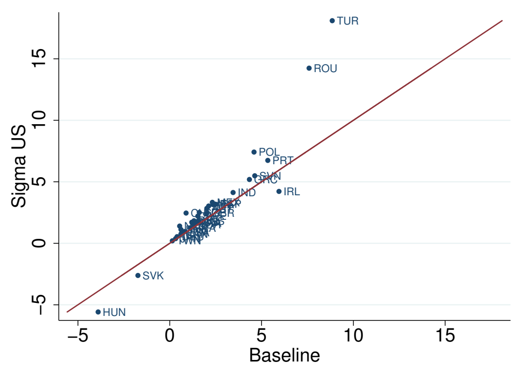
[31] We bring in Input-Output data from the OECD, which ranges from 1977 to 1990 for the US, and we combine it with data on employment and compensation from KLEMS.

Figure OA.3: Change in Skill Premium, no-trade in services



Notes: The x-axis reports the change in Counterfactual 1. The y-axis reports the difference in the change in the skill premium in one counterfactual in which services are not traded neither in the initial nor the final equilibrium.

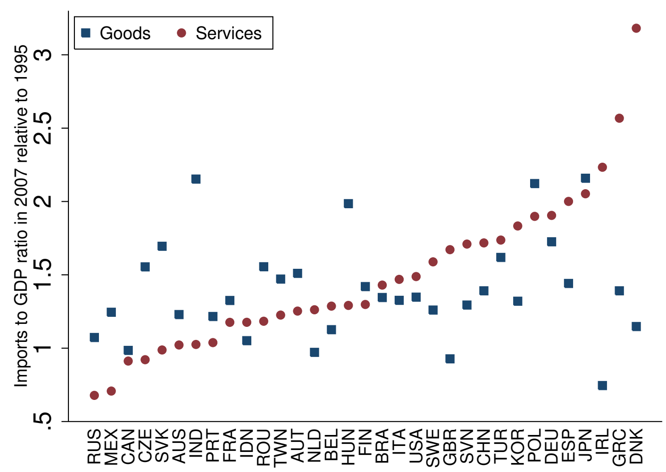
Figure OA.4: Change in Skill Premium, $\sigma_i = \sigma_{USA}$



Notes: The x-axis reports the change in Counterfactual 1. The y-axis reports Counterfactual 1 under an alternative calibration where the $\sigma^j(k)'s$ are the same across countries and equal to those observed for the US.

Appendix E Additional tables and figures

Figure OA.5: Skill and trade intensities across industries by countries

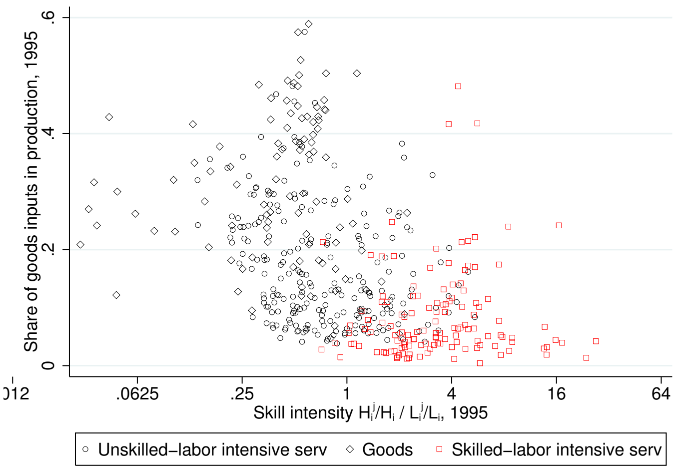


Notes: We classify agriculture, manufacturing and mining as 'Goods', and all other sectors as 'Services.' Source: WIOD.

Figure OA.6: Skill and trade intensities across industries by countries

Notes: Each point is a country, one-digit industry pair. 'Domestic expenditure shares 2007 relative to 1995' refers to $\pi^j_{ii,2007}/\pi^j_{ii,1995}$ defined in Figure 2. Skill intensities are defined as in Figure 3. Source: WIOD.

Figure OA.7: Intermediate use of inputs from the goods-producing sector, by industries and countries



Notes: Each point is a country-industry pair. Share of goods inputs in production is the share of agriculture, mining and manufacturing inputs in total production of the sector. Skill intensities are defined as in Figure 3. Source: WIOD.

