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LGL

ISAR – Assessing the impact of the Ukraine war on the agri-food chain

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BfR International Scientific Conference, 27.-29. May 2024, Berlin

Outline

- Early warning system and ISAR
- Impact of the Ukraine war on the agri-food chain
 - Possibly increased food safety risks and food fraud incentives
 - Methods
 - Case study: mustard seeds
- Conclusions

Bavarian Health and Food Safety Authority

The Bavarian Health and Food Safety Authority (LGL)
is Bavaria's central expert body for

The logo for the Bavarian Health and Food Safety Authority (LGL) consists of the letters 'LGL' in a bold, blue, sans-serif font. The 'L' and 'G' are connected at the top, and the 'L' and 'L' are connected at the bottom.

Food safety*



Health



Animal health*



Occupational and product safety

* under supervision of Bavarian State Ministry of Environment and Consumer Protection

Targeting of resources is fundamental for official food control activities

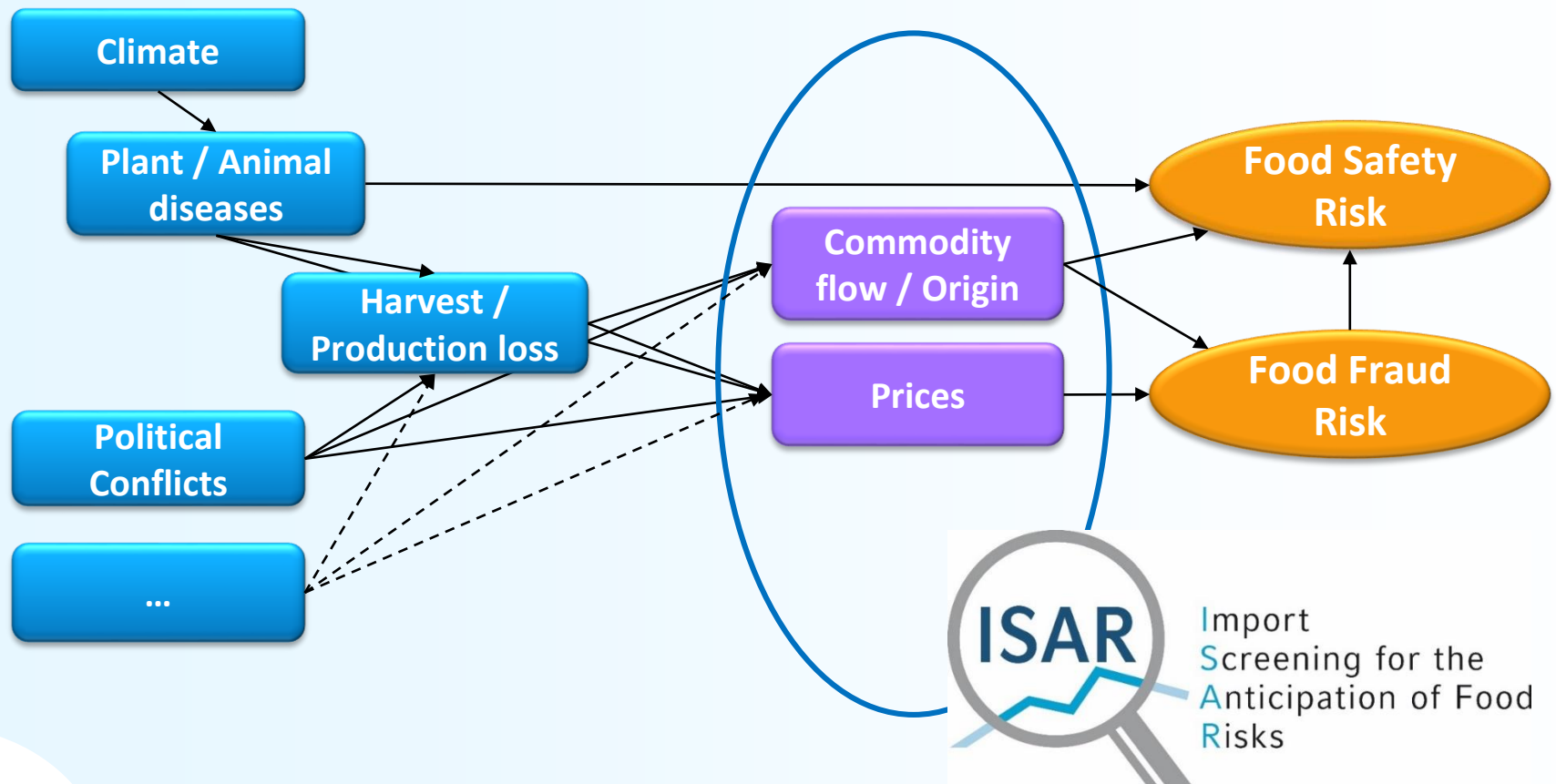
→ Risk-based concept

BUT: Food control is mostly focussed on already known aspects



Early warning system & ISAR

- Comprehensive view on the agri-food chain for better anticipation of health risks and fraudulent practices





Federal Office of
Consumer Protection
and Food Safety

- joint development with LMU (since 2015)
- cooperation with Federal Office of Consumer Protection and Food Safety (since 2018)
- pilot project with all other 15 federal states and NRZ-Authent (since 2021)



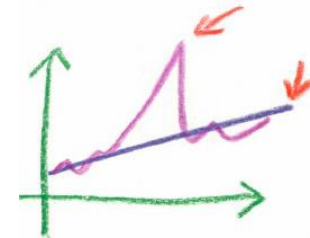
Data base



Analyses



Results



German Foreign Trade Statistics

- ≈ 2.500 food commodities
- ≈ 220 countries (EU, third countries)
- volume
- prices

→ Automated Analysis

- time series analysis
- initially independent from food control

→ Detection of changes

- automatic prioritisation
- expert evaluation

→ Explorative Analysis

- relies initially on information provided by food control and other sources

→ Case-specific answers

- descriptive analysis
- quick visualization



Possible direct impact

- food imports from UA do not reach Germany or Europe or are delayed because of the war and logistical problems

Possible indirect impact

