Evaluating the Effects of Non-Tariff Measures on Poultry Trade

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Non-tariff measures (NTMs) and trade flows

- NTMs are policy measures **other than ordinary customs tariffs** that may affect the quantities and value of international trade flows (UNCTAD 2022)

- For agriculture, several categories of NTMs represent significant barriers to trade
  - Tariff rate quotas (TRQs), Sanitary and phytosanitary (SPS) measures, Technical barriers to trade (TBTs), Special safeguards (SS)

- World Bank Group (2020) simulate that AfCFTA may result in a decline in NTM rates of approximately 17 percentage points in agriculture

Effects of NTMs on trade may vary based on product and measure

- Generally, NTMs are viewed as barriers to trade
  - Can create significant information and compliance costs for exporters
  - SPS and TBT measures may prevent products from entering the market

- Some types of NTMs may be trade enhancing
  - Compliance with SPS measures can send a positive signal to consumers (Cadot et al. 2018)
  - Labeling and packaging can also be low-cost signals of product quality (Groudon et al. 2020)

Important to understand NTM effects across products and markets

Why poultry?

- Poultry is expected to remain the largest imported livestock product by volume over the next decade (Miller et al. 2022)
  - 17.5 million metric tons global imports projected in 2031
  - sub-Saharan Africa projected to remain top global importer

- Poultry trade is affected by a wide variety of NTMs
  - EU poultry SPS/TBT NTMs estimated to have a similar effect on U.S. poultry exports as a 95-102 percent tariff (Arita et al. 2015)
  - Bilateral barriers also exist (e.g. South Africa) (Cochrane et al. 2016)

- Overlap of demand and ongoing trade negotiations (AfCFTA)

How do different NTMs affect the value of poultry trade?

- Provide estimates of the effects of four different types of nondiscriminatory NTMs on global poultry trade using a gravity model approach

- Investigate whether and to what extent effects vary based on WTO notifications of NTM initiation or NTMs placed in force

- Check for regional heterogeneity in NTM notification effects

We use bilateral trade data for eight poultry products

- Value of annual poultry trade from Trade Data Monitor
  - 93 importers
  - 211 exporters

- Include eight poultry-related HS codes for fresh and frozen poultry meat: 020711-14; 32-33; 35-36