Table OA.3: Concordance across datasets and sectoral aggregation

Category	One Digit	Sector	OECD Description	WIOD code	KLEMS code	CP Elasticity	Agg. Elasticity
Agriculture	AtB	G	Agriculture, forestry & fishing	AtB	AtB	8.11	8.11
Mining	C	G	Mining & quarrying	C	C	15.72	15.72
Food	D	G	Food, beverages & tobacco	15t16	15t16	2.55	2.55
Textile	D	G	Textiles, apparel & leather	17t18	17t19	5.56	5.56
Textile	D	G	Textiles, apparel & leather	19	17t19	5.56	5.56
Wood	D	G	Wood products & furniture	20	20	10.83	10.83
Paper	D	G	Paper, paper products & printing	21t22	21t22	9.07	9.07
Chemicals	D	G	Industrial chemicals	24	24	4.75	4.75
Chemicals	D	G	Drugs & medicines			4.75	4.75
Petroleum	D	G	Petroleum & coal products	23	23	51.08	51.08
Plastic	D	G	Rubber & plastic products	25	25	1.66	1.66
Minerals	D	G	Non-metallic mineral products	26	26	2.76	2.76
Basic metals and Metal Products	D	G	Iron & steel	27t28	27t28	7.99	6.76
Basic metals and Metal Products	D	G	Non-ferrous metals	27t28	27t28	7.99	6.76
Basic metals and Metal Products	D	G	Metal products			4.3	6.76
Machinery nec	D	G	Non-electrical machinery	29	29	1.52	1.52
Electrical, Communication, Medical	D	G	Office & computing machinery			12.79	10.11
Electrical, Communication, Medical	D	G	Electrical apparatus, nec	30t33	30t33	10.6	10.11
Electrical, Communication, Medical	D	G	Radio, TV & communication equipment			7.07	10.11
Auto and Other Transport	D	G	Shipbuilding & repairing	34t35	34t35	.37	.53
Auto and Other Transport	D	G	Other transport	34t35	34t35	.37	.53
Auto and Other Transport	D	G	Motor vehicles			1.01	.53
Auto and Other Transport	D	G	Aircraft	34t35	34t35	.37	.53
Electrical, Communication, Medical	D	G	Professional goods			9.98	10.11
Other	D	G	Other manufacturing	36t37	36t37	5	5
Electricity	E	S	Electricity, gas & water	E	E	5	5
Construction	F	S	Construction	F	F	5	5
Wholesale and Retail	G	S	Wholesale & retail trade	51	51	5	5
Wholesale and Retail	G	S	Wholesale & retail trade	52	52	5	5
Wholesale and Retail	G	S	Wholesale & retail trade	50	50	5	5
Hotels and Restaurants	H	S	Restaurants & hotels	H	H	5	5
Transport and Communication	I	S	Transport & storage	60	I	5	5
Transport and Communication	I	S	Transport & storage	62	I	5	5
Transport and Communication	I	S	Transport & storage	61	I	5	5
Transport and Communication	I	S	Transport & storage	63	I	5	5
Transport and Communication	I	S	Communication	64	I	5	5
Finance	J	F	Finance & insurance	J	J	5	5
Real Estate	K	F	Real estate & business services	70	70	5	5
Real Estate	K	F	Real estate & business services	71t74	71t74	5	5
Health	N	F	Community, social & personal services	N	N	5	5
Other Services	O	S	Community, social & personal services	O	O	5	5
Education	M	F	Community, social & personal services	M	M	5	5
Public Admin	L	S	Producers of government services	L	L	5	5
Private Households	P	S	Other producers	P	P	5	5

Table OA.4: Changes in goods and service imports relative to total GDP

Country	Goods	Services	Country	Goods	Services
Australia	1.23	1.02	Italy	1.33	1.47
Austria	1.51	1.25	Japan	2.16	2.05
Belgium	1.13	1.29	Korea	1.32	1.83
Brazil	1.35	1.43	Mexico	1.24	0.71
Canada	0.98	0.91	Netherlands	0.97	1.26
China	1.39	1.72	Poland	2.12	1.90
Czech Republic	1.55	0.92	Portugal	1.22	1.04
Germany	1.73	1.91	Romania	1.56	1.18
Denmark	1.15	3.18	Russia	1.07	0.68
Spain	1.44	2.00	Rest of the World	1.22	1.43
Finland	1.42	1.30	Slovakia	1.69	0.99
France	1.33	1.18	Slovenia	1.29	1.71
Great Britain	0.93	1.67	Sweden	1.26	1.59
Greece	1.39	2.57	Turkey	1.62	1.74
Hungary	1.99	1.29	Taiwan	1.47	1.23
Indonesia	1.05	1.18	United States	1.35	1.49
India	2.15	1.03	World	1.44	1.60
Ireland	0.75	2.23	Average	1.39	1.48

