# Online Appendix to Rising Inequality as a Threat to the Liberal International Order

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## Appendix

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# A1: Tables

**TABLE A1.** *EU Parties Classified by GRR as Populist Radical Right vs. Extreme Right*

| Country | Party | **Classification** | |
|---|---|---|---|
| | | PRR | ER |
| Austria | FPO | ✓ | |
| | BZO | ✓ | |
| Belgium | VB | ✓ | |
| | FNb | ✓ | |
| | N-VA | ✓ | |
| Bulgaria | ATTAKA | ✓ | |
| Croatia | HSP | ✓ | |
| Cyprus | ELAM | | ✓ |
| Czech Rep. | DSSS | | ✓ |
| | RMS | ✓ | |
| Denmark | DF | ✓ | |
| Estonia | EIP | ✓ | |
| Finland | PERUS | ✓ | |
| France | FN | ✓ | |
| Germany | NPD | | ✓ |
| | DVU | | ✓ |
| | REP | ✓ | |
| Greece | LAOS | ✓ | |
| | GD | | ✓ |
| | ANEL | ✓ | |
| Hungary | JOBBIK | | ✓ |
| Ireland | | | |
| Italy | LN | ✓ | |
| | F-T | | ✓ |
| Latvia | VL | | ✓ |
| | NA | ✓ | |
| Lithuania | | | |
| Luxembourg | | | |
| Netherlands | PVV | ✓ | |
| | LPF | ✓ | |
| Norway | FRP | ✓ | |
| Poland | LPR | ✓ | |
| | SRP | ✓ | |
| | KNP | ✓ | |
| Portugal | PNR | ✓ | |
| Romania | PRM | | ✓ |
| | PNG-CD | | ✓ |
| Slovakia | SNS | | ✓ |
| Slovenia | SNS | ✓ | |
| Sweden | SD | ✓ | |
| Switzerland | SVP | ✓ | |
| UK | NBP | | ✓ |
| | NF | | ✓ |

*Notes:* This table is reproduced from Georgiadou, Rori and Roumanias 2018 (their Appendix Table A3). It lists the parties that they classify as "populist radical right" (PRR) as opposed to "extreme right" (ER).

**TABLE A2.** *Vote Shares for Populist Radical Right Parties, NUTS-2 Level*

| | (1)<br>b/se | (2)<br>b/se |
|---|---|---|
| Income inequality$_{t-1}$ | 0.947*** | 1.023*** |
| | (0.12) | (0.13) |
| Immigration flow$_{t-1}$ | 0.989** | -4.117** |
| | (0.48) | (1.71) |
| Income inequality$_{t-1}$ | | 17.655*** |
| × Immigration flow$_{t-1}$ | | (5.63) |
| Unemployment rate$_{t-1}$ | 1.486*** | 1.369*** |
| | (0.35) | (0.29) |
| Parliamentary | 0.013** | 0.013** |
| election = 1 | (0.01) | (0.01) |
| Estimator | Panel Tobit | Panel Tobit |
| Year FE | Yes | Yes |
| N | 705 | 705 |
| Censored | 253 | 253 |
| Uncensored | 452 | 452 |
| Number if clusters | 248 | 248 |
| Region FE | yes | yes |
| $\chi^2$ | 91.05 | 82.07 |

*Notes:* $*p < 0.1; ** p < 0.05; *** p < 0.01$. Column 1 replicates the model from Georgiadou, Rori and Roumanias 2018 in their Table 3 (specification 1). It regresses "populist radical right" vote shares (2000-2014) at the NUTS2 region level on their measures of income inequality, immigration, unemployment, and a parliamentary dummy. Column 2 introduces an interaction between their measure of inequality and immigration. Coefficients are reported in their natural units.

