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Globalization, Government Popularity, and the Great Skill Divide

Cevat G. Aksoy, Sergei Guriev, Daniel Treisman[1]

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Abstract. We provide the first large-scale, global evidence on the impact of the skill composition of trade on political approval. We show that political implications of trade shocks depend on the relationship between workers' skills and the characteristics of goods traded. Using Gallup World Poll surveys of a million respondents from 120 countries over 2005-2018, we show that growth in high skill intensive exports increases confidence in government among skilled individuals relative to unskilled ones. Growth in high skill intensive imports has the opposite effect. Growth in low skill intensive exports (imports) increases (decreases) confidence in government among unskilled individuals relative to skilled ones. To identify causal relationships, we construct instruments based on time-varying effects of air and sea distances on bilateral trade in goods of different skill intensity.

JEL Codes: D72; F14; G02; P16

Keywords: International trade; political approval; skill intensity of trade.

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1 Introduction

The growth of cross-border trade has profoundly affected politics around the world. It became a central issue in the 2016 US presidential election when Donald Trump promised to limit imports from China and Mexico. The rise of imports from China after its accession to the World Trade Organization contributed to Trump's 2016 victory (Autor et al. 2020), as well as to the growth in support for right-wing populists across Europe (Colantone and Stanig 2018a) and the victory for Leave in the UK's Brexit referendum (Colantone and Stanig 2018b). Growing evidence suggests that globalization has emerged as a new dimension of politics, complementing or even replacing the traditional left-right cleavage related to redistribution (De Vries 2018, Grossman and Helpman 2020). In the words of the *Economist* (2016), "The new divide is not between left and right but between open and closed."

Yet, although some scholars have explored implications of classic trade theories for preferences on trade policy (Scheve and Slaughter 2001, O'Rourke and Sinnott 2001, Mayda and Rodrik 2005), empirical analysis of how global trade affects political attitudes around the world has been more limited. Some pioneering papers have demonstrated the effects of trade on recent electoral outcomes—in the US (Margalit 2011, Autor et al. 2016, Jensen et al. 2017, Che et al. 2016), the UK (Colantone and Stanig 2018b) and Europe (Colantone and Stanig 2018a, Dippel et al. 2021). The general finding has been that sharp import shocks increase partisan polarization or voting for populist parties (see Guriev and Papaioannou 2021, section 4.1 for a comprehensive survey).

In this paper, we shift the focus from electoral outcomes to the approval ratings of governments and political leaders. We explore the impact of trade shocks on public opinion in the periods between elections.[2] At the same time, we look not just for

[2] Besides occurring more frequently than elections, polls on government approval provide estimates of public opinion that are not distorted by crossnational differences in electoral rules and integrity. Gallup's questions and methodology are the same in all countries surveyed.

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the aggregate impact of total import and export flows on all citizens but for the disaggregated, specific effects that differentially influence groups with distinct trade-related interests.

Using annual data from the Gallup World Poll for 2005-2018 on more than a million individuals in 120 countries, we provide the first large-scale, systematic evidence on this issue. The Gallup data permit the examination of heterogeneous political effects. In particular, we show that political responses to globalization depend on both individuals' skill levels and the skill-intensity of their country's exports and imports.[3] To identify causal relationships, we use both ordinary least squares (OLS) panel regressions (controlling for country-year fixed effects) and instrumental variables based on the time-varying effects of bilateral air and sea distances, originally proposed by Feyrer (2019) and later used by other trade scholars.[4]

Our results reveal a causal impact of changing trade flows on political approval. Perhaps surprisingly–given the perceived popularity of protection in many countries–average confidence in government increases as imports rise, especially high skill intensive ones. On average, consumers apparently value the broader selection and price competition that open trade provides. Aggregate exports have no clear effect, perhaps because higher exports directly benefit only the exporting firms, while increased imports potentially benefit all consumers. However, these results mask substantial heterogeneity. We show that trade shocks affect the attitudes of skilled and unskilled individuals differently and that the effects depend on the relationship between the individuals' characteristics and their country's trade structure. Citizens appear to respond to how changes in the composition of trade affect their own labor market prospects. Highly skilled workers approve of their

[3] Throughout the paper, we use the term "skilled" or "highly skilled" to refer to individuals with at least tertiary education. Individuals with less than tertiary education are referred to as "unskilled." We check robustness to an alternative definition (at least secondary education vs. less than secondary) in the robustness section.

[4] We also extend the scope of study beyond the period of the initial "China import shock"—between its 2001 WTO accession and the 2008 global financial crisis—to explore the political effects of trade in all years up to 2018.

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government more when exports of high skill intensive goods and services rise and when imports of high skill intensive items fall. Similarly, low skilled workers approve of their government more when low skill intensive exports increase and low skill intensive imports decrease. Although modest, the effects are enough to make a difference in today's highly polarized politics. For instance, if all trade flows move by 10% in the direction favored by the high skilled and against that favored by the low skilled (that is, high skill exports increase, high skill imports decrease, low skill exports decrease, and low skill imports increase, all by 10%), then confidence in government among the high skilled is predicted to rise by 1.6 percentage points relative to the level among the low skilled. If we replace 10% in this example with the average within-country standard deviation, the resulting gap in confidence in government increases to 4.8 percentage points—a significant difference given that average confidence in our sample is about 50 percent.

Much work on the politics of trade has focused on the impact of imports on low skilled workers in advanced economies. To the extent that competition from China disproportionately threatens their jobs, that makes sense. Yet, in less developed countries, it is often the relatively highly skilled who are hit hardest by greater trade openness. Our results cast light on the politics of trade in such countries. Whereas the shock from cheap imports may fuel populist campaigns in the West, competition from skill-intensive manufacturing and services can drive educated elites to protectionism in the developing world. More generally, surging trade does not just increase or decrease aggregate support for political incumbents—it reshapes support coalitions in ways that vary with the country's endowments and economic specialization.

The paper proceeds as follows. Section 2 discusses related literature and motivates our hypotheses. Section 3 describes the data. Section 4 outlines our empirical approach and instrumentation strategy. Section 5 presents the results. Section 6 concludes.

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2 Trade and Politics

A variety of work, building on the classic Heckscher-Ohlin model, has explored how individuals' factor endowments should affect their attitudes towards trade. Given perfect competition, constant returns to scale, and costless factor mobility across sectors, the Heckscher-Ohlin and Stolper-Samuelson theorems showed that openness should benefit owners of abundant factors and hurt owners of scarce ones.[5] Such effects run primarily through trade-driven change in factor prices. A number of subsequent papers (Deardorff and Steiger 1988, Deardorff 2000, Adao et al. 2020) relaxed the restrictive assumptions of the original factor content approach and traced in greater detail the mechanisms connecting these price changes with trade flows and factor intensities. Adao et al. (2020) construct a non-parametric model assuming away perfect competition as well as restrictions on preferences and technology. Most importantly for our specification, the model in Adao et al. (2020) shows that gross exports' factor content serves as a sufficient statistic for the effect of trade exposure on wages (like in Adao et al., we use skill intensity of gross trade flows).

If the owners of abundant factors benefit from trade, we might expect them to favor openness. Early analyses of ISSP data by O'Rourke and Sinnott (2001) and Rodrik and Mayda (2005) showed that, in line with the theory, highly skilled individuals supported free trade in richer countries (where high skills are more abundant) but *opposed* it in poorer countries. Scheve and Slaughter (2001) also showed that in the US highly skilled workers are more likely to favor openness. More recently, Jakel and Smolka (2017) divided respondents into more fine-grained, occupation-based skill groups and, using two crossnational surveys, demonstrated a relationship between relatively abundant skills and support for free trade.[6]

[5] For a classic investigation of the role of such factors in history, see Rogowski (1989).

[6] Their dataset included surveys in 26 countries from the 2003 International Social Survey Program (ISSP) and 28 countries from the 2007 Pew Global Attitudes Project.

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Such studies—like ours—often use education levels as a proxy for skills. Some have suggested that education could be picking up other factors. For instance, higher education might inculcate greater tolerance toward foreigners, encourage risk acceptance, or increase understanding of the benefits of commerce (Hainmueller and Hiscox 2006, Mansfield and Mutz 2009, Rho and Tomz 2017). Grossman and Helpman (2020) suggest that in a country like the US lower skill levels may go along with self-identification as the "true people" who stand against "corrupt elites." By contrast, Borusyak and Jaravel (2018) argue that pro-trade attitudes among the high skilled likely result from specific trade-related material interests, specifically the greater boost to earnings that trade provides to college graduates. Although the question remains open, our finding of an interaction between education and particular skill-related trade interests is more consistent with education proxying for skill than with other pathways.

These studies provide evidence on the link between skill levels and public opinion on trade. But do such attitudes influence political preferences and behavior? It is natural to assume that those who stand to lose from trade will not only favor protection but also vote and protest against incumbents who fail to protect their markets. A small but growing literature looks at such political effects.

Four recent papers evaluate the impact of international trade on voting in the US. Margalit (2011) shows that job losses from import competition depressed the vote share of the incumbent president in 2004 and 2008. Jensen et al. (2017) study a county-level panel for 1992-2012 and find that incumbents received more votes in county-years with higher employment in tradeable high skilled goods and services and with lower employment in low-skilled manufacturing. Autor et al. (2020) examine the polarization of U.S. politics and find that congressional districts exposed to greater increases in import penetration due to the "China import shock" disproportionately removed moderate politicians from office in the 2000s. They also show that exposure to the China shock resulted in a higher vote share for Trump in 2016. Looking at US counties rather than congressional districts and exploiting change in US trade policy, Che et al. (2020) find that higher Chinese

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competition did not just increase polarization but boosted the Democratic vote in congressional elections in 2000s (when Democrats were in opposition) but not after 2008.

Moving beyond the US, only a few papers have explored the political consequences of trade in a cross-national context. For instance, Colantone and Stanig (2018b) examine how globalization has affected electoral outcomes in 15 West European countries in 1988-2007. They conclude that greater exposure to Chinese imports produced a shift to the right in voting, including greater support for nationalist parties and the radical right, i.e. parties that criticize the political mainstream. Margalit (2017), using data from the 2003 ISSP survey (a cross-section of 34 mostly developed countries), finds that those in advanced economies who feel they have suffered from international trade tend to support parties that favor economic protection and socio-cultural conservatism.