Notes: This table reports imports to total GDP in 2007 relative to 1995 using data from the WIOD. The classification of WIOD industries into Goods and Services is detailed in Section 4.

Table OA.5: Sectoral changes in domestic-expenditure shares

Country	Goods	Services	Country	Goods	Services
Australia	0.88	1.00	Italy	0.89	0.99
Austria	0.66	0.99	Japan	0.90	0.99
Belgium	0.76	0.98	Korea	0.94	0.98
Brazil	0.97	0.99	Mexico	0.87	1.01
Canada	0.97	1.01	Netherlands	0.81	0.98
China	0.97	0.99	Poland	0.72	0.98
Czech Republic	0.72	1.01	Portugal	0.77	1.00
Germany	0.76	0.98	Romania	0.74	1.00
Denmark	0.83	0.92	Russia	0.97	1.01
Spain	0.81	0.98	Rest of the World	0.89	0.96
Finland	0.84	0.99	Slovakia	0.53	1.00
France	0.85	1.00	Slovenia	0.64	0.97
Great Britain	0.80	0.99	Sweden	0.83	0.97
Greece	0.75	0.96	Turkey	0.86	1.00
Hungary	0.54	0.98	Taiwan	0.78	0.99
Indonesia	0.96	1.00	United States	0.90	1.00
India	0.88	1.00	World	0.90	0.98
Ireland	1.04	0.87	Average	0.82	0.98

Notes: This Table reports the ratio of the 2007 domestic expenditure shares relative to those in 1995 and 2007. Domestic expenditure shares are computed as the ratio of production minus exports to production plus imports minus exports in each sector using data from the WIOD. The grouping of WIOD industries into Goods and Services is detailed in Section 4.

Table OA.6: Observed changes in domestic expenditure shares and net exports to aggregate revenue ratios

Country	Weighted change in domestic expenditure share	Change in Sectoral Net Exports to Aggregate Revenues ratio
Australia	0.93	1.01
Austria	0.80	0.97
Belgium	0.90	1.01
Brazil	1.00	0.98
Canada	0.97	1.01
China	1.00	0.98
Czech Republic	0.91	0.95
Germany	0.91	0.97
Denmark	0.87	1.02
Spain	0.91	1.03
Finland	0.92	1.01
France	0.91	1.01
Great Britain	0.89	1.03
Greece	0.88	1.05
Hungary	0.72	0.97
Indonesia	0.99	0.97
India	0.96	1.03
Ireland	0.95	1.04
Italy	0.95	1.01
Japan	0.97	1.00
Korea	1.00	0.98
Mexico	0.92	1.01
Netherlands	0.91	0.99
Poland	0.85	1.02
Portugal	0.84	1.02
Romania	0.87	1.07
Russia	0.94	1.00
Slovakia	0.83	0.99
Slovenia	0.66	1.00
Sweden	0.95	1.01
Turkey	0.76	1.01
Taiwan	0.91	0.97
United States	0.94	1.02
Average	**0.90**	**1.00**

Notes: The weighted change in domestic expenditure shares is defined as $\hat{\pi}_{ii} \equiv \prod_{k=1}^{K_j} \hat{\pi}_{ii}^{j}(k)^{\sigma_i^j(k)\theta^j(k)}$. The change in the revenue to absorption ratio is given by $\hat{\lambda}_i^T$.

