

EXPORTING THE SURVEILLANCE STATE VIA TRADE IN AI

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- ▶ Undermine democracy / Enhance autocrat power / Empower surveillance capitalists
(Acemoglu, 2021, Tirole 2021, Zuboff, 2019)
- ▶ **In China**, access to gov't data and gov't demand of **facial recognition AI for surveillance** has stimulated innovation and enhanced the regime's stability
(Beraja et al., 2022; 2023)

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3. **Autocracies and weak democracies** are **especially** more likely to import facial recog. AI from **China** in years when they experience **domestic unrest**

These imports coincide with the erosion of domestic political institutional quality more broadly

1. Global trade in facial recognition AI from 2008 to 2021

1.1 Trade deals from the bibliography of “Carnegie report” (Feldstein, 2019)

- ▶ International procurement of **AI surveillance tech by governments** (1,300 citations, 75 countries)
- ▶ Identify key variables with Stanza: exporting / importing countries, year of the deal, **exporting firm**, and whether smart city. Then, human verifies that entries are indeed AI trade deals

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In all, 1,636 AI trade deals from 36 exporting countries to 136 importing countries

- ▶ Example 1: *“Yanbu: A Smart Industrial Oil Kingdom City — Huawei case studies,”*
- ▶ Example 2: *“Microsoft’s Smart Government Summit sparks dialogue to shape Kuwait’s Smart transformation”*

2. Trade in other frontier technologies and country characteristics

- ▶ UN Comtrade database: trade volume in **16 SITC codes related to 10 techs.** in the OECD's "Science, Technology and Innovation Outlook" (Robotics, genomics, neuroscience, ...)
- ▶ Helpman et al (2008): distance between countries, common border, free trade agreement, colonial history, legal system, language, or religion
- ▶ GDP (World Bank), AI investment (Netbase Quid), **regime type** (Polity IV Project)

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3. Political unrest

- ▶ GDELT project: **unrest events** from a global, comprehensive set of news feeds
- ▶ E.g., *"Laos: Police arrests 8 activists planning to stage protests to condemn land grabs and dam projects, later releases 6 of them"*

FACT 1: CHINA'S COMPARATIVE ADVANTAGE IN FACIAL RECOGNITION AI



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Empirical strategy

► Linear probability model

$$\text{trade}_{ijs} = \beta_1 \mathbf{1}_{i=\text{China}} + \beta_2 \mathbf{1}_{s=\text{AI}} + \beta_3 \mathbf{1}_{i=\text{China}, s=\text{AI}} + X_{ij} + u_{ijs}$$

- Obs. at country-pair by sector level
- $\mathbf{1}_{i=\text{China}, s=\text{AI}}$: Export link when exporter is China and sector is AI
- X_{ij} : import/exporter GDP, distance, ...
- SE's clustered at exporter level



FACT 1: CHINA'S COMPARATIVE ADVANTAGE IN FACIAL RECOGNITION AI

Table 2: China vs. rest of world, AI vs. frontier technologies

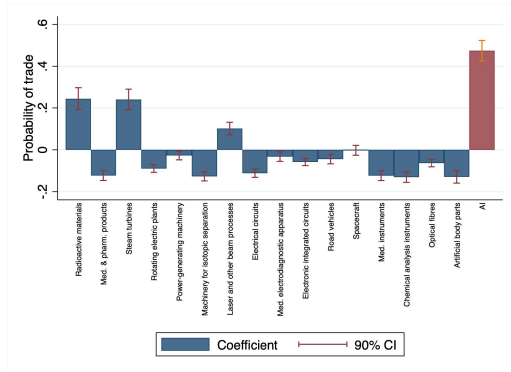
	<i>Engage in trade</i>			
	(1)	(2)	(3)	(4)
Origin China	-0.026 (0.024)	-0.026 (0.024)	-0.012 (0.025)	-0.026 (0.024)
AI	-0.356*** (0.010)	-0.357*** (0.010)	-0.355*** (0.010)	-0.355*** (0.010)
Origin China X AI	0.474*** (0.030)	0.475*** (0.030)	0.461*** (0.030)	0.475*** (0.030)
N	402300	402300	402300	402300
Log importer/exporter GDP	Yes	Yes	Yes	Yes
Log distance	Yes	Yes	Yes	Yes
Border/trade characteristics	No	Yes	No	No
Institutional characteristics	No	No	Yes	No
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Figure 1: China vs. RoW, frontier tech exports