Our dataset includes fourteen years of annual data on more than a hundred developed and developing countries and therefore allows for a deeper analysis of heterogeneous effects of trade on politics. Following the Heckscher-Ohlin-inspired studies of policy preferences, we hypothesize that political attitudes will depend on the interaction between an individual's skill level and the skill-intensity of the country's imports and exports. We therefore disaggregate individuals and trade flows by skills. As in the recent papers on voting, we reach beyond self-reported attitudes towards trade, which may be superficial for many citizens and unlinked to political attitudes and behavior, to study support for the incumbent government. At the same time, rather than assuming a particular pattern of trade flows based on countries' factor endowments—a pattern known to be at best only partly accurate—we use a direct measure of trade disaggregated on the basis of skill-intensity of the products. This helps us address a common criticism of the early work on factor content theory—the neglect of trade costs—as we use data on the skill intensity of the realized gross (rather than net) exports and imports. Our main hypothesis is that skilled workers are more likely to support the incumbent national leadership if skill-

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intensive imports are falling and skill-intensive exports are growing, with the opposite effects for low-skill-intensive trade flows.

3 Data

The data used in this paper come from the Gallup World Polls, the United Nations International Trade Statistics Database (COMTRADE), CEPII, and Polity IV. The level of analysis is the individual level. We describe the data below.

3.1 Individual Level Data from Gallup World Polls

Our primary data on political approval come from the 2005-2018 Gallup World Polls (GWP). These nationally representative surveys are fielded every year in over 140 countries and interview approximately 1,000 individuals in each country on a wide range of topics. We restrict attention to those aged 18 to 64 to focus on economically active individuals. Our main sample includes more than a million respondents from 121 countries.[7]

The key outcome variable in this paper comes from the question on confidence in the national government: "In (this country), do you have confidence in each of the following, or not: … How about national government?". We also show that our results are similar when we use the question about the approval of the incumbent leader: "Do you approve or disapprove of the job performance of the leadership of this country?"

The GWP also provides detailed information on respondents' demographic characteristics (age, gender, educational attainment, marital status, religion, and urban/rural residence), labor market outcomes, and income. GWP codes respondents' education into the following three categories: Elementary (up to 8 years of basic education); Secondary (9 to 15 years of education); and Tertiary

[7] We drop observations for Nagorno-Karabakh, Northern Cyprus, Somaliland, and Puerto Rico.

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(completed 4 years of education beyond "high school" and/or received a four-year college degree). GWP does not include data on respondents' occupations.

3.2 International Trade Data

We obtained product-level export and import data on goods and services from the UN COMTRADE database for the years 2005-2018. More specifically, we use the 3-digit Standard International Trade Classification (SITC – revision 3) to categorize manufactured goods by their skill intensity (that is, labor-intensive, low-skill intensive, medium-skill intensive, and high-skill intensive).[8] The data on exports and imports of services employ the Extended Balance of Payments Services (EBOPS) classification. We use correspondence tables provided by the Manual on Statistics of International Trade in Services (2002) to classify trade in services by their skill intensity (see Appendix Table 11 and 12 for details). These skill-based classifications reflect common perceptions regarding different skill-intensities in the production line and give a broad indication of sectoral differences in terms of the potential for productivity growth (Mayer et al., 2003). In both datasets, values are reported in nominal U.S. dollars. We adjust these values to 2011 dollars using the consumer price index. Using these data, we calculate the variables *Total Volume of High Skill Intensive Exports (Imports)* and *Total Volume of Low Skill Intensive Exports (Imports)*. Some examples of high skill intensive goods and services include electronics, parts and components for electronics, medical and chemical products, optical goods, and auditing, financial, and legal services. Goods such as cutlery, fencing grills, metal containers for storage or transport, and office supplies are classified as low-skill intensive products. We provide detailed information about the skill classification in the appendix.[9]

To construct our instruments, we mainly use two datasets. The first is the special

[8] In what follows, we group high-skill and medium-skill intensive goods and services and refer to them as "high-skilled" and describe other goods and services as "low-skilled" (grouping together labor-intensive and low-skill intensive ones). Detailed information on product grouping of goods and services can be found at: http://unctadstat.unctad.org/EN/Classifications.html

[9] Some low-skilled individuals do work in sectors such as electronics, so these classifications rank sectors by the *average* level of skill-intensity.

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license version of the UN COMTRADE data, which provides bilateral trade flows between countries at the product and service level. The raw dataset includes more than 300 million year-country-pair (year-exporter-importer) observations. We first classify each trade flow based on its skill intensity. We then calculate the sum of trade values by year-country-trade-partner for each country. The second dataset comes from the CEPII. More specifically, we use the Historical Bilateral Trade and Gravity Dataset (TRADHIST) that was compiled by Fouquin and Hugot (2016) to obtain information on bilateral trade characteristics.. There are two main measures of bilateral distance: a city population-weighted mean of the great-circle distance between each pair of countries (a measure of air distance) and the shortest maritime distance between two countries (a measure of sea distance). [10]

3.3 Descriptive Statistics

Table 1 presents descriptive statistics for the outcome variables and individual demographic characteristics. Figure 1 shows the global trends in confidence in the national government over our sample period, averaged across all countries for which data were available in seven or more years. Averaging across all country-years, almost 50 percent of respondents say they have confidence in the national government. This ratio remains remarkably stable over time.

Table 1 also shows that in our sample about 16 percent of the respondents have tertiary education, 52 percent have secondary education, and 32 have primary education.

[10] For landlocked countries, Fouquin and Hugot (2016) choose the closest foreign port and report the distance accordingly. Fouquin and Hugot (2016) also obtained information on all maritime distances from vesseltracker.com (2014). They first identified the largest port in each country (two ports if the country was bordered by two different seas or oceans) and chose the shortest maritime distance between any of the ports of both countries.

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4 Estimation Methodology

4.1 Empirical Strategy

Our preferred specification to assess the effect of international trade on confidence in the national government is as follows:

$$
\begin{aligned}
Y_{ict} = \beta_0 + \beta_1 Skilled_{ict} * (Log\ High\ Skill\ Intensive\ Exports)_{ct} \\
+ \beta_2 Skilled_{ict} * (Log\ High\ Skill\ Intensive\ Imports)_{ct} \\
+ \beta_3 Unskilled_{ict} * (Log\ Low\ Skill\ Intensive\ Exports)_{ct} \\
+ \beta_4 Unskilled_{ict} * (Log\ Low\ Skill\ Intensive\ Imports)_{ct} \\
+ \beta_5 Skilled_{ict} + \beta_6 X_{ict} + \beta_7 \delta_{ct} + \varepsilon_{ict}
\end{aligned} \tag{1}
$$

where Y_{ict} is a dummy variable indicating that the respondent has "confidence in national government", for individual *i* in country *c* at time *t*. We estimate linear probability models for ease of interpretation.

Skilled is an indicator variable equal to one for individuals with completed tertiary education. *Unskilled* is an indicator variable equal to one for individuals with less than completed tertiary education.

Log High (Low) Skill Intensive Exports (Imports) is the natural log of the total volume of high (low) skill intensive exports (imports) of good and services. The main coefficients of interest are those on the interaction terms, β_1, β_2, β_3, and β_4, which capture the impact of growth in the total volume of high (low) skill intensive exports and imports on confidence in the national government among skilled and unskilled individuals.

Country-year fixed effects δ_{ct} control for all potentially relevant country-time varying characteristics that could be correlated with confidence in the national government (such as political regime characteristics of a country, press freedom, GDP per capita and so on). By definition, they also control for country-year-specific trade flows, *Log High (Low) Skill Intensive Exports (Imports)*. This is why in our

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main specification we can only measure the differential effect of *Log High (Low) Skill Intensive Exports (Imports)* among skilled relative to unskilled–through the coefficients on the interaction terms–and cannot include interactions of the same trade flow with both skilled and unskilled at the same time.[11]

To adjust for the effect of demographic and labor market structure on the outcome variables, we directly control for time-varying, observable individual characteristics. More specifically, X_{ict} is a vector of demographic variables that include: a male dummy; age and age squared; dummy variables for marital status (married/civil partnership and divorced/separated); a dummy variable for the presence of children in the household (any child under 15); and a dummy variable for living in an urban area. Note that we do not control for individual-level unemployment in our baseline specification since this information is only available in the GWP from 2009. Below, we show that our results are robust to this choice. We also include multiple language and interview type dummies throughout, though we do not report them in the tables.

We cluster standard errors by country and use sample weights provided by Gallup to make the data representative at the country level.

4.2 Instrumentation Strategy

To identify the causal effects of international trade on political approval, we need to address the issues of omitted variables bias and reverse causality. If individuals do not approve of the performance of their leader or do not have confidence in the government, that might affect economic activity and eventually influence the volume and composition of trade. Trade and political outcomes may also be jointly affected by omitted variables (such as a change in institutions). Furthermore,

[11] We do also present some models replacing country-year fixed effects with country fixed effects and year fixed effects (Tables 2 and 3, columns 1-3). This allows us to include interactions of both skilled and unskilled with each trade flow in the same regression, rather than just estimating the effects of skilled relative to unskilled status. This also permits us to include measures of aggregate trade flows, the influence of which would otherwise be absorbed by the country-year fixed effects. However, control for non-observables is weaker excluding country-year fixed effects.

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measurement error in high skill intensive exports (imports) may result in attenuation bias. To tackle these issues, we use two-stage least squares (2SLS) methodology with instrumental variables that affect high (low) skill intensive exports (imports) but are unrelated to confidence in the incumbent government.

To find a valid instrument, we focus on exogenous determinants of trade flows that predict each country's high and low skill intensive exports and imports. Specifically, we use the changes in high skill intensive bilateral trade flows that have resulted from advances in transportation technology.[12] As documented in Hummels (2007), substantial improvements in technology have sharply cut the cost of air shipping relative to that of sea shipping.[13] Put differently, a weight/value ratio of trade for air transport has been declining much faster than a weight/value ratio of trade for sea transport. Trade costs have therefore changed differently for country pairs with different sea-distance-to-air-distance ratios. This means, for instance, that countries located far in terms of sea distance from their major export markets – but close to them in terms of air distance – have a comparative advantage in lightweight goods due to air shipping (Harrigan 2010).[14]

Our identification strategy assumes that high skill intensive products are mostly light—and therefore usually transported by air—while low and medium skill intensive products are heavier—and therefore usually transported by sea. If this assumption holds, the shipping costs of high skill intensive products should be more sensitive to the air distance between the exporter and importer, while the shipping

[12] In a similar way, Pascali (2017) uses the adoption of the steamship in the late 19th century to establish a causal relationship between trade and development, exploiting the differential impact of this new technology on trade between countries separated by larger or smaller technology-specific travel time.