- Mirroring process to fill in missing import values with partner exports

Value of poultry trade by region in 2019

Value, U.S. dollars (billion) — Region

Imports
Exports
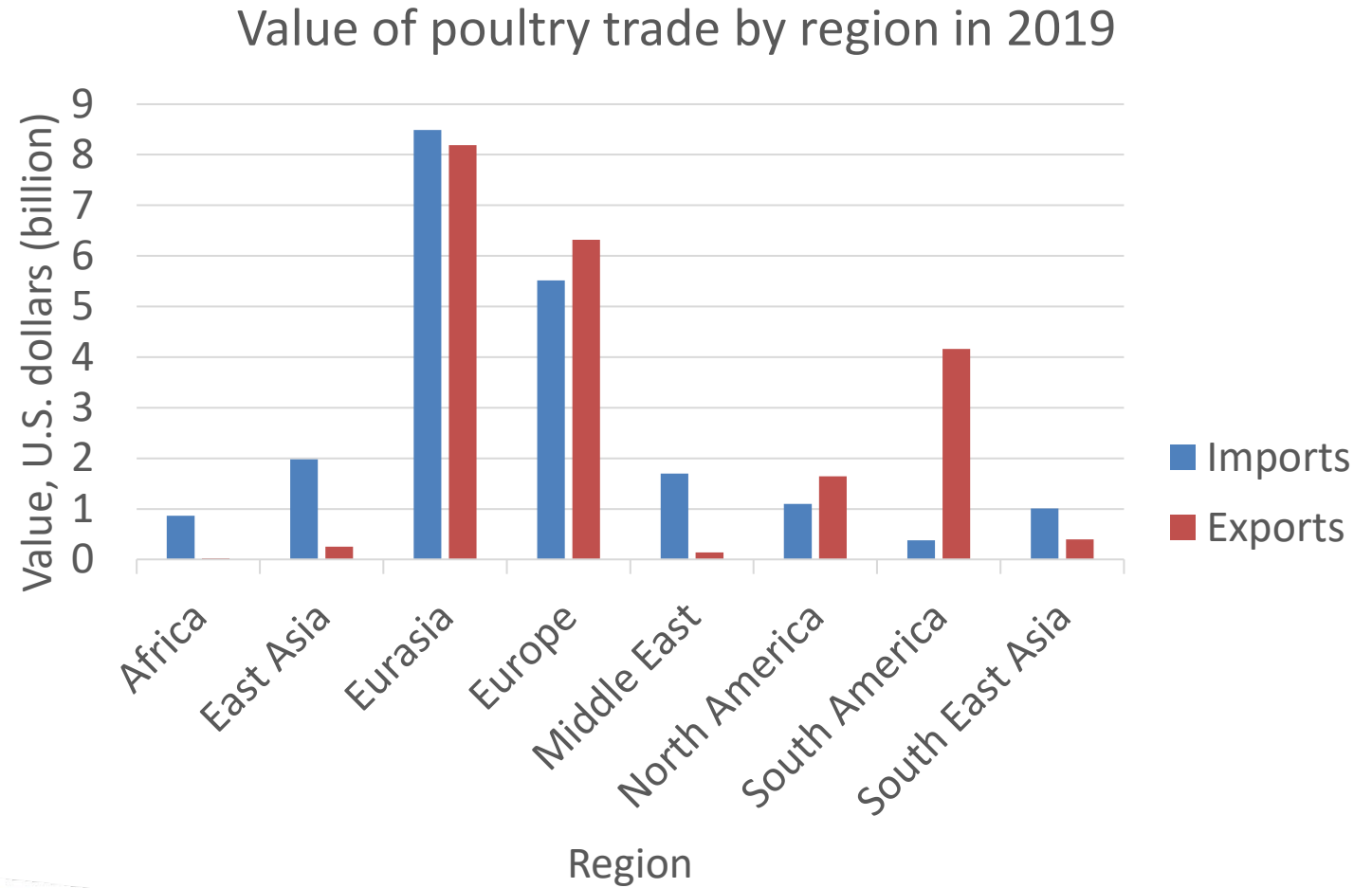
NTMs are notified to the WTO