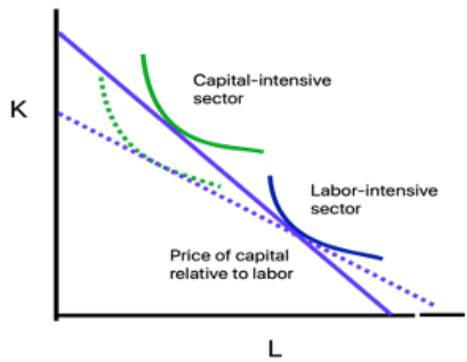
**TABLE A3.** *Vote Shares for Radical Right Parties, District Level*

| | (1) b/se | (2) b/se | (3) b/se | (4) b/se | (5) b/se | (6) b/se | (7) b/se | (8) b/se |
|---|---|---|---|---|---|---|---|---|
| China shock | 0.041* | 0.132*** | | | | | | |
| | (0.02) | (0.05) | | | | | | |
| log(China shock) | | | 0.343* | 1.429*** | 0.404** | 1.423*** | 0.120 | 9.981*** |
| | | | (0.19) | (0.49) | (0.20) | (0.43) | (0.28) | (1.80) |
| top 1 % share | | | | | -0.601 | -0.374 | 6.429 | 5.291*** |
| | | | | | (0.92) | (0.97) | (5.36) | (1.15) |
| log(China shock) | | | | | | | | 3.620*** |
| × top 1 % share | | | | | | | | (0.62) |
| Constant | 0.042*** | 0.275*** | -1.885*** | 0.264 | -4.022** | -0.839 | 14.379 | 11.083*** |
| | (0.00) | (0.02) | (0.43) | (0.89) | (1.87) | (3.09) | (14.22) | (3.24) |
| Estimator | OLS | 2SLS | OLS | 2SLS | OLS | 2SLS | Multilevel | Multilevel |
| Logged DV | N | N | Y | Y | Y | Y | Y | Y |
| Country-year FE | Y | Y | N | N | N | N | n/a | n/a |
| Country FE | N | N | Y | Y | Y | Y | n/a | n/a |
| Year FE | N | N | Y | Y | Y | Y | Y | Y |
| N | 8181 | 7782 | 3891 | 3089 | 2228 | 2189 | 2228 | 2228 |
| Adj.R-sqr | 0.632 | 0.621 | 0.749 | 0.723 | 0.667 | 0.650 | | |
| df.resid | 767 | | 396 | | 330 | | | |
| **First-stage results** | | | | | | | | |
| China shock | 0.039*** | | | | | | | |
| | (0.009) | | | | | | | |
| log(China shock) | | | 0.128*** | | 0.219*** | | | |
| | | | (0.025) | | (0.037) | | | |
| top 1 % share | | | | | -0.309 | | | |
| | | | | | (0.275) | | | |
| KP F-stat | 19.171 | | 26.734 | | 34.470 | | | |
| **Random-Effects Parameters** | | | | | | | | |
| var(top 1 % share) | | | | | | | 45.562 | 0.204 |
| | | | | | | | (34.425) | (0 .461) |
| var(country intercepts) | | | | | | | 311.654 | 0.000 |
| | | | | | | | ( 241.951) | (0.000) |
| var(log(China shock)) | | | | | | | 0.162 | 0.199 |
| | | | | | | | (0.155) | (0.214) |
| var(NUTS2 intercepts) | | | | | | | 0.158 | 0.137 |
| | | | | | | | (0 .077) | (0.059) |

*Notes:* $*p < 0.1; **p < 0.05; ***p < 0.01$. Columns (1) and (2) replicate the models from Colantone and Stanig 2018 in their Table 1 (specifications 9 and 10). Columns (3) and (4) show the effect of introducing log transformations on the vote shares and the China shock variables. Columns (5) and (6) shows robustness to country-level inequality. Columns (7) and (8) use a multilevel model with two levels (with country and NUTS2 random slopes) with all variables at their appropriate levels of analysis. Column (8) features the interaction term of interest. Coefficients are reported in their natural units. To interpret the coefficients in column (8), see Figure 5. Country-year clustered standard errors in parentheses.

## A2: Graphical Exposition of the "Enriched" H-O-S-S Model of Haskel et al. 2012

Begin with a conventional depiction of the Stolper-Samuelson Theorem (Figure A1). With only two goods, one produced using capital[1] intensively (and employing high-skill labor) and the other intensive in low-skill labor, the line of tangency to the respective isocost curves (i.e., the combinations of capital and labor that can produce, say, $1000 worth of each good) determines the relative price of the two factors of production (the slope of the solid line in Figure A1). But any increase in the relative price of the capital-intensive good means that $1000 worth of it can now be produced with less capital and labor: its isocost curve shifts inward (the dashed curve). But that also shifts the relative price of the two factors (the slope of the new, dashed line of tangency): a unit of capital now trades for more units of labor; or, in more prosaic terms, the return to capital rises and wages fall.