[13] The relative decline in air freight costs relative to sea transportation costs is a long-term trend spanning several decades (Feyrer 2019). However, as Appendix Figure 1 documents, there has also been substantial variation in air and sea transportation costs in the years since 2005. The total unit cost of air freight fell substantially during our sample period (by 59 per cent between 2005 and 2015) while the unit cost of sea freight increased (by 47 per cent between 2005 and 2015). In line with this, total air freight traffic worldwide rose sharply, from 152 billion tonne-kilometers in 2005 to 199 billion tonne-kilometers in 2015, according to annual global statistics from ICAO (2015).

[14] See World Bank (2009, section 5) for case studies.

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costs of low skill intensive products should be more sensitive to the sea distance between them. To check this, we estimate the following equation at the country pair-year-product level:

$$\log(TrCost_{ijtp}) = \alpha_{s,t} \log SeaDistance_{ij} + \alpha_{a,t} \log AirDistance_{ij} + D_{ij} + P_p + \varepsilon_{ijt} \quad (2)$$

where $TrCost_{ijtp}$ is the transport cost (in dollars) to export one kilogram of product p from exporting country i to importing country j in year t.[15] D_{ij} represents country-pair fixed effects, which means the relationship is identified on the basis of within-pair changes; P_p are product fixed effects; $SeaDistance_{ij}$is the shortest bilateral sea trade distance, and $AirDistance_{ij}$ is the weighted great circle distance between countries i and j. The equation is separately estimated for each year t. Robust standard errors are clustered at the origin-destination pair level.

We estimate equation (2) separately for high skill intensive and low skill intensive products.[16] If high skill intensive goods are transported by air and not by sea, $\alpha_{a,t}$ should be positive and significant in the regression for the subsample of high skill intensive products, while $\alpha_{s,t}$ should be zero. If low skill intensive goods are transported by sea and not by air, $\alpha_{a,t}$ should be zero in the regression for the subsample of low skill intensive products, while $\alpha_{s,t}$ should be positive and significant. This is exactly what we find (see Appendix Figures 2 and 3). The results indicate that high skill intensive trade flows are, as supposed, sensitive to air

[15] Due to limited availability of data on transport costs around the world, we use an indirect measure—the difference between the "free on board" (FOB) value of goods when they are exported and the "cost of insurance and freight" (CIF) value of the same goods when declared by the importer. (Thus, we exploit the fact that each trade flow is counted twice, at the customs offices of both the exporter and the importer. Data on these flows are from CEPII and Berthou and Emlinger (2011)). CIF unit values rely on importers' declarations and include all trade costs (except tariffs and domestic taxes after the border). FOB unit values measure the trade price at the factory gate, relying on exporters' declarations, and do not include transportation costs (Berthou and Emlinger 2011). The difference between CIF and FOB unit values for the same good serves as our proxy for transportation costs. Strictly speaking, it includes insurance costs as well, but if, as seems likely, unit insurance costs did not change much during this period, the change in this proxy will measure mostly change in transportation costs.

[16] We use correspondence tables provided by the World Integrated Trade Solution (WITS) to classify each product by its skill intensity.

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distances and not to sea distances, while the opposite is true for low skill intensive trade flows.

This allows us to construct an instrument for the actual high skill intensive trade flows on the basis of geography. Our approach is based on the gravity model (Anderson, 2011 and Anderson and van Wincoop, 2003) and closely follows Feyrer (2019), Blanchard and Olney (2017), Pascali (2017) and Magistretti and Tabellini (2020). We begin by constructing estimates of "predicted trade flows" of high skill intensive products. Formally, we estimate the following equation:

$$\log X_{ijt} = \beta_{sea,t} \log SeaDistance_{ij} + \beta_{air,t} \log AirDistance_{ij} + D_{ij} + T_t + \varepsilon_{ijt} \quad (3)$$

where X_{ijt} is either (a) the bilateral flow of high (low) skill intensive exports from exporter *i* to importer *j* in year *t* or (b) the bilateral flow of high (low) skill intensive imports to importer *i* from exporter *j* in year *t*. T_t are year dummies. As in Equation (2), D_{ij} represent bilateral pair fixed effects, which means the relationship is identified on the basis of within-pair changes in high (low) skill intensive trade; $SeaDistance_{ij}$ is the shortest bilateral sea trade distance, and $AirDistance_{ij}$ is the weighted great circle distance between countries *i* and *j*. Here, $\beta_{sea,t}$ is a vector of coefficients capturing the effect of sea distance in each year, while $\beta_{air,t}$ is a similar vector capturing the effect of air distance in each year.

From Equation (3), we calculate "predicted bilateral flows" of high (low) skill intensive exports and imports for each country pair and year, based on their exogenous sea and air distances. The precision of this "prediction" is very high: R-squared in equation (3) is around 0.90.[17]

[17] We report coefficients $\beta_{sea,t}$ and $\beta_{air,t}$ for high skilled and low skilled exports in Appendix Figures 4 and 5. For each country-pair and year the sum of coefficients on air distance and sea distance is negative, confirming that longer distances result in lower trade. Furthermore, given sea distance, coefficients on air distance are negative and are larger in absolute value for high skilled goods – as those are more likely to be transported by air.

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We sum the predicted bilateral flows across trading partners to construct our final instruments: the total predicted volume of high (low) skill intensive exports (imports) of goods and services for each country.[18] We use these four instruments to create four predicted interaction terms "the total predicted volume of high skill intensive exports*tertiary education", "the total predicted volume of high skill intensive imports*tertiary education", "the total predicted volume of low skill intensive exports*less than tertiary education" and "the total predicted volume of low skill intensive imports*less than tertiary education" as instruments for the respective four right-hand-side variables in equation (1).

As Figure 2 demonstrates, our instruments are good predictors of actual skill-specific intensive exports and imports for each country and year.[19] Since they are a function of only geography and time, they are exogenous with respect to political approval and therefore allow us to identify causal effects. Following Feyrer (2019), our key identification assumption is that the evolution of transportation technology over time is independent of any particular country and therefore contains no information about government approval in specific countries.

5 Results

This section presents three sets of results. We first show OLS estimates. We then present IV results following the methodology introduced in section 4.2. We then investigate potential mechanisms, exploring individual unemployment and satisfaction with national and local economic conditions. We also present a set of

[18] We construct separate instruments for high skill intensive imports and high skill intensive exports. While each export from *i* to *j* is simultaneously an import to *j* from *i*, the reported exports of one country rarely coincide exactly in a given year with the reported imports of its partner country. As the UN International Statistics explains, this occurs for a host of reasons including: time lags between exports and imports, goods passing through third countries, goods delayed in customs, different classification systems, and different trade systems. Since in our regressions the dependent variable is logged, we delog the estimates before summing them across trading partners and then take the log of the total for subsequent analysis. Our main models also include zero trade values. We tried excluding zero trade values and found qualitatively similar results.

[19] The outliers are country-year observations from Ukraine, Georgia, Bosnia and other countries where trade patterns are distorted by noneconomic factors.

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robustness checks. Finally, we investigate heterogeneity by socio-economic subgroups and country levels of democracy.

5.1 Ordinary Least Squares Specifications

We begin by analyzing the effects of total international trade on political approval among skilled workers relative to unskilled workers.

Table 2 presents the results from the OLS estimations where the dependent variable is a dummy indicating that the respondent has "confidence in national government." In the first column, we report the results from a specification with country and year fixed effects (rather than country-year fixed effects as in (1)).[20] We find that confidence in government is not correlated with total exports but is positively correlated with total imports: an increase in imports by 10 percent is associated with a 1 percentage point increase in government approval. Approval is negatively correlated with education: on average, individuals with tertiary education are 2.2 percentage points less likely to have confidence in government. In the second column, we add individual-level demographic controls (gender, age and age squared, family status, and rural dummy); the results do not change.

To understand government approval's zero correlation with exports and positive correlation with imports, we check whether these relationships are driven by the highly educated or less educated individuals (column 3). We find that for individuals without tertiary education, there is no correlation between total exports and confidence in government; for individuals with tertiary education, an increase in exports is associated with an increase in approval—but since there are fewer of these, the effect washes out in the aggregate. The relationship between total imports and government approval is positive and significant for both educated and uneducated individuals, but the effect is slightly stronger for those without higher education.

[20] As noted above, the effect of total exports (imports) would be absorbed by country-year fixed effects.

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In column 4, we include country-year fixed effects, thus controlling for all time-varying country characteristics. As in column 3, we find that educated individuals (relative to their unskilled peers) have higher confidence in government in country-years with higher exports but lower confidence in country-years with higher imports. (As noted, while controlling for country-year fixed effects we cannot include all four interaction terms and can only estimate the difference between the effects of trade between the skilled and the unskilled. For example, the coefficient -0.014 on the *Skilled*LogTotalImports* term in column 4 equals the difference between the 0.091 and 0.105 coefficients on the *Skilled*LogTotalImports* and *Unskilled*LogTotalImports* terms in column 3.)

In Table 3, we turn to our main focus—the different effects of high skill intensive and low skill intensive trade flows. In columns 1-3 we report results from specifications with country and year fixed effects. When we combine responses of skilled and unskilled individuals (column 1), we find a positive coefficient on high-skill imports but no significant coefficients on other trade flows. This implies that the positive coefficient on total imports in Table 2 is explained by high skill imports more than low skill ones. In column 2 we add demographic characteristics; results do not change.

In column 3 we interact the high and low skill trade flows with individual skill levels. We find that the positive coefficient on high skill imports is driven by the less educated individuals. We also find that the nonsignificant coefficients on other trade flows in columns 1 and 2 mask important heterogeneity. The unskilled respond positively to low skill exports, but negatively to high skill exports. They respond very positively to high skill imports, but not to low skill imports. The skilled respond very positively to low skill imports, but not to high skill imports. (Various other effects could not be estimated precisely.) These results are intuitive: individuals prefer growth of exports intensive in their skill levels and imports that compete with the *other* skill class.

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The coefficients in column 3 may be biased due to various country-year covariates. In our main specification (equation (1)), reported in column 4, we address this by adding country-year fixed effects.[21] The results confirm the existence of a "skill divide" in the effects of trade flows on confidence in government. An increase in high skill exports results in higher government approval among the skilled relative to the unskilled. An increase in high skill imports results in lower government approval among the skilled relative to the unskilled. The effects of increases in low skill exports and imports are exactly the opposite. The coefficients are statistically significant except for that on low skill exports.

How can we reconcile these results on the skill divide from column 4 with other findings in Tables 2 and 3? Table 2 shows that on balance, individuals have higher confidence in government when imports increase; this is true for both educated and uneducated individuals. However, Table 3 shows that the uneducated are more likely to respond positively to high skill imports while the educated prefer low skill imports. As those with tertiary education are a minority, the average effect is that confidence in government increases when high skill imports increase. The aggregate effects of exports are similar but weaker in magnitude and often not significant.