Table OA.7: Sectoral factor intensities

Country	H^S/H	L^S/L	Difference	H^G/H	L^G/L	Difference	H^F/H	L^F/L	Difference
Australia	0.29	0.53	-0.24	0.11	0.23	-0.13	0.60	0.24	0.37
Austria	0.31	0.50	-0.20	0.17	0.34	-0.17	0.52	0.15	0.37
Belgium	0.29	0.51	-0.22	0.15	0.23	-0.08	0.57	0.26	0.31
Brazil	0.32	0.49	-0.17	0.13	0.40	-0.27	0.55	0.11	0.44
Canada	0.43	0.57	-0.14	0.11	0.24	-0.13	0.45	0.19	0.26
China	0.61	0.31	0.29	0.14	0.64	-0.50	0.25	0.04	0.21
Czech Republic	0.34	0.48	-0.14	0.18	0.38	-0.20	0.48	0.15	0.34
Germany	0.38	0.51	-0.13	0.22	0.28	-0.06	0.40	0.21	0.19
Denmark	0.30	0.48	-0.18	0.12	0.27	-0.15	0.58	0.25	0.33
Spain	0.39	0.57	-0.19	0.14	0.31	-0.17	0.47	0.11	0.36
Finland	0.38	0.44	-0.06	0.19	0.35	-0.16	0.43	0.21	0.22
France	0.28	0.50	-0.23	0.14	0.25	-0.12	0.59	0.24	0.34
Great Britain	0.30	0.53	-0.23	0.12	0.20	-0.08	0.58	0.27	0.31
Greece	0.44	0.56	-0.12	0.09	0.37	-0.29	0.48	0.07	0.41
Hungary	0.33	0.46	-0.13	0.19	0.41	-0.22	0.49	0.13	0.35
Indonesia	0.53	0.41	0.11	0.11	0.50	-0.39	0.36	0.09	0.28
India	0.38	0.23	0.15	0.27	0.75	-0.48	0.35	0.02	0.33
Ireland	0.28	0.46	-0.18	0.18	0.39	-0.21	0.54	0.15	0.39
Italy	0.24	0.50	-0.26	0.11	0.33	-0.23	0.65	0.16	0.49
Japan	0.48	0.54	-0.06	0.20	0.29	-0.09	0.32	0.17	0.15
Korea	0.51	0.49	0.02	0.27	0.40	-0.13	0.22	0.11	0.11
Mexico	0.52	0.45	0.07	0.17	0.44	-0.27	0.30	0.11	0.20
Netherlands	0.30	0.51	-0.21	0.09	0.24	-0.15	0.61	0.25	0.36
Poland	0.32	0.32	-0.01	0.19	0.57	-0.38	0.49	0.11	0.38
Portugal	0.29	0.48	-0.20	0.08	0.41	-0.33	0.63	0.11	0.53
Romania	0.19	0.27	-0.07	0.15	0.65	-0.51	0.66	0.08	0.58
Russia	0.21	0.33	-0.12	0.22	0.51	-0.29	0.57	0.16	0.41
Slovakia	0.29	0.43	-0.14	0.19	0.38	-0.20	0.52	0.18	0.34
Slovenia	0.34	0.35	-0.01	0.21	0.53	-0.33	0.46	0.12	0.34
Sweden	0.31	0.45	-0.14	0.11	0.28	-0.17	0.59	0.27	0.31
Turkey	0.56	0.31	0.24	0.11	0.63	-0.52	0.33	0.06	0.27
Taiwan	0.51	0.49	0.02	0.18	0.42	-0.24	0.31	0.08	0.23
United States	0.41	0.58	-0.16	0.15	0.21	-0.06	0.44	0.22	0.22
Average	**0.36**	**0.46**	**-0.09**	**0.16**	**0.39**	**-0.23**	**0.48**	**0.15**	**0.32**

Notes: H^j/H measures the fraction of total skilled labor employed in sector $j = S, G, F$. L^j/L is defined analogously. Difference measures $H^j/H - L^j/L$ for each sector j.