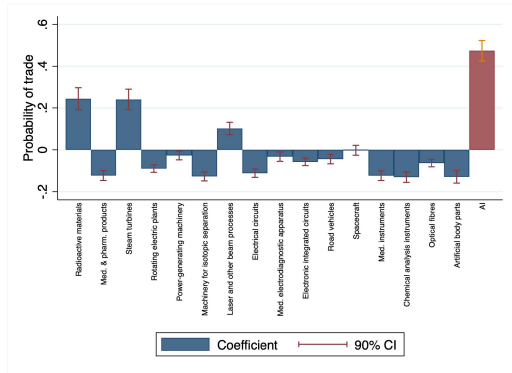


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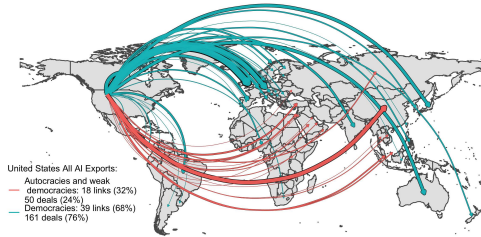
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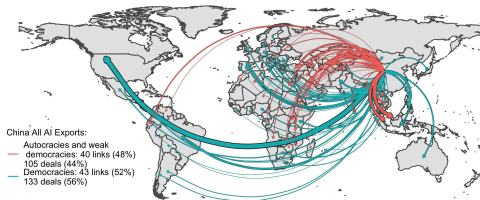
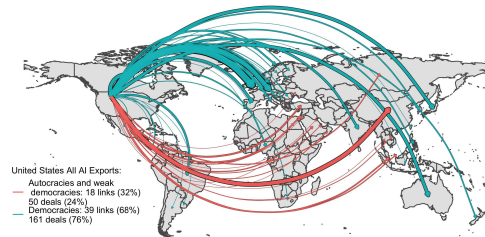
1. Gov't demand of surveillance AI, a form of "home-market" effect (Linder, 1961)?
2. Firm access to **gov't data** (Beraja et al., 2022) or explicit industrial policy (Liu, 2019)?

FACT 2: AUTOCRACIES AND WEAK DEM'S ARE MORE LIKELY TO IMPORT AI FROM CHINA



Democracies: Polity Score 7 or greater, Autocracies and weak democracies: Polity Score below 7

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Empirical strategy

► Linear probability model

$$\begin{aligned} trade_{i=China,js} = & \beta_0 + \beta_1 \mathbf{1}_{j=\text{low Polity Score}} \\ & + \beta_2 \mathbf{1}_{s=AI} \\ & + \beta_3 \mathbf{1}_{j=\text{low Polity Score}, s=AI} \\ & + X_{i=China,j} + u_{i=China,js} \end{aligned}$$

- Obs. at importer by sector level. Only consider imports from China
- $\beta_3 \mathbf{1}_{j=\text{low Polity Score}, s=AI}$: Export link when importer has a low Polity score and sector is AI
- SE's clustered at importer level

FACT 2: AUTOCRACIES AND WEAK DEM'S ARE MORE LIKELY TO IMPORT AI FROM CHINA

	China exports			
	(1)	(2)	(3)	(4)
<i>Panel A: effect by regime type</i>				
Autocracy and weak democracy	-0.004 (0.003)	-0.003 (0.003)	-0.003 (0.005)	0.000 (0.003)
AI	-0.600*** (0.097)	-0.597*** (0.101)	-0.560 (0.794)	-0.601*** (0.096)
Autocracy and weak democracy X AI	0.222** (0.103)	0.266** (0.102)	0.223* (0.121)	0.231** (0.108)

FACT 2: AUTOCRACIES AND WEAK DEM'S ARE MORE LIKELY TO IMPORT AI FROM CHINA

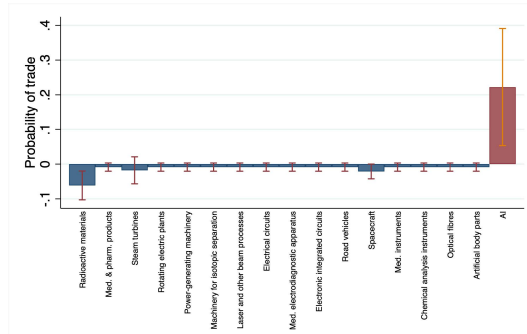
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	<i>US exports</i>			
	(5)	(6)	(7)	(8)
Autocracy and weak democracy	-0.003 (0.004)	-0.002 (0.005)	0.002 (0.005)	-0.002 (0.004)
AI	-0.727*** (0.062)	-0.726*** (0.062)	-0.734*** (0.065)	-0.732*** (0.060)
Autocracy and weak democracy X AI	-0.015 (0.077)	-0.032 (0.077)	0.001 (0.081)	-0.031 (0.080)

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Figure 2: Bias in tech imports from China