5.2 Instrumental Variables Specifications

In this section, we present the IV estimates of the relationship between the composition of trade and political approval. As described above, we predict high (low) skill exports (imports) using equation (3). We then use the four predicted high (low) skill exports (imports) variables to generate instruments for the four independent variables of interest in column 4 of Table 3.[22]

[21] The coefficients on controls are reported in Appendix Table 1.

[22] We also tried to use similar instrumental variables to instrument the eight regressors in Column 3 of Table 3 but the first stage is too weak.

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Table 4 reports the results of the first stage. The four interactions of predicted trade flows with individual-level education are strong instruments for the four endogenous variables; the value of the Kleibergen-Paap F statistic for joint significance of the instruments is 143.

The second stage results are reported in column 5 of Table 3. The coefficients have the same signs as those in the OLS specification (column 4 of Table 3) but are all statistically significant and slightly larger in magnitude. In a given country-year, an increase in high skill exports or a decrease in high skill imports increases confidence in government among the high-skilled relative to their low-skilled peers. Similarly, an increase in low skill exports or a decrease in low skill imports increases confidence in government among low-skilled individuals relative to high-skilled individuals. The magnitudes, although modest, are enough to make a difference in politically polarized settings: if high skill exports and low skill imports each increase by 10% and high skill imports and low skill exports each decrease by 10%, confidence in government is predicted to increase by 1.6 percentage points among high-skilled individuals relative to that among low-skilled individuals. If each trade flow changed by its average within-country standard deviation, the respective skill divide in confidence would be 4.8 percentage points—a significant change given that average confidence in government is about 50 percent.

5.3 Potential mechanisms

We argued that the highly educated respond more to increases in high skill intensive trade because they believe it matters for their own labor market prospects. In Table 5, we show that this is indeed the case. We check for the effects of trade on unemployment (presenting OLS and IV results in columns 1 and 2, respectively). As expected, increases in high skill exports and decreases in high skill imports decrease unemployment among respondents with tertiary education more than among respondents without tertiary education. Increases in low skill exports and decreases in low skill imports have the opposite effect. In particular, if high skill exports and low skill imports each increase by 10% and high skill imports and low

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skill exports each decrease by 10%, unemployment is predicted to decrease by 0.4 percentage points among high-skilled individuals relative to low-skilled individuals. If each trade flow changed by its average within-country standard deviation, the respective skill divide in unemployment would be 1.2 percentage points (which is substantial given that the average unemployment level in the sample is about 6 percent).

Not surprisingly, changes in trade flows affect respondents' overall evaluation of the economic situation. In columns 3-6 we present results for confidence in country- and local-level economic conditions. Gallup's country-level economic confidence index is based on the combined responses to two questions asking respondents, first, to rate economic conditions in their country today ("Right now, do you think that economic conditions in this country, as a whole, are getting better or getting worse?"), and second, whether they think economic conditions in their country as a whole are getting better or getting worse ("How would you rate economic conditions in this country today – as excellent, good, only fair, or poor?"). The Index may vary from -100 to +100. Positive values indicate that a respondent has a more positive than negative view of the economy. Gallup also asks about local economic conditions ("Right now, do you think that economic conditions in the city or area where you live, as a whole, are getting better or getting worse?"). Responses to this question are recorded as dummy variables with one representing a positive answer and zero otherwise. In columns 3 and 5 we present the OLS estimates and in columns 4 and 6 the IV estimates (similar to the last two columns of Table 3, respectively). We find that increases in high skill intensive exports and decreases in high skill intensive imports are associated with higher economic confidence (both at the national and local level) among the high skilled respondents, and corresponding changes in low skilled trade have the opposite effects; some coefficients are not statistically significant, however.

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5.4 Robustness Checks and Heterogeneity

In Appendix Table 2 we estimate our main specifications (columns 4 and 5 of Table 3) for an alternative outcome variable: "approval of the leadership of the country". The results remain similar for high skill intensive exports and imports: increases in high skill exports (imports) significantly increase (decreases) leader approval among the skilled relative to the unskilled. However, the coefficients on the interaction terms for low skill trade flows in the IV specification are not significant. The difference in results for confidence in government and leader approval may be explained by the fact that approval of the leader is likely to include personal aspects of a politician's valence that are not related to economic performance.

We have so far used completed tertiary education as our measure of respondents' skills. In Appendix Table 3 we use an alternative definition, treating those with secondary or tertiary education as skilled and those with just primary education or less as unskilled. The results for high skill intensive exports and imports remain similar while those for low skill intensive trade are not significant. To further explore these effects, in Appendix Table 4 we run the same estimations including separate dummies for tertiary education and for secondary education, along with their interactions with high skill intensive exports (imports) and low skill intensive exports (imports). The table shows that our results are driven by tertiary education: the coefficients on the interaction terms with secondary education are small and almost never significant, while those for tertiary education remain similar to our main results in Table 3. These results also confirm that our results are not driven by choosing an arbitrary education threshold.

In Appendix Table 5 we check if our results are driven by any specific sub-period. We exclude various three-year periods (2005-2007, 2008-2010, 2009-2011, 2012-2015, and 2016-2018) one at a time and find that our results do not change.

To understand the heterogeneity of our results, we estimate our preferred IV specification for various subsamples. In Appendix Table 6, we split countries by their average level of democracy over the years in our sample, using the Polity

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Project's Polity2 measure (we do not use annual democracy scores because of potential endogeneity). We split the sample into democracies (Polity2 > 5, columns 1 and 2) and nondemocracies (Polity2 $\leq$ 5, columns 3 and 4). The results for both high and low skill intensive imports, as well as for high skill intensive exports, are stronger among democracies. However, the results for low skill intensive exports are stronger for nondemocracies—probably because there is more variation in low skill intensive exports in nondemocratic countries; the respective coefficients for democracies are small and insignificant.

In Appendix Tables 7 and 8 we explore individual heterogeneity. Appendix Table 7 shows that the effects are stronger for males than females, although most of the differences are not statistically significant. Almost all effects are stronger for older individuals (aged 38-64) than for younger ones (aged 18-37). (The one exception is the effect of low skill exports among the low skilled; here the effect for the older group is not statistically significant.)

Columns 1 and 2 in Appendix Table 8 imply that effects are slightly stronger in rural than in urban areas (although most differences are not statistically significant).[23] In Columns 3 and 4 we split the sample by household incomes. We find that respondents from households below median income in a given country-year are more responsive to trade shocks; our average results are mostly driven by these groups. For high-income households, coefficients have the same signs and are statistically significant, but the effects are smaller.[24]

In Appendix Table 9, we check whether the effects are stronger for countries that have a comparative advantage in high-skill vs. low-skill-intensive goods. We split the sample into countries that are net exporters of skill-intensive goods (one fifth of the full sample) and countries that are net importers of skill-intensive goods. We

[23] The share of skilled individuals living in rural areas in our estimation sample is 19 percent in developed countries and 7 percent in developing ones.

[24] The distribution of the share of skilled individuals by income-groups in our estimation sample is as follows: (i) for less developed countries: 0.03 in low-income tercile, 0.15 in middle-income tercile, 0.29 in upper-income tercile; (ii) for developed countries: 0.05 in low-income tercile, 0.14 in middle-income tercile, 0.33 in upper-income tercile.

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find that our results are driven by the countries that are net importers of skill-intensive goods. The coefficients for the subsample of the net exporters of skill-intensive goods are not statistically significant.

In Appendix Table 10, we investigate whether the relationship between trade and political approval is linear or is driven by extreme realizations of trade shocks. We create dummies for quartiles of high skill intensive exports and then interact these dummies with log high skill intensive exports themselves. We find that the coefficients are remarkably similar across quartiles, which suggests that the relationship between log high skill intensive exports and the skill divide in political approval is linear. We also do this for high skill intensive imports, low skill intensive exports and imports and also find no evidence of nonlinearity.

6 Conclusions

Our results confirm that international trade shocks affect individuals' support for incumbent leaders and governments. The effects, however, are heterogeneous and depend on the relationship between individuals' skill levels and the characteristics of the goods imported or exported. Analyzing data from 120 countries in 2005-18, we find that growth in high skill intensive exports increases confidence in the incumbent government among skilled respondents relative to their unskilled peers, while growth in high skill intensive imports has the opposite effect. Low skill intensive exports increase support among the unskilled relative to the skilled; low skill intensive imports do the opposite. The effects tended to be stronger among men than among women, among the old than among the young, in rural rather than urban locations, and in groups with lower rather than higher incomes. Most were also stronger in democratic than in nondemocratic countries.

These results provide new insights into the politics of trade shocks. Previous literature has mostly concentrated on the effects of import surges (such as the one that followed China's WTO accession) on low skill workers in developed countries. Such shocks have contributed to the recent rise of populism in the US and Europe. In advanced economies, it is indeed low skill workers who are most vulnerable to

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import competition, so policy responses usually focus on retraining. However, in developing and middle-income countries, trade shocks are likely to disproportionately harm more highly skilled workers. In such cases, additional training is no solution. On the contrary, it will make skilled workers displaced by imports even *less* employable in an economy increasingly specializing in low and medium skill intensive exports. Since the highly educated also tend to be the most politically sophisticated and active, governments in such countries come under pressure to respond with economically harmful, skill-biased protectionist measures.

To take one example, unemployment has recently surged among the highly educated in India. The unemployment rate among those with college degrees more than doubled between 2011 and 2016, forcing millions of new graduates to settle for menial jobs (Slater 2019). This followed sharp cuts in the country's tariff rates: the weighted average tariff on manufactured products fell from 25 percent in 2004 to 7 percent in 2013, according to World Bank data. Prime Minister Narendra Modi responded by re-introducing tariffs on a range of skill intensive imported goods, such as electronics components (Aiyar 2018). Despite his image as an economic liberal, he has embraced protectionism, favoring creation of "national champions" in high-tech industry. He pioneered "phased manufacturing programs," which "use import duties and informal political pressure" to get major electronics firms to produce advanced goods and components within India (Ibid). Modi's ratings among skilled Indians increased quite dramatically.[25] Although various factors may explain this, his protectionist response to trade threats likely contributed.

India does not appear to be an exception. In poorer democracies, one might expect unskilled workers to be politically dominant because of their voting power. Yet, trade policy often seems to favor the highly skilled, who lobby effectively for protections. Between 1978 and 2002, trade barriers against low skill goods

[25] Between 2013, the year before Modi first took office, and 2018, the last year of his first mandate, confidence in government among those with tertiary education rose by 27 percentage points, from 49 percent to 76 percent. Among the less educated, it rose by only 19 percentage points, from 60 percent to 79 percent (Gallup World Poll data).