Number of poultry NTM initiations by type, 1995-2021

Legend:
- Special safeguards
- Technical barriers to trade
- Sanitary and phytosanitary
- Tariff rate quota
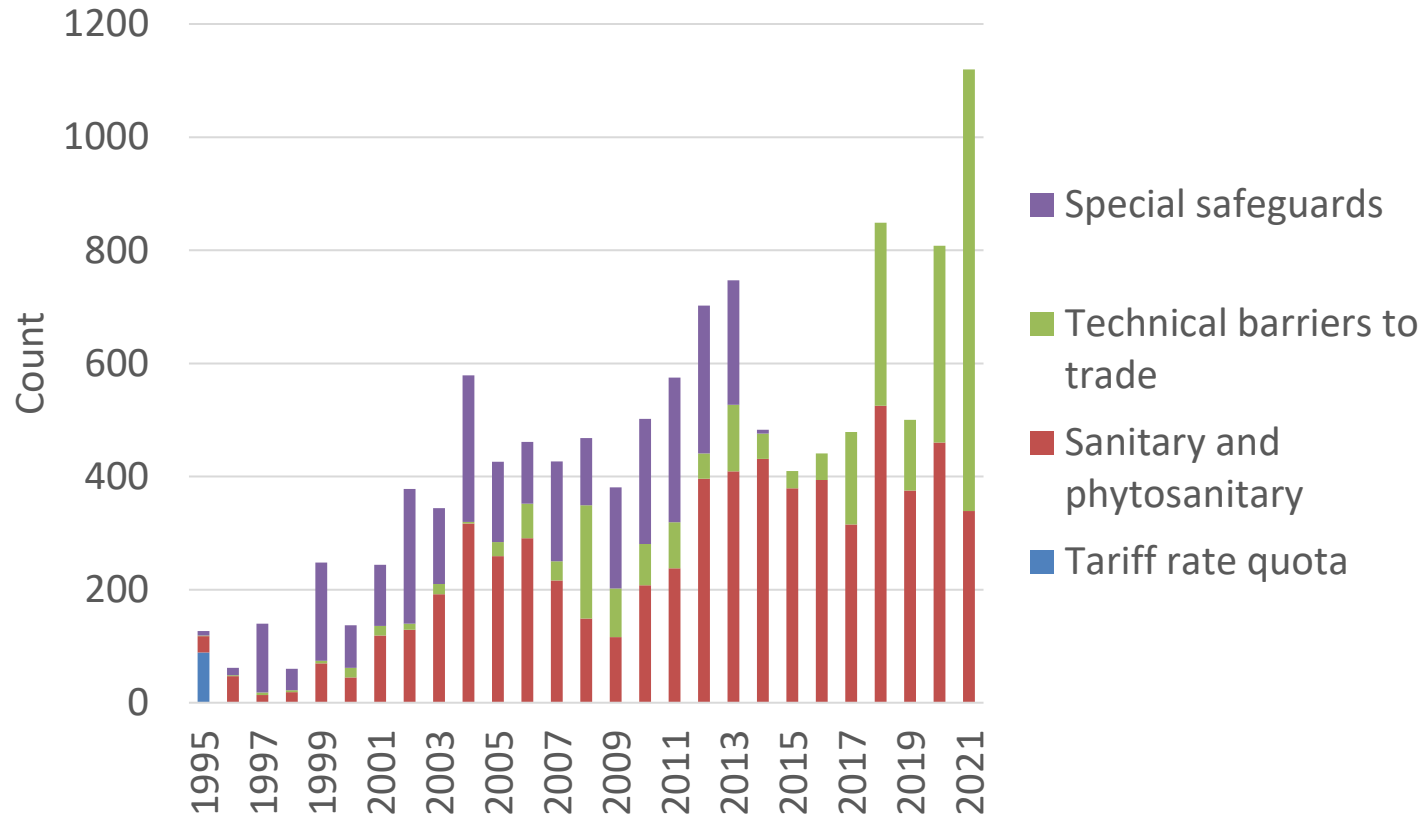
- NTM data are from the World Trade Organization's Integrated Trade Intelligence Portal (I-TIP)

- WTO member notifications of non-discriminatory NTMs initiated or imposed on poultry trade by year

- Broken out by type of NTM imposed

Other data sources

- Include domestic trade flows calculated using FAOSTAT's Value of Agricultural Production dataset (FCL item code 1058 = Chicken meat)
  - Covers the same 8 poultry HS codes as the trade data
  - Calculate domestic trade as Value Domestic Production – Value of Exports

- Other standard gravity variables drawn from USITC's Dynamic Gravity Dataset including distance, region, common language, colonial history, and RTA status for all country pairs

Identification using intra-national trade flows

- Include intra-national trade so that the effects of non-discriminatory NTMs can be identified in the presence of exporter and importer FEs (Heid et al. 2021)

- Poisson Pseudo Maximum Likelihood (PPML) estimator
  - Better account for zero trade flows and heteroskedasticity (e.g. Santos Silva and Tenreyro 2006; Yotov et al. 2016)

- Focus on indicators for different types of NTMs indicating their status in a particular trade year as initiated, in force, or either

Basic gravity model structure

$$X_{ijt} = exp[GRAV_{ijt}\alpha + (NTM_{jt} * INTL_{ij})\beta + \gamma_{it} + \delta_{jt}] * \epsilon_{ijt}$$

- X_{ijt} are nominal poultry trade flows from exporter i to importer j in year t.

- $GRAV_{\{ijt\}}$ are bilateral control variables from the USITC gravity database

- $NTM_{\{jt\}}$ are indicators of non-discriminatory, non-tariff measures affecting the poultry imports of country j in year t.

- $INTL_{\{ij\}}$ is an indicator variable equal to 1 for international trade (i.e. $i \neq j$) and 0 otherwise. NTM_{jt} is interacted with this indicator as the NTMs only affect poultry imports.