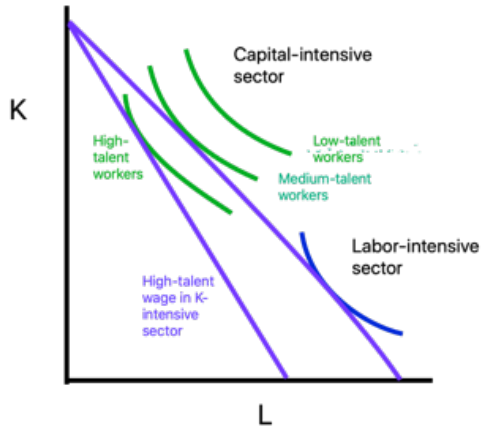

*Notes:* An increase in the relative price of the capital-intensive good lowers its isocost curve and raises the relative price of capital: a change in the relative price of a good is transmitted to the price of the factor used intensively in the production of that good.

**FIGURE A1.** *The Standard H-O-S-S Model*

In the augmented H-O-S-S model, the capital-intensive sector employs three kinds of high-skill workers, defined by their endowments of (initially unobservable) talent: high, medium, or low (Figure A2). The more talented the worker, the less capital and labor she requires to produce the capital-intensive good—or, equivalently, the higher the price such a worker's capital-intensive product can command. By

1. As discussed more fully in the text, capital includes intellectual property, e.g., algorithms, novels, and film scripts.

definition, workers are immobile upwardly across these talent categories (a low-talent worker cannot overnight become one of high talent); but a high-skill worker can, if she chooses, move into the low-skill sector. We assume, as in the standard model, that capital is perfectly mobile across sectors, hence its cost is the same everywhere. This bifurcates the labor market: the high-talent workers, able to use capital more efficiently, command a higher wage. The low-skill wage is set equal to that of a high-skill worker of medium talent, while high-skill but low-talent workers would actually earn less in the capital-intensive sector than in the labor-intensive one: hence less talented high-skill workers move into the labor-intensive sector.




*Notes:* High-skill workers may be of high, medium, or low talent. Medium-talent high-skill workers are interchangeable with low-skill ones, while low-talent high-skill workers will earn more in the low-skill than in the high-skill sector. High-talent high-skill workers use capital more efficiently, can produce at lower cost, and earn higher wages.

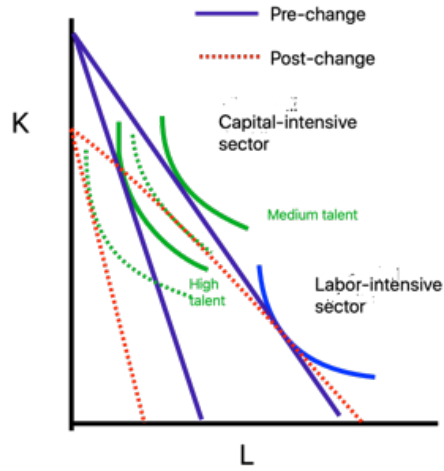
**FIGURE A2.** *The "Enriched" H-O-S-S Model of Hasket et al.*

What now happens if, as before, the relative price of the capital-intensive good rises? The isocost curves move downward for all three brackets of talent (Figure A3, dashed lines; low-talent workers in the capital-intensive sector now omitted for clarity of presentation); and, since the relative price of capital with respect to labor is set, as before, as the slope of the tangent line to medium-talent high-skill and to low-skill workers, just as in the standard model the relative price of capital rises: the return to capital increases, wages in the low-skill sector decline. But, since workers of medium talent are interchangeable with ones in the low-skill sector, the compensation of medium-talent high-skill workers also falls. The capital with which they work becomes relatively pricier, and the increase in the price of the high-skill product

(remember, the isocost curve of the medium-talent workers has also moved inward) does not suffice to compensate for the increased cost of capital. The only gainers are the high-talent, high-skill minority, whose wages unambiguously rise.

Given that many of today's most productive firms are "platforms" that employ relatively little physical capital, we stress that "capital," as used here and in Haskel et al. 2012, comprises also intellectual property. A high-talent software engineer or specialist in artificial intelligence can adapt existing algorithms far more productively than one of equal education but less talent.