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significantly decreased in a range of developing world democracies; at the same time, however, those against high skill goods remained constant or increased (Milner and Mukherjee 2013, p.3). Other countries with a noted high skill bias in protectionism include Brazil and South Africa.

Since 2000, gross tertiary enrolment in middle income countries has soared from 14 percent to 36 percent, according to the World Bank. Simultaneously, in many of them unemployment among people with advanced education has increased: from 2 to 7 percent in Brazil, 7 to 15 percent in India, 2 to 7 percent in Pakistan, and 6 to 12 percent in South Africa.[26] As skill levels rise across the developing world, the combination of free trade for low skill goods with protection for high skill jobs will continue to seem tempting to many leaders.

[26] World Bank data, accessed Feb 12, 2020 (https://data.worldbank.org/indicator/). Latest figures are for 2018.

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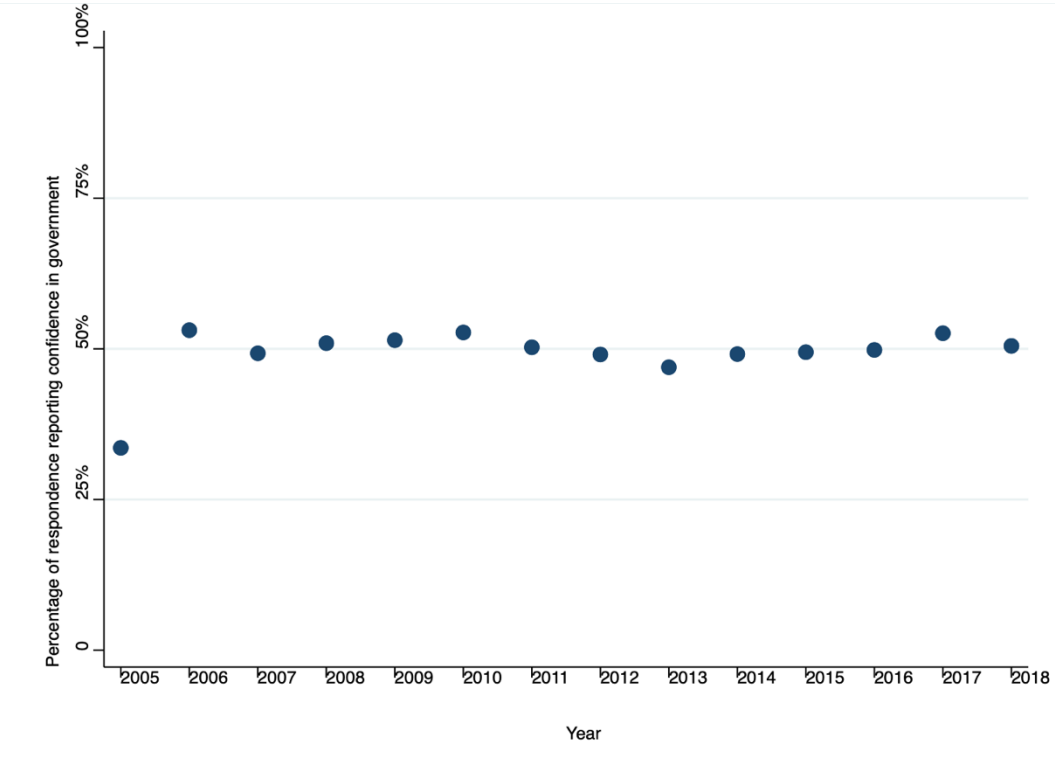
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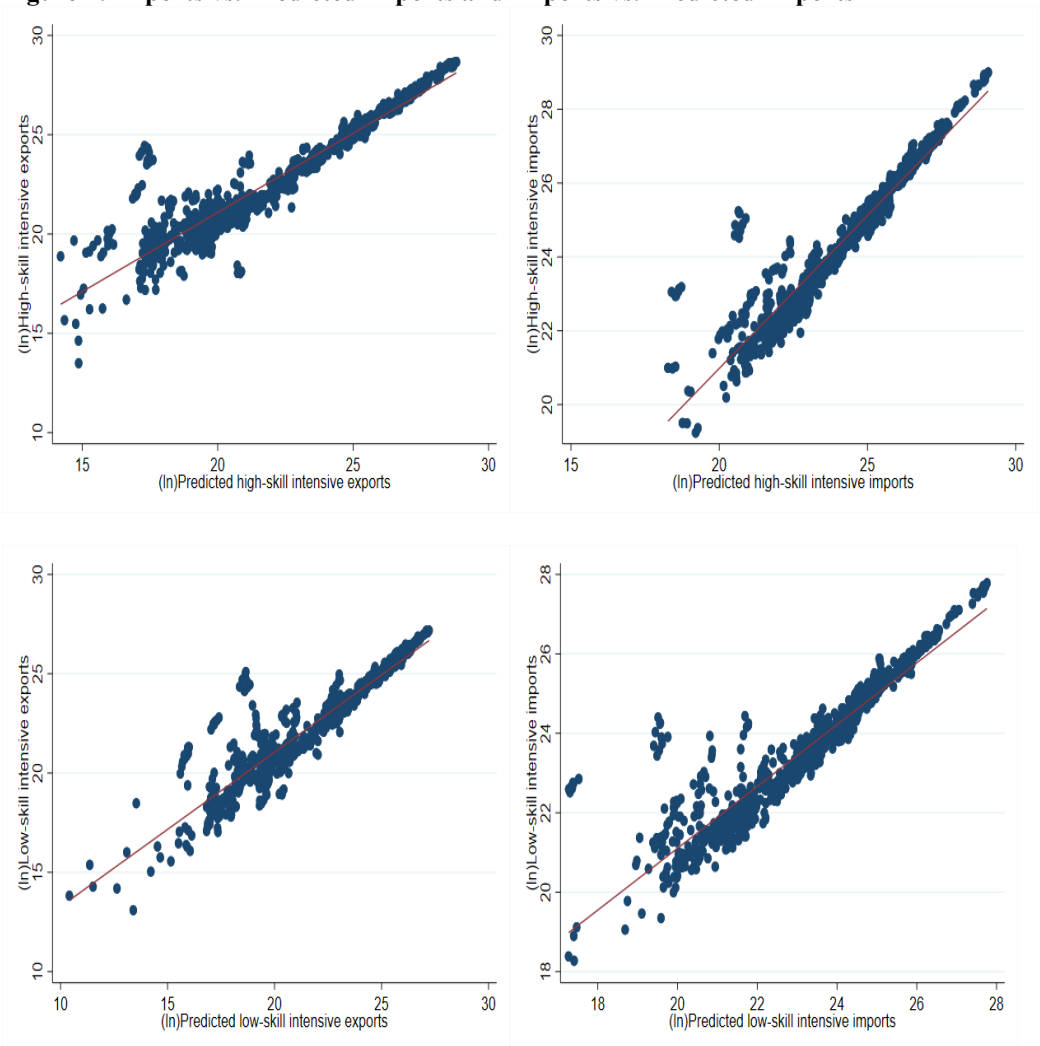
Figure 1: Trends in Confidence in Government



Source: Gallup World Polls, 2006-2018. Note: This figure includes all countries that were observed during at least 7 years of the sample. We further restrict the sample to observations used in the full-sample estimation. The data for 2005 in our estimation sample only include 6 countries (Australia, Brazil, Hungary, Iran, Poland, Romania).

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Figure 2: Exports vs. Predicted Exports and Imports vs. Predicted Imports



Notes: Each panel plots the actual value (y-axis) against the predicted value (x-axis), derived using the IV strategy introduced in Section 4.2. Each dot represents a country-year. Straight line: linear fit.

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Table 1: Sample Characteristics - 2005-2018 Gallup World Poll Data

Variables	(1) Mean (Standard deviation) [Average within-country standard deviation]
Dependent variables	
Confidence in national government	0.51 (0.50) [0.47]
International trade characteristics	
Ln (High Skill Intensive Exports)	23.53 (2.83) [0.28]
Ln (High Skill Intensive Imports)	24.63 (1.88) [0.18]
Ln (Low Skill Intensive Exports)	23.02 (2.47) [0.26]
Ln (Low Skill Intensive Imports)	23.67 (1.68) [0.21]
Individual level characteristics	
Age	42.21 (17.91)
Male	0.46 (0.50)
Tertiary education	0.16 (0.37)
Secondary education	0.52 (0.50)
Married/partnered	0.57 (0.50)
Urban	0.58 (0.49)
Number of observations	1074949

Notes: This table provides individual and aggregate level variables averaged across the 14 years (2005-2018) used in the analysis.

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Table 2: OLS Estimates with Aggregate Exports (Imports) and Tertiary Education Interactions

	(1) OLS	(2) OLS	(3) OLS	(4) OLS
Outcome: Confidence in government				
Log Total Exports	-0.002	-0.001		
	(0.009)	(0.009)		
TertiaryEducation*LogTotalExports			0.022***	0.023***
			(0.010)	(0.005)
No TertiaryEducation*LogTotalExports			-0.003	
			(0.005)	
Log Total Imports	0.105***	0.104***		
	(0.021)	(0.021)		
TertiaryEducation*LogTotalImports			0.091**	-0.014**
			(0.022)	(0.007)
No TertiaryEducation*LogTotalImports			0.105**	
			(0.021)	
Tertiary Education	-0.022***	-0.005	-0.259***	-0.231***
	(0.004)	(0.003)	(0.065)	(0.062)
R-squared	0.116	0.122	0.122	0.156
N	1074949	1074949	1074949	1074949
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes
Country*year fixed effects	No	No	No	Yes

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Demographic characteristics include: a male dummy, age and its square, dummy variables for marital status (married/civil partnership), and a dummy variable for living in a rural area. Results use the Gallup sampling weights; robust standard errors are clustered at the country-year level.