- UA: planting, harvest, food processing and logistics are compromised
- RU: food imports are affected by sanctions and other restrictive measures and by renounces of food industry in Europe
- disrupted food chains
- supply shortage
- price rise for feed, fertilizer, fuel and energy; therefore also for food
- impaired official controls and companies' own checks in UA



Possibly increased food safety risks

- mycotoxins, microbial contamination caused by longer and adverse storing or transport conditions
- contamination with polycyclic aromatic hydrocarbons because of improper drying processes
- contamination by warfare agents?
- increased application of pesticides
- „re-emerging risks“ due to country of origin shift
- various food safety risks are increased by food fraud issues, especially undeclared allergens

Possibly increased incentives for food fraud

- due to supply shortage and higher prices
- various types of food fraud are relevant



Methods

1. Identification of vulnerable foodstuffs

- analysis of all foodstuffs with relevant import share from UA and RU (2020/21)
- time series analyses of imports from UA and RU (since 2020)

2. Media monitoring

- MediSys



<https://emm.newsbrief.eu/overview.html>

Impact of the Ukraine war on the agri-food chain



Project in 2022

- coordinated by Bavarian Health and Food Safety Authority
- 6 federal states of Germany
- Federal Office of Consumer Protection and Food Safety
- National Reference Center for Food Authenticity
- Federal Food Safety and Veterinary Office of Switzerland



Impact of the Ukraine war on the agri-food chain



Identification of vulnerable foodstuffs

- determination of import share for 2020/2021
 - imports to Germany: ISAR
 - imports to EU: EUROSTAT
- for all products coming from UA and RU



Product	Import share UA / RU / UA + RU
Product 1	high
Product 2	
Product ...	
Product ...	
Product n	low



Impact of the Ukraine war on the agri-food chain



Identification of vulnerable foodstuffs



Product	Import share UA	Product	Import share RU	Product	Import share UA + RU
Product 1	high	Product 1	high	Product 1	high
Product 2		Product 2		Product 2	
Product ...		Product ...		Product ...	
Product 29		Product 29		Product 29	
Product 30	low	Product 30	low	Product 30	low