Once we grant that such differences in talent can become important, the model suggests that any globalization-induced rise in the relative price of capital-intensive goods (or, equivalently, decline in the relative price of labor-intensive products) in advanced economies will depress (or threaten to depress) the wages not only of low-skill workers but of high-skill ones of less than superlative talent.




*Notes:* An increase in the relative price of the capital-intensive good lowers isocost curves in all talent brackets;[a] that raises returns to capital and lowers wages, reducing returns both to low-skill and to medium-talent high-skill workers. *The wages of medium-talent high-skill workers stagnate or decline.* Only the high-talent workers, who can use pricier capital more efficiently, gain.

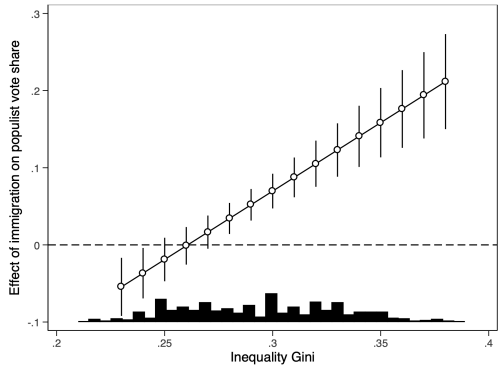
*a*. Low-talent high-skill workers, no longer depicted here to minimize clutter in the figure, continue to be better remunerated in the low-skill sector; hence their wages also decline.

**FIGURE A3.** *How Expanded Trade Affect Factor Prices in the Augmented H-O-S-S Model*

## A3: Robustness Checks

The marginal effects plots in the paper (Figures 3 and 5) allow the effects of immigration and imports, respectively, to vary non-linearly with inequality. These non-linear terms improve model fit and help guard against linear extrapolation to negative vote shares. We report the simpler linear marginal effects plots here as a robustness check for model misspecification. For both the GRR and CS analyses, respectively, Figure A4 and Figure A5 show that our results are consistent for the non-negative range of the coefficients.

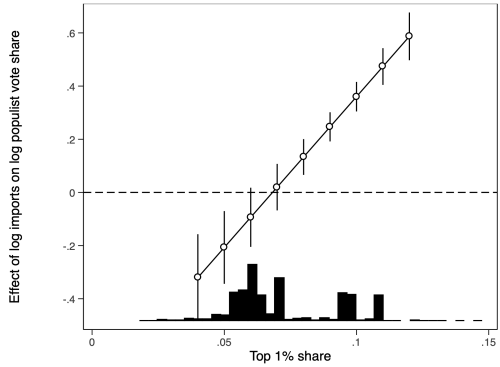
Our analysis of the data from Colantone and Stanig 2018 rely on a preferred multilevel estimator. We show here in Figure A6 that the results from Figure 5 (which are based on specification (8) in Table A3) are robust to an alternative country and year fixed effects estimator. The estimators largely differ in their degree of uncertainty, with the preferred multilevel model enjoying much more precision.[2]




*Notes:* We calculate these marginal effects from our interaction model "IO2020" in Figure 2 in the paper and Table A2.

**FIGURE A4.** *Marginal Effect of Immigration on Populist Vote Shares, by Level of Inequality (Linear Panel Tobit Model)*

2. The relatively large standard errors from this fixed effects model likely reflects the higher finite sample properties of multilevel (see the description of partial pooling in Gelman and Hill 2006).




*Notes:* The estimates are based on the interaction model "IO2020" in Figure 4 in the paper, or similarly, specification (8) in Table A3.

**FIGURE A5.** *Marginal Effect of Trade on Populist Vote Shares, by Level of Inequality (Linear Multilevel Model)*

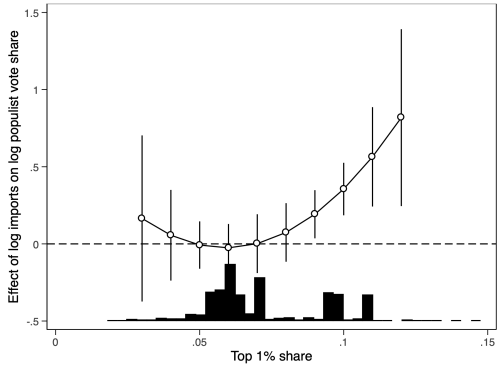



**FIGURE A6.** *Marginal Effect of Trade on Populist Vote Shares, by Level of Inequality (Non-Linear FE Model)*

## References

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