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Table 3: OLS Estimates with High-skill and Low-skill Intensive Exports (Imports) and Education Interactions

Outcome: Confidence in Government	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV
Log High Skill Exports	-0.017	-0.016			
	(0.011)	(0.011)			
No Tertiary*Log High Skill Exports			-0.019*		
			(0.011)		
Tertiary*Log High Skill Exports			0.011	0.029***	0.037***
			(0.012)	(0.005)	(0.005)
Log High Skill Imports	0.085***	0.084***			
	(0.031)	(0.031)			
No Tertiary*Log High Skill Imports			0.088***		
			(0.031)		
Tertiary*Log High Skill Imports			0.034	-0.055***	-0.069***
			(0.033)	(0.011)	(0.012)
Log Low Skill Exports	0.019	0.019			
	(0.012)	(0.012)			
No Tertiary*Log Low Skill Exports			0.019*	0.008	0.010*
			(0.012)	(0.005)	(0.006)
Tertiary*Log Low Skill Exports			0.012		
			(0.012)		
Log Low Skill Imports	0.024	0.023			
	(0.022)	(0.022)			
No Tertiary*Log Low Skill Imports			0.020	-0.044***	-0.050***
			(0.022)	(0.012)	(0.014)
Tertiary*Log Low Skill Imports			0.064**		
			(0.026)		
Tertiary education	-0.022***	-0.005	-0.254***	-0.214***	-0.112
	(0.004)	(0.003)	(0.070)	(0.065)	(0.076)
R-squared	0.116	0.122	0.123	0.156	0.008
N	1074949	1074949	1074949	1074949	1074949
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Demographic characteristics	No	Yes	Yes	Yes	Yes
Country*year fixed effects	No	No	No	Yes	Yes

Notes: * significant at 10%; ** 5%; *** 1%. Demographic controls, weights and clustering: same as in Table 2.

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Table 4: IV First Stage Results for Confidence in Government Outcome

Outcome ➔	(1) Tertiary* Log High Skill Exports	(2) Tertiary* Log High Skill Imports	(3) No Tertiary* Log Low Skill Exports	(4) No Tertiary* Log Low Skill Imports
Tertiary*Predicted Log High Skill Exports	0.702***	-0.129***	0.008	0.124***
	(0.048)	(0.034)	(0.051)	(0.035)
Tertiary* Predicted Log High Skill Imports	0.556***	1.373***	-0.326***	-0.491***
	(0.099)	(0.066)	(0.101)	(0.065)
No Tertiary*Predicted Log Low Skill Exports	-0.161***	-0.138***	0.815***	0.116***
	(0.052)	(0.035)	(0.067)	(0.036)
No Tertiary*Predicted Log Low Skill Imports	0.705***	0.585***	-0.453***	0.284***
	(0.126)	(0.093)	(0.127)	(0.097)
Tertiary Education	6.732***	7.740***	-7.581***	-5.411***
	(0.780)	(0.700)	(0.850)	(0.776)
Observations	1074949	1074949	1074949	1074949
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Demographic characteristics	Yes	Yes	Yes	Yes
Country*year fixed effects	Yes	Yes	Yes	Yes
First Stage F Statistic	1049.56	1489.12	539.84	750.83
Kleibergen-Paap F statistic for joint significance of the instruments for Column 5 of Table 3	143.44	143.44	143.44	143.44

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3. Results use the Gallup sampling weights and robust standard errors are clustered at the country level.

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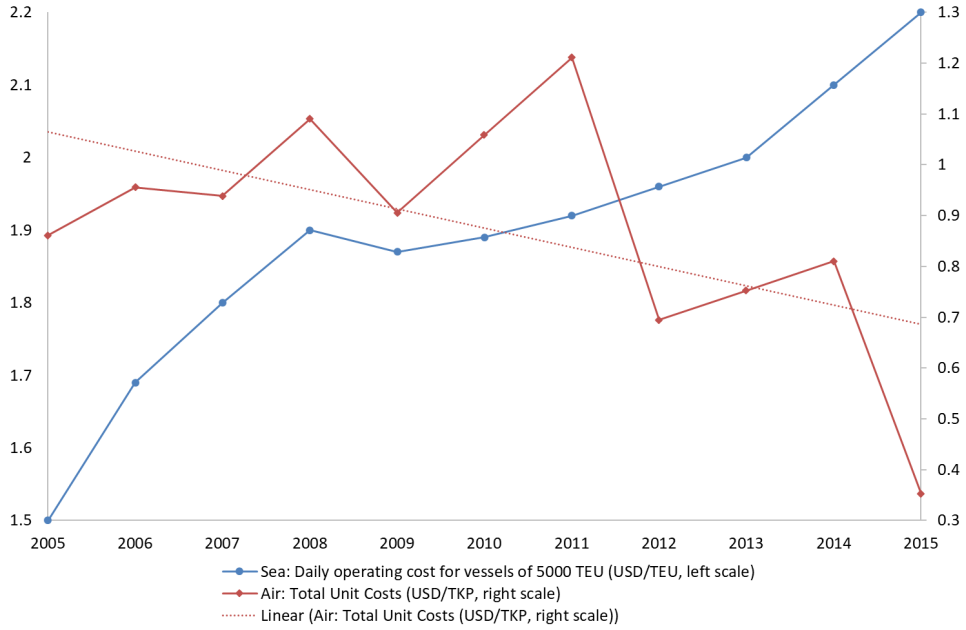
Table 5: Mechanisms

	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV
	Unemployed		Economic confidence index		Local economic conditions	
Tertiary*Log High Skill Exports	-0.004**	-0.006***	2.460***	1.654*	0.045***	0.034***
	(0.002)	(0.002)	(0.807)	(0.975)	(0.009)	(0.012)
Tertiary*Log High Skill Imports	0.005	0.014**	-7.187***	-5.922*	-0.110***	-0.075
	(0.004)	(0.005)	(2.738)	(3.556)	(0.033)	(0.049)
No Tertiary*Log Low Skill Exports	-0.007***	-0.007***	1.038	0.554	0.032***	0.022
	(0.002)	(0.002)	(0.983)	(1.126)	(0.011)	(0.013)
No Tertiary*Log Low Skill Imports	0.008	0.016***	-5.664*	-5.308	-0.101***	-0.074
	(0.005)	(0.006)	(3.010)	(3.982)	(0.036)	(0.054)
Tertiary education	-0.016	0.002	12.625	2.384	0.040	0.165
	(0.020)	(0.022)	(9.749)	(11.604)	(0.115)	(0.139)
Observations	918323	918323	767259	767259	784336	784336
Kleibergen-Paap rk Wald F Statistic		132		59		66

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3. A respondent is defined as unemployed if he/she reports not being employed in the last seven days, either for an employer or for himself or herself. The respondent must also report actively looking for a job in the past four weeks and being able to begin work in the last four weeks. Gallup's Economic Confidence Index is based on the combined responses to two questions asking respondents, first, to rate economic conditions in their country today (right now, do you think that economic conditions in this country, as a whole, are getting better or getting worse?), and second, whether they think economic conditions in their country as a whole are getting better or getting worse (how would you rate economic conditions in this country today -- as excellent, good, only fair, or poor?). The Index has a theoretical maximum value of +100 and a theoretical minimum value of -100. Values above zero indicate that a respondent has a more positive than a negative view of the economy, values below zero indicate net-negative views and zero indicates that positive and negative views are equal. Local economic conditions outcome measures the attitudes about a community's efforts to provide economic opportunities (right now, do you think that economic conditions in the city or area where you live, as a whole, are getting better or getting worse?). Responses to this question are recorded as dummy variables with one representing a positive answer and zero otherwise.

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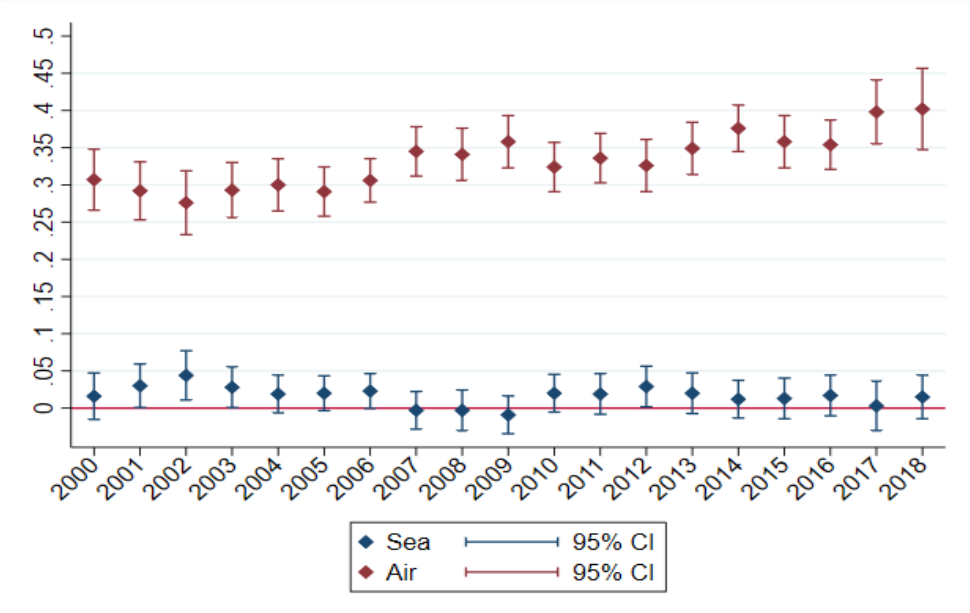
Appendix Figure 1: Change in Operating Cost for Aircrafts and Ships, 2005-2015



Source: Drewry, Murray (2016) and International Aviation Organization Database. Notes: Vessels operating costs often measured as the cost per Twenty-Foot Equivalent (TEU) per day and TEU is the standard unit for describing a ship's container carrying capacity. The graph above shows the average daily operating cost per TEU for vessels that can carry 5000 TEU. A tonne-km performed is a unit of measure of freight transport, which represents the transport of one tonne of goods by air, over a distance of one kilometre. The straight line is a linear time trend for the total unit cost of air transportation.

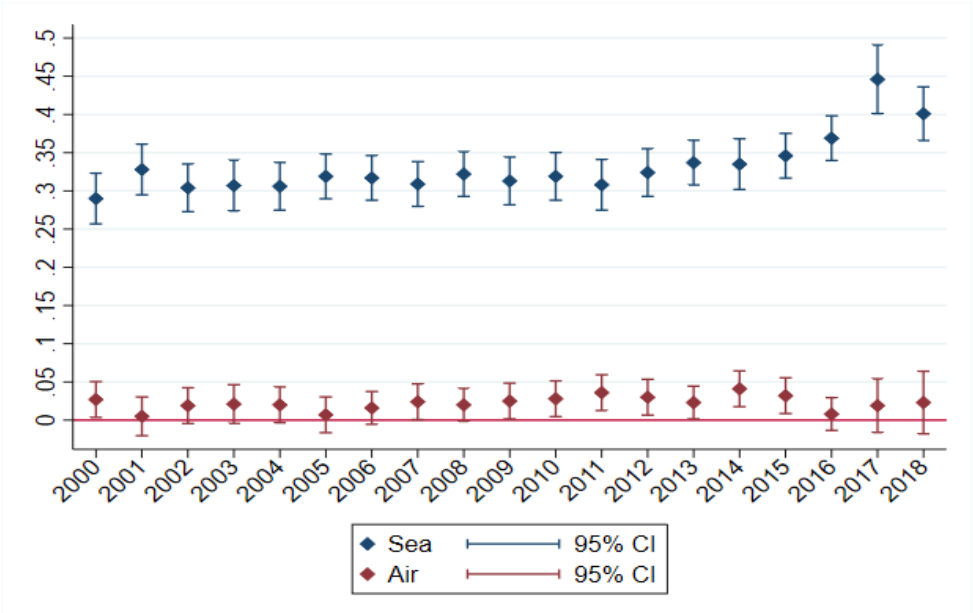
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Appendix Figure 2: Yearly Elasticity of Trade Costs (CIF-FOB) for High Skill Intensive Trade



Notes: Point estimates of coefficients $\alpha_{s,t}$ and $\alpha_{a,t}$ at sea and air distance in the equation (2) for each year.