Product	Import share UA	Product	Import share RU	Product	Import share UA + RU
Product 1	high	Product 1	high	Product 1	high
Product 2		Product 2		Product 2	
Product ...		Product ...		Product ...	
Product 29		Product 29		Product 29	
Product 30	low	Product 30	low	Product 30	low

Merging of TOP lists and prioritisation



Identification of vulnerable foodstuffs

- prioritisation by
 - food safety risks and food fraud potential
 - current market situation
 - assigning prioritisation scores (0-3) for all foodstuffs
 - calculating mean values across all prioritisation scores
- in-depth research on high-priority products

Impact of the Ukraine war on the agri-food chain



Mustard seeds: Result of prioritisation

Destination	Product	Import share RU [%]	Import share UA [%]	Import share UA + RU [%]	Average prioritisation score
EU	Mustard seeds	42.4	13.2	55.6	2.2
Germany		55	23.8	78.8	

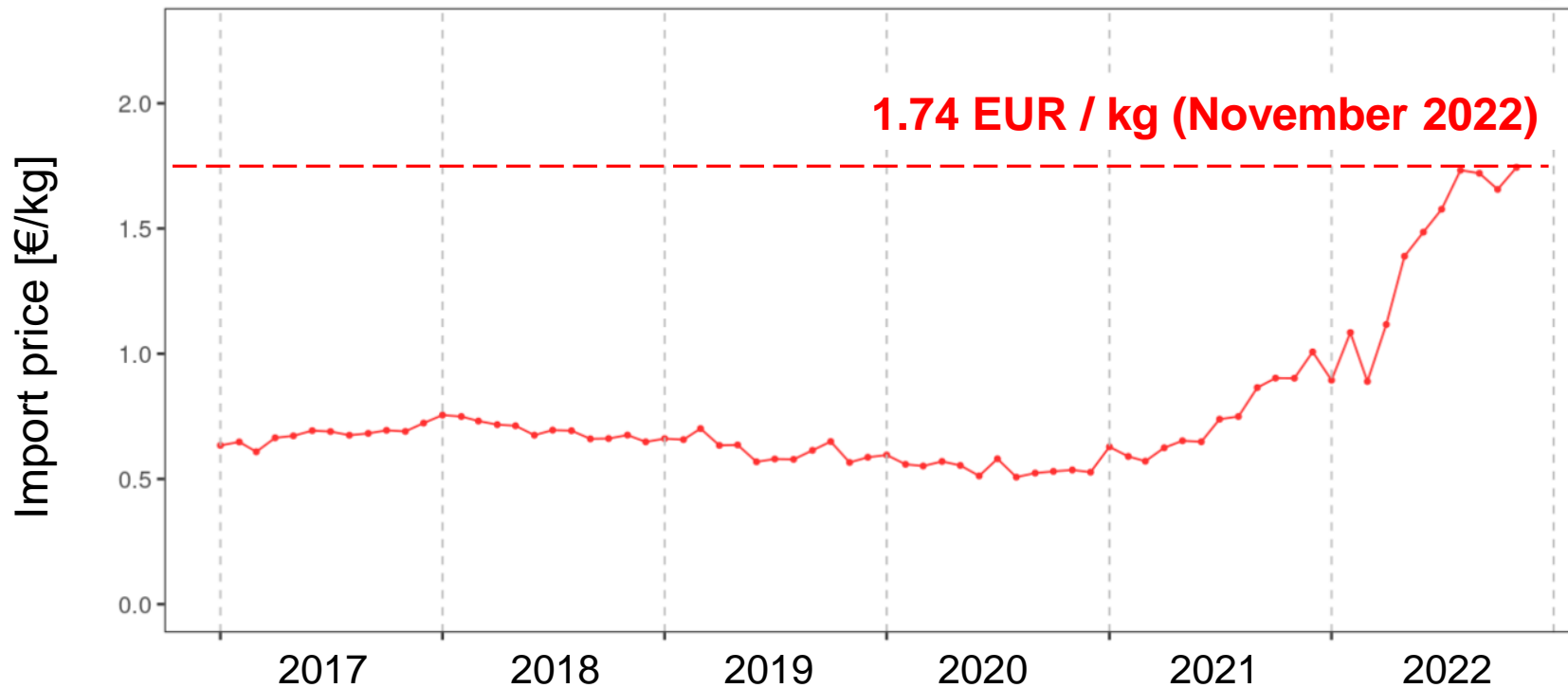


Mustard seeds: Media monitoring

- **shortfall of imports from Russia and Ukraine**
- **alternative suppliers can not compensate**