- $\gamma_{\{it\}}$ are exporter-year fixed effects and $\delta_{\{jt\}}$ are importer-year fixed effects

Robustness checks include asymmetric pair fixed effects

$$X_{ijt} = exp\big[(NTM_{jt} * INTL_{ij})\beta + \gamma_{it} + \delta_{jt} + \zeta_{ij}\big] * \epsilon_{ijt}$$

- ζ_{ij} are asymmetric pair fixed effects

- Take the place of the bilateral control variables

Preliminary evidence that poultry **TRQs significantly reduce the value of poultry trade** across specifications

NTM Status	(1) Initiated	(2) In force	(3) Either	(4) Initiated	(5) In force	(6) Either
INTL	-9.589***	-7.713***	-9.628***			
	(-7.38)	(-6.48)	(-7.35)			
TRQ_x_INTL	-5.121***	-4.557***	-4.985***	-6.014***	-6.171***	-5.953***
	(-3.90)	(-3.92)	(-3.78)	(-5.54)	(-5.61)	(-5.47)
SPS_x_INTL	2.255***	0.914***	2.170***	0.615***	0.0674	0.560***
	(4.91)	(6.51)	(4.75)	(4.03)	(0.62)	(3.87)
TBT_x_INTL	0.677***	0.317	0.884***	0.104	0.234*	0.212*
	(3.29)	(1.57)	(3.53)	(1.66)	(2.57)	(2.50)
SS_x_INTL	2.152***	2.455***	2.014***	0.239	0.0632	0.218
	(5.47)	(5.66)	(5.22)	(1.84)	(0.48)	(1.60)
USITC gravity controls	Yes	Yes	Yes	No	No	No
Importer-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Asymmetric pair FEs	No	No	No	Yes	Yes	Yes
N	201153	201153	201153	62672	62672	62672

TRQ = Tariff rate quota

SPS = Sanitary and phytosanitary measures

TBT = Technical barriers to trade

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Most WTO poultry TRQs enter into the dataset in 1995

The one exception is Russia's 2013 poultry TRQ

Preliminary evidence that **SPS and TBT measures have a positive effect on the value of poultry trade.** Less clear for SS measures.

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Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Asymmetric pair FEs	No	No	No	Yes	Yes	Yes
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TRQ = Tariff rate quota

SPS = Sanitary and phytosanitary measures

TBT = Technical barriers to trade

SS = Special safeguards

Preliminary evidence that **SPS NTMs have larger negative effects** on African poultry trade flows

NTM Status	(1) Initiated	(2) In force	(3) Either	(4) Initiated	(5) In force	(6) Either
SPS_x_INTL_x_Africa	-6.106***	-9.545***	-6.189***	-1.475***	-0.680	-1.424***
	(-4.39)	(-9.19)	(-4.36)	(-3.46)	(-0.72)	(-3.37)
TBT_x_INTL_x_Africa	1.444	0.900	1.261	0.447	0.279***	0.338
	(1.49)	(1.18)	(1.30)	(1.50)	(4.13)	(1.11)
USITC gravity controls	Yes	Yes	Yes	No	No	No
Importer-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Exporter-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Asymmetric pair FEs	No	No	No	Yes	Yes	Yes
N	201153	201153	201153	62672	62672	62672

TRQ = Tariff rate quota

SPS = Sanitary and phytosanitary measures

TBT = Technical barriers to trade

SS = Special safeguards

Note: African importers reported one TRQ and zero SS WTO notifications during the sample period (1995-2019) so those coefficients are not estimated in the regional analysis.

# Overall, we find evidence of heterogeneous effects of poultry NTMs

- Negative effects of TRQs on the value of trade, some evidence that other NTMs may provide positive signals

- Limitations
  - Country and HS code coverage for the value of own production
  - Quantity vs. value effects
  - NTM duration and aggregate effects of multiple NTMs
  - Consider intra-regional trade flows

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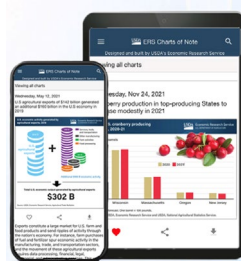
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Thank you!

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