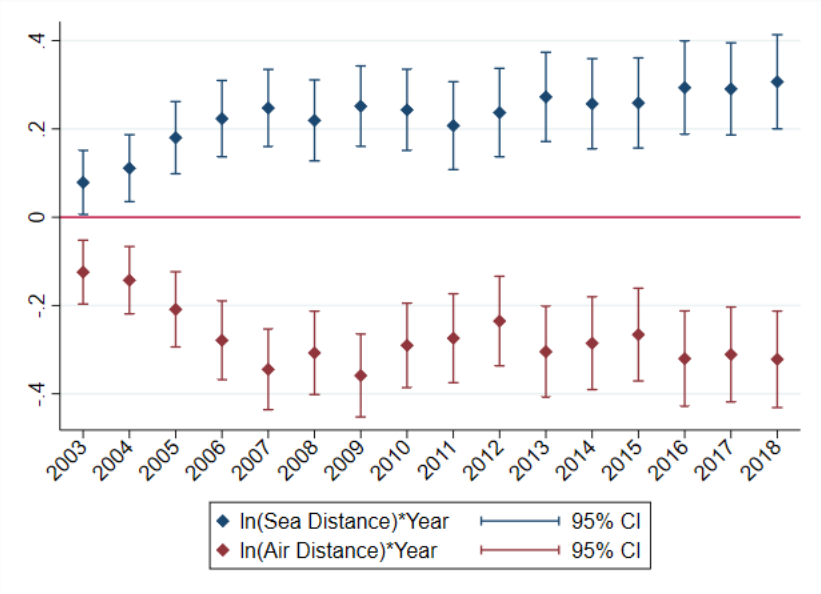
Appendix Figure 3: Yearly Elasticity of Trade Costs (CIF-FOB) for Medium + Low Skill Intensive Trade



Notes: Point estimates of coefficients $\alpha_{s,t}$ and $\alpha_{a,t}$ at sea and air distance in the equation (2) for each year.

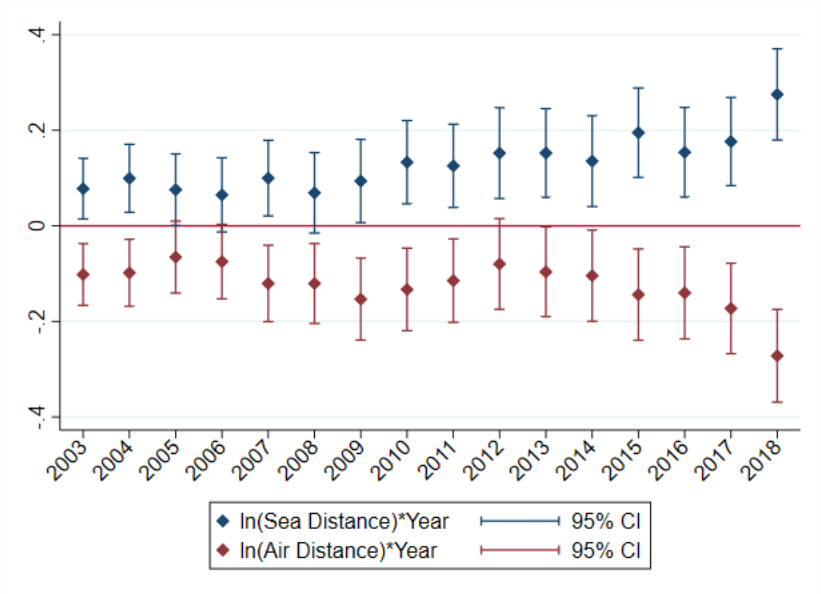
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Appendix Figure 4: Yearly Elasticity of Trade Flows for High Skill Intensive Exports



Notes: Point estimates of coefficients $\beta_{sea,t}$ and $\beta_{air,t}$ on the sea and air distances in the equation (3) for high skill intensive exports.

Appendix Figure 5: Yearly Elasticity of Medium + Low Skill Intensive Exports



Notes: Point estimates of coefficients $\beta_{sea,t}$ and $\beta_{air,t}$ on the sea and air distances in the equation (3) for low skill intensive exports.

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Appendix Table 1: Estimates from Table 3, Columns 4 and 5, Showing Coefficients on Controls

	(4) OLS	(5) IV
Outcome is ➔	Confidence in Government	Confidence in Government
Tertiary*Log High Skill Exports	0.029***	0.037***
	(0.005)	(0.005)
Tertiary*Log High Skill Imports	-0.055***	-0.069***
	(0.011)	(0.012)
No Tertiary*Log Low Skill Exports	0.008	0.010*
	(0.005)	(0.006)
No Tertiary*Log Low Skill Imports	-0.044***	-0.050***
	(0.012)	(0.014)
Tertiary Education	-0.214***	-0.112**
	(0.065)	(0.076)
Male	-0.009***	-0.009***
	(0.002)	(0.002)
Age	-0.006***	-0.007***
	(0.000)	(0.000)
Age-squared	0.000***	0.000***
	(0.000)	(0.000)
Married/CP	0.022***	0.023***
	(0.002)	(0.002)
Rural	0.042***	0.043***
	(0.003)	(0.003)
Country fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Country*year fixed effects	Yes	Yes
N	1074949	1074949
Kleibergen-Paap F statistic		143

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3.

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Appendix Table 2: Approval of the leader

	(2) OLS	(1) IV
Outcome is ➔	Approval of the leader	Approval of the leader
Tertiary*Log High Skill Exports	0.023***	0.028***
	(0.005)	(0.005)
Tertiary*Log High Skill Imports	-0.046***	-0.051***
	(0.011)	(0.013)
No Tertiary*Log Low Skill Exports	-0.004	-0.002
	(0.005)	(0.006)
No Tertiary*Log Low Skill Imports	-0.023**	-0.022
	(0.011)	(0.014)
Tertiary Education	-0.044	0.031
	(0.064)	(0.071)
Country fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Country*year fixed effects	Yes	Yes
N	950400	950400
Kleibergen-Paap F statistic	--	136

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3.

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Appendix Table 3: IV Estimates with Alternative Skill Definition (Secondary education or above)

	(1) OLS	(2) IV
Outcome: Confidence in Government		
Secondary or Tertiary*LogHighSkillIntensiveExports	0.013***	0.013***
	(0.003)	(0.004)
Secondary or Tertiary *LogHighSkillIntensiveImports	-0.015**	-0.018*
	(0.007)	(0.009)
Elementary*LogLowSkillIntensiveExports	-0.002	0.001
	(0.003)	(0.004)
Elementary*LogLowSkillIntensiveImports	0.004	-0.011
	(0.008)	(0.012)
Secondary or Tertiary	-0.117**	-0.161**
	(0.053)	(0.073)
N	1074949	1074949
Kleibergen-Paap F statistic	--	40

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3.

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Appendix Table 4: IV Estimates with High-skill Trade and Secondary and Tertiary Education Interactions

Outcome is ➔	(1) OLS Confidence in Government	(2) IV Confidence in Government
SecondaryEducation*LogHighSkillIntensiveExports	0.009***	0.009**
	(0.003)	(0.004)
TertiaryEducation*LogHighSkillIntensiveExports	0.032***	0.039***
	(0.005)	(0.006)
SecondaryEducation*LogHighSkillIntensiveImports	-0.008	-0.008
	(0.007)	(0.009)
TertiaryEducation*LogHighSkillIntensiveImports	-0.058***	-0.073***
	(0.013)	(0.015)
SecondaryEducation*LogLowSkillIntensiveExports	0.004	0.001
	(0.003)	(0.003)
TertiaryEducation*LogLowSkillIntensiveExports	-0.002	-0.005
	(0.006)	(0.007)
SecondaryEducation*LogLowSkillIntensiveImports	-0.003	0.002
	(0.008)	(0.011)
TertiaryEducation*LogLowSkillIntensiveImports	0.038***	0.048***
	(0.014)	(0.018)
Tertiary Education	-0.227***	-0.170*
	(0.084)	(0.102)
Secondary Education	-0.088*	-0.137*
	(0.051)	(0.072)
N	1074949	1074949
Kleibergen-Paap F statistic		20

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3.

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Appendix Table 5: Robustness to Excluding Sub-Periods.

	(1) IV	(2) IV	(3) IV	(4) IV	(5) IV
Outcome ➔ Confidence in Government	Excl. 2005-2007	Excl. 2008-2010	Excl. 2009-2011	Excl. 2012-2015	Excl. 2016-2018
TertiaryEducation*LogHighSkillIntensiveExports	0.039***	0.040***	0.037***	0.032**	0.036**
	(0.005)	(0.006)	(0.006)	(0.007)	(0.006)
TertiaryEducation*LogHighSkillIntensiveImports	-0.071***	-0.073***	-0.074***	-0.064***	-0.067***
	(0.013)	(0.014)	(0.014)	(0.015)	(0.015)
Less than tertiary*LogLowSkillIntensiveExports	0.012**	0.012*	0.013*	0.005	0.012*
	(0.006)	(0.007)	(0.007)	(0.008)	(0.007)
Less than tertiary*LogLowSkillIntensiveImports	-0.050***	-0.052***	-0.057***	-0.046***	-0.048***
	(0.015)	(0.063)	(0.017)	(0.016)	(0.017)
Tertiary Education	-0.097	-0.098	-0.139	-0.159*	-0.081
	(0.079)	(0.089)	(0.093)	(0.093)	(0.086)
KP First Stage F-Stat	158	94	88	143	97
N	1007231	858817	827034	667618	787010
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Demographic characteristics	Yes	Yes	Yes	Yes	Yes
Country*year fixed effects	Yes	Yes	Yes	Yes	Yes

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Table 3.