FACT 3: AUTOCRACIES AND WEAK DEM'S ARE ESPECIALLY MORE LIKELY TO IMPORT AI FROM CHINA IN YEARS WHEN THEY EXPERIENCE DOMESTIC UNREST

Empirical strategy

► Event study

$$\text{trade}_{i=\text{China},s=\text{AI},jt} = \sum_{h=t-2}^{t+2} \beta_{1h} \text{unrest}_{jt} + \alpha_t + \gamma_j + u_{jt}$$

- unrest at t in importing country j when AI trade deal is observed
- time (α_t), importer (γ_j) fixed effects

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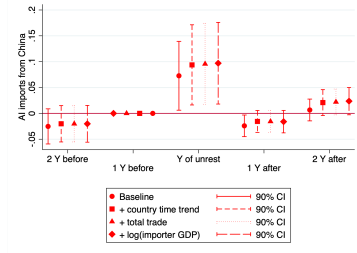
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Panel A: autocracies and weak democracies



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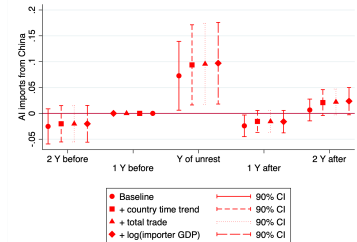
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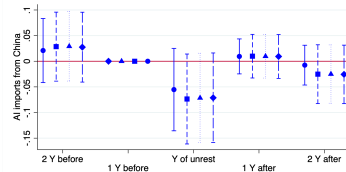
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► Figure: AI vs. frontier tech

Panel A: autocracies and weak democracies



Panel B: mature democracies



BROADER IMPLICATIONS

1. Bias in AI imports from **China** (facts 2 and 3) reflects in part higher demand in **autocracies and weak democracies** for **surveillance** tech.

INSTITUTIONAL QUALITY AFTER AI IMPORTS AND UNREST

	<i>Political institutional quality</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: imports by autocracies and weak democracies</i>					
AI imports during high unrest	-0.556*** (0.209)	-0.688*** (0.224)	-0.687*** (0.217)	-0.704*** (0.210)	-0.526** (0.209)
N	46	46	46	46	46

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<i>Panel B: imports by mature democracies</i>					
AI imports during high unrest	0.091*** (0.026)	-0.094 (0.097)	-0.157 (0.240)	0.060 (0.196)	0.289 (0.255)
N	45	45	45	45	45

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N	45	45	45	45	45
<i>Panel C: exports by the US to autocracies and weak democracies</i>					
AI imports during high unrest	-0.671* (0.360)	-0.675 (0.519)	-0.676 (0.580)	-0.680 (0.576)	-0.540 (0.335)
N	46	46	46	46	46
Total AI	No	Yes	Yes	Yes	Yes
Total unrest	No	No	Yes	Yes	Yes
Total trade	No	No	No	Yes	Yes
Log importer GDP	No	No	No	No	Yes

BROADER IMPLICATIONS

1. Bias in AI imports from **China** (facts 2 and 3) reflects in part higher demand in **autocracies and weak democracies** for surveillance tech.
2. To the extent that **China** may be exporting its **surveillance state** via trade in AI, the rise of **China** as a tech leader may **enhance and beget** more **autocracies** abroad.

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3. More generally, the facts challenge the **conventional view** that economic integration is necessarily associated with the **diffusion of liberal institutions**.

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3. More generally, the facts challenge the **conventional view** that economic integration is necessarily associated with the **diffusion of liberal institutions**.
4. Regulating AI trade: products with global externalities (produced using unethically sourced inputs; generating negative consumption externalities; dual-use).

Thank you!

Yanbu: A Smart Industrial Oil Kingdom City



In recent years, falling global oil prices have created challenging opportunity for Saudi Arabia to move towards renewable energy and opening new investments projects that will support the economy since oil generates about 70 percent of the country's revenue. As such, Saudi Arabia announced its new transformation program called 'Vision 2030' in April 2016. This ambitious yet achievable blueprint has clarified the goals of developing cities, achieving environmental sustainability, improving digital infrastructures, and expanding the variety of digital services. In particular, this new initiative recognizes the significance of expanding industrial clusters and attracting more high value-added investments — as feasible ways to build up national competitiveness. In line with Saudi Arabia's vision, the Smart Yanbu Industrial City project has started to build upon the hopes of Saudi Arabian citizens for transformation.

Microsoft's Smart Government Summit sparks dialogue to shape Kuwait's Smart transformation

June 6, 2022 | Microsoft News Center



AI VS. OTHER FRONTIER TECHNOLOGIES, IMPORT DURING UNREST