Table OA.8: Intermediate input shares

Country	β_i^S	β_i^G	β_i^F	α_i^{SS}	α_i^{GS}	α_i^{FS}	α_i^{SG}	α_i^{GG}	α_i^{FG}	α_i^{SF}	α_i^{GF}	α_i^{FF}
Australia	0.46	0.41	0.63	0.40	0.31	0.29	0.32	0.57	0.11	0.34	0.11	0.55
Austria	0.61	0.42	0.68	0.43	0.31	0.26	0.27	0.60	0.13	0.36	0.17	0.48
Belgium	0.51	0.33	0.64	0.52	0.22	0.26	0.28	0.63	0.09	0.24	0.16	0.60
Brazil	0.65	0.41	0.73	0.37	0.35	0.27	0.21	0.69	0.10	0.39	0.23	0.37
Canada	0.59	0.40	0.73	0.39	0.32	0.28	0.26	0.65	0.09	0.46	0.12	0.42
China	0.43	0.35	0.57	0.25	0.65	0.10	0.15	0.81	0.05	0.28	0.45	0.27
Czech Republic	0.43	0.32	0.54	0.51	0.33	0.16	0.24	0.69	0.07	0.37	0.29	0.34
Germany	0.59	0.41	0.70	0.39	0.31	0.30	0.24	0.59	0.17	0.26	0.12	0.62
Denmark	0.56	0.41	0.72	0.49	0.27	0.24	0.30	0.60	0.10	0.42	0.16	0.42
Spain	0.54	0.35	0.69	0.44	0.36	0.20	0.26	0.65	0.09	0.41	0.18	0.41
Finland	0.56	0.38	0.68	0.39	0.40	0.21	0.24	0.65	0.10	0.43	0.26	0.31
France	0.56	0.34	0.68	0.47	0.24	0.29	0.26	0.58	0.15	0.28	0.13	0.59
Great Britain	0.52	0.42	0.66	0.45	0.29	0.26	0.25	0.63	0.13	0.34	0.17	0.49
Greece	0.61	0.39	0.77	0.35	0.45	0.21	0.22	0.70	0.08	0.45	0.15	0.40
Hungary	0.51	0.33	0.66	0.35	0.38	0.27	0.20	0.71	0.09	0.29	0.30	0.42
Indonesia	0.55	0.49	0.72	0.33	0.55	0.12	0.17	0.78	0.06	0.33	0.24	0.43
India	0.60	0.41	0.79	0.35	0.53	0.12	0.25	0.69	0.06	0.34	0.39	0.27
Ireland	0.48	0.37	0.64	0.52	0.29	0.20	0.23	0.64	0.14	0.29	0.15	0.57
Italy	0.53	0.35	0.74	0.44	0.33	0.23	0.29	0.63	0.08	0.29	0.16	0.56
Japan	0.57	0.37	0.70	0.40	0.35	0.25	0.23	0.69	0.08	0.39	0.20	0.42
Korea	0.55	0.33	0.70	0.24	0.45	0.31	0.10	0.81	0.08	0.36	0.24	0.39
Mexico	0.64	0.41	0.79	0.29	0.41	0.30	0.17	0.74	0.09	0.23	0.26	0.51
Netherlands	0.53	0.38	0.65	0.43	0.27	0.30	0.27	0.57	0.16	0.32	0.15	0.53
Poland	0.55	0.39	0.66	0.48	0.41	0.11	0.26	0.67	0.07	0.38	0.22	0.40
Portugal	0.53	0.35	0.68	0.46	0.33	0.21	0.22	0.69	0.10	0.33	0.20	0.47
Romania	0.48	0.39	0.69	0.38	0.51	0.11	0.19	0.72	0.08	0.29	0.53	0.18
Russia	0.62	0.43	0.58	0.50	0.43	0.07	0.33	0.65	0.02	0.51	0.29	0.20
Slovakia	0.42	0.33	0.64	0.53	0.34	0.13	0.27	0.67	0.06	0.39	0.27	0.35
Slovenia	0.49	0.38	0.67	0.45	0.33	0.23	0.22	0.69	0.09	0.30	0.29	0.41
Sweden	0.53	0.40	0.64	0.44	0.28	0.28	0.27	0.61	0.12	0.39	0.17	0.44
Turkey	0.68	0.49	0.72	0.27	0.54	0.19	0.27	0.65	0.08	0.33	0.40	0.27
Taiwan	0.58	0.31	0.73	0.29	0.42	0.29	0.18	0.74	0.08	0.18	0.21	0.61
United States	0.62	0.35	0.66	0.36	0.32	0.32	0.19	0.68	0.13	0.25	0.14	0.61
Average	**0.55**	**0.38**	**0.68**	**0.40**	**0.37**	**0.22**	**0.24**	**0.67**	**0.09**	**0.34**	**0.23**	**0.43**

Notes: We calculate β_i^j from Input-Output data as the share of value-added in sector j's total revenues. The input share α_i^{lj} is the share of expenditure in inputs produced in sector l, as a fraction of total input expenditure in sector j.