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Appendix Table 6: IV Estimates - Sub-sample Analysis by Country Political Regime

Sample ➔	(1) OLS Democracies (average Polity2 > 5)	(2) IV Democracies (average Polity2 > 5)	(3) OLS Non-democracies (average Polity2 ≤5)	(4) IV Non-democracies (average Polity2 ≤5)
Outcome: Confidence in Government				
Tertiary*Log High Skill Exports	0.021***	0.030***	0.028***	0.028***
	(0.005)	(0.006)	(0.007)	(0.009)
Tertiary*Log High Skill Imports	-0.054***	-0.067***	-0.001	0.016
	(0.012)	(0.015)	(0.018)	(0.023)
No Tertiary*Log Low Skill Exports	0.002	0.005	0.026***	0.021*
	(0.005)	(0.007)	(0.010)	(0.012)
No Tertiary*Log Low Skill Imports	-0.050***	-0.052***	-0.004	0.021
	(0.013)	(0.016)	(0.023)	(0.028)
Tertiary Education	-0.316***	-0.179**	-0.209*	-0.130
	(0.073)	(0.082)	(0.116)	(0.133)
N	792049	792049	254274	254274
Kleibergen-Paap F statistic		65		38

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Columns 4 and 5 of Table 3.

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Appendix Table 7: IV Estimates - Sub-sample Analysis by Gender and Age

	(1) IV Male	(2) IV Female	(3) IV 18-37	(4) IV 38-64
Outcome: Confidence in Government				
Tertiary*Log High Skill Exports	0.041***	0.032***	0.031***	0.041***
	(0.006)	(0.006)	(0.006)	(0.007)
Tertiary*Log High Skill Imports	-0.085***	-0.050***	-0.043***	-0.097***
	(0.014)	(0.014)	(0.014)	(0.015)
No Tertiary*Log Low Skill Exports	0.015**	0.005	0.014**	0.009
	(0.006)	(0.007)	(0.006)	(0.008)
No Tertiary*Log Low Skill Imports	-0.065***	-0.029*	-0.035**	-0.073***
	(0.016)	(0.016)	(0.017)	(0.017)
Tertiary Education	-0.073	-0.117	-0.202***	-0.100
	(0.092)	(0.078)	(0.094)	(0.086)
N	496366	578583	435717	435681
Kleibergen-Paap F statistic	147	141	91	212

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3.

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Appendix Table 7: IV Estimates - Sub-sample Analysis by Urbanization and Household Income

Sample ➔	(1) IV Urban	(2) IV Rural	(3) IV Below median income HH	(4) IV Above median Income HH
Outcome: Confidence in Government				
Tertiary*Log High Skill Exports	0.032***	0.033***	0.037***	0.033***
	(0.005)	(0.007)	(0.006)	(0.005)
Tertiary*Log High Skill Imports	-0.053***	-0.065***	-0.073***	-0.044***
	(0.013)	(0.017)	(0.017)	(0.012)
No Tertiary*Log Low Skill Exports	0.011*	0.007	0.008	0.008
	(0.006)	(0.007)	(0.008)	(0.006)
No Tertiary*Log Low Skill Imports	-0.037**	-0.042**	-0.053***	-0.024*
	(0.015)	(0.018)	(0.019)	(0.014)
Tertiary Education	-0.084	-0.041	-0.170*	-0.084
	(0.082)	(0.090)	(0.089)	(0.079)
N	451474	623474	512902	482264
Kleibergen-Paap F statistic	242	76	122	107

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3.

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Appendix Table 8: IV Estimates - Countries with Positive and Negative Net High-skill Exports and Imports

	(1) IV	(2) IV
Sample is ➔	Net exporters	Net importers
Outcome: Confidence in Government		
Tertiary*Log High Skill Exports	0.020	0.031***
	(0.025)	(0.006)
Tertiary*Log High Skill Imports	-0.016	-0.076***
	(0.043)	(0.014)
No Tertiary*Log Low Skill Exports	-0.024	0.012*
	(0.040)	(0.006)
No Tertiary*Log Low Skill Imports	0.015	-0.064***
	(0.062)	(0.017)
Tertiary Education	-0.315*	-0.117
	(0.171)	(0.090)
N	212004	862945
Kleibergen-Paap F statistic	72	66

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3. Net exporters refer to the countries where exports are greater than imports (using averages over the sample period). Net importers refer to the countries where imports are greater than imports (using averages over the sample period).

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Appendix Table 10: OLS Estimates – Non-linearities

	(1)
Tertiary*Log High Skill Exports*0-25%	0.0294***
	(0.0051)
Tertiary*Log High Skill Exports*25-50%	0.0290***
	(0.0050)
Tertiary*Log High Skill Exports*50-75%	0.0289***
	(0.0050)
Tertiary*Log High Skill Exports*75-100%	0.0288***
	(0.0051)
Tertiary*Log High Skill Imports*0-25%	-0.0495***
	(0.0112)
Tertiary*Log High Skill Imports*25-50%	-0.0490***
	(0.0112)
Tertiary*Log High Skill Imports*50-75%	-0.0492***
	(0.0112)
Tertiary*Log High Skill Imports*75-100%	-0.0493***
	(0.0112)
No Tertiary*Log Low Skill Exports*0-25%	0.0067
	(0.0055)
No Tertiary*Log Low Skill Exports*25-50%	0.0064
	(0.0055)
No Tertiary*Log Low Skill Exports*50-75%	0.0061
	(0.0055)
No Tertiary*Log Low Skill Exports*75-100%	0.0061
	(0.0055)
No Tertiary*Log Low Skill Imports*0-25%	-0.0382***
	(0.0122)
No Tertiary*Log Low Skill Imports*25-50%	-0.0369***
	(0.0122)
No Tertiary*Log Low Skill Imports*50-75%	-0.0374***
	(0.0122)
No Tertiary*Log Low Skill Imports*75-100%	-0.0370***
	(0.0123)
Tertiary education	-0.2253***
	(0.0690)
Observations	865891

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. For details on control variables, see notes to Column 4 of Table 3. To explore non-linearities, we divide the variables Tertiary*Log High Skill Exports (Imports) into four variables: Tertiary*Log High Skill Exports*(Dummy if in Bottom 25% High Skill Export shock), Tertiary*Log High Skill Exports*(Dummy if in 25% to 50% High Skill Export shock), Tertiary*Log High Skill Exports*(Dummy if in 50% to 75% High Skill Export shock), Tertiary*Log High Skill Exports*(Dummy if in Top 75% High Skill Export shock). The same applies to the No Tertiary*Log Low Skill Exports (Imports) variables.

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Appendix Table 11: Classification of High-Skill Intensive Goods (SITC Rev. 3)

TDRE1	**High-skill: Electronics (excluding parts and components)**
751	Office machines
752	Automatic data processing machines, n.e.s.
761	Television receivers, whether or not combined
762	Radio-broadcast receivers, whether or not combined
763	Sound recorders or reproducers
TDRE2	**High-skill: Parts and components for electrical and electronic goods**
759	Parts, accessories for machines of groups 751, 752
764	Telecommunication equipment, n.e.s.; & parts, n.e.s.
776	Cathode valves & tubes
TDRE3	**High-skill: Other, excluding electronics**
511	Hydrocarbons, n.e.s., & halogenated, nitr. derivative
512	Alcohols, phenols, halogenat., sulfonat., nitrat. der.
513	Carboxylic acids, anhydrides, halides, per.; derivati.
514	Nitrogen-function compounds
515	Organo-inorganic, heterocycl. compounds, nucl. acids
516	Other organic chemicals
522	Inorganic chemical elements, oxides & halogen salts
523	Metallic salts & peroxysalts, of inorganic acids
524	Other inorganic chemicals
525	Radio-actives and associated materials
531	Synth. organic colouring matter & colouring lakes
532	Dyeing & tanning extracts, synth. tanning materials
533	Pigments, paints, varnishes and related materials
541	Medicinal and pharmaceutical products, excluding 542
542	Medicaments (incl. veterinary medicaments)
551	Essential oils, perfume & flavour materials
553	Perfumery, cosmetics or toilet prepar. (excluding soaps)
554	Soaps, cleansing and polishing preparations
562	Fertilizers (other than those of group 272)
571	Polymers of ethylene, in primary forms
572	Polymers of styrene, in primary forms
573	Polymers of vinyl chloride or halogenated olefins
574	Polyethers, epoxide resins; polycarbonat., polyesters
575	Other plastics, in primary forms
579	Waste, parings and scrap, of plastics

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581	Tubes, pipes and hoses of plastics
582	Plates, sheets, films, foil & strip, of plastics
583	Monofilaments, of plastics, cross-section > 1mm
591	Insectides & similar products, for retail sale
592	Starche, wheat gluten; albuminoidal substances; glues
593	Explosives and pyrotechnic products
597	Prepared addit. for miner. oils; lubricat., de-icing
598	Miscellaneous chemical products, n.e.s.
792	Aircraft & associated equipment; spacecraft, etc.
871	Optical instruments & apparatus, n.e.s.
872	Instruments & appliances, n.e.s., for medical, etc.
873	Meters & counters, n.e.s.
874	Measuring, analysing & controlling apparatus, n.e.s.
881	Photographic apparatus & equipment, n.e.s.
882	Cinematographic & photographic supplies
883	Cinematograph films, exposed & developed
884	Optical goods, n.e.s.
885	Watches & clocks
891	Arms & ammunition
892	Printed matter
896	Works of art, collectors' pieces & antiques
897	Jewellery & articles of precious materia., n.e.s.
898	Musical instruments, parts; records, tapes & similar

Note: The Standard International Trade Classification (SITC) is a statistical classification of the commodities entering external trade, which is provided by UNCTADstat. The current international standard is the SITC, Revision 3.

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Appendix Table 12: Classification of High-Knowledge Intensive Services

ISIC Code	EBOPS Code	Service Industry
642	247	Telecommunications services
65	260	Financial services
66	253, 254, 255, 256, 257, 258	Insurance services Life insurance and pension funding Freight insurance Other direct insurance Reinsurance Auxiliary services
72	263	Computer services
73	279	Research and development
74	275, 276, 277, 278, 280, 284	Legal services Business and management consulting and public relations services Accounting, auditing, bookkeeping, and tax consulting services Advertising, market research, and public opinion polling Architectural, engineering, and other technical services Other business service

Notes: EBOPS data from UN COMTRADE do not classify exports and imports of services by skills. Therefore, we use ISIC-EBOPS conversion tables to identify "high-knowledge intensive services" using the definitions provided by the United Nations Manual on Statistics of International Trade in Services (2002).

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