Mustard seeds: Descriptive analyses

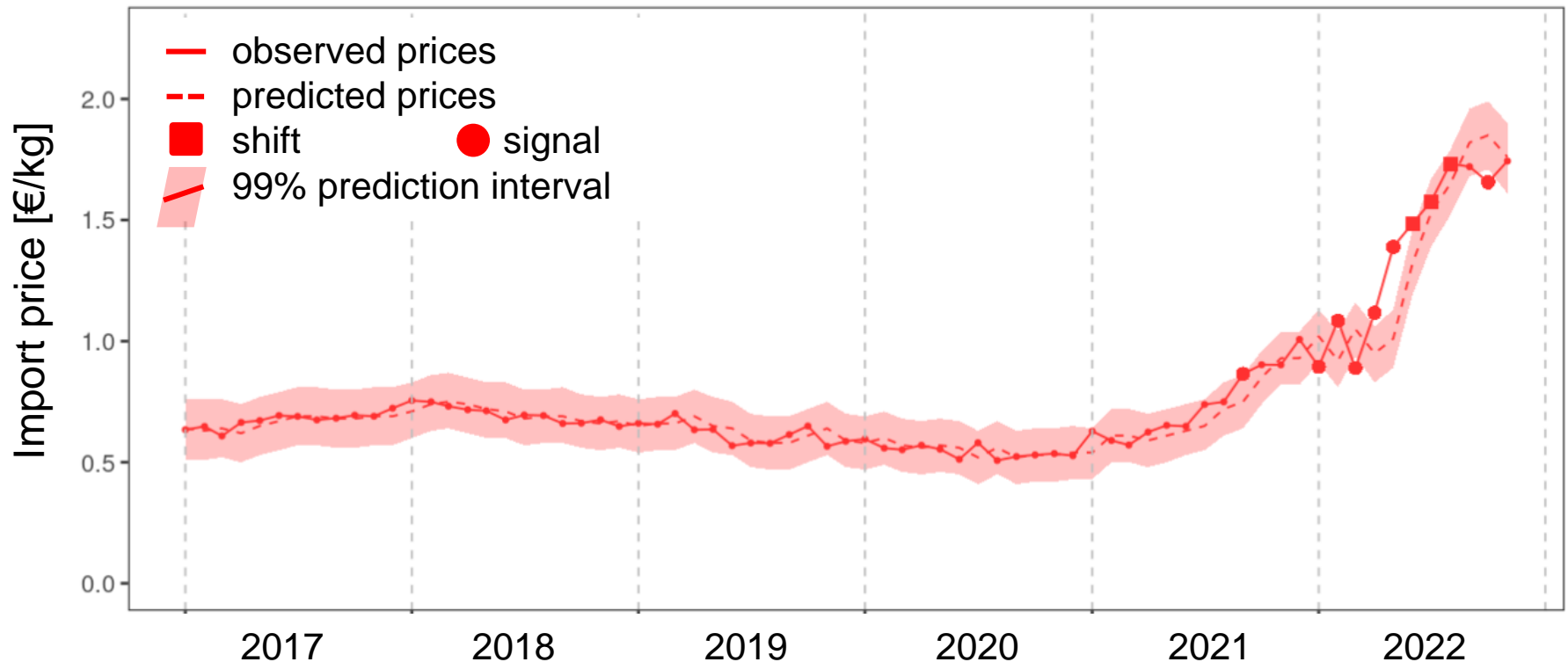
Global price for imports to Germany (2015-2022)



→ price is at global all time high

Mustard seeds: Automated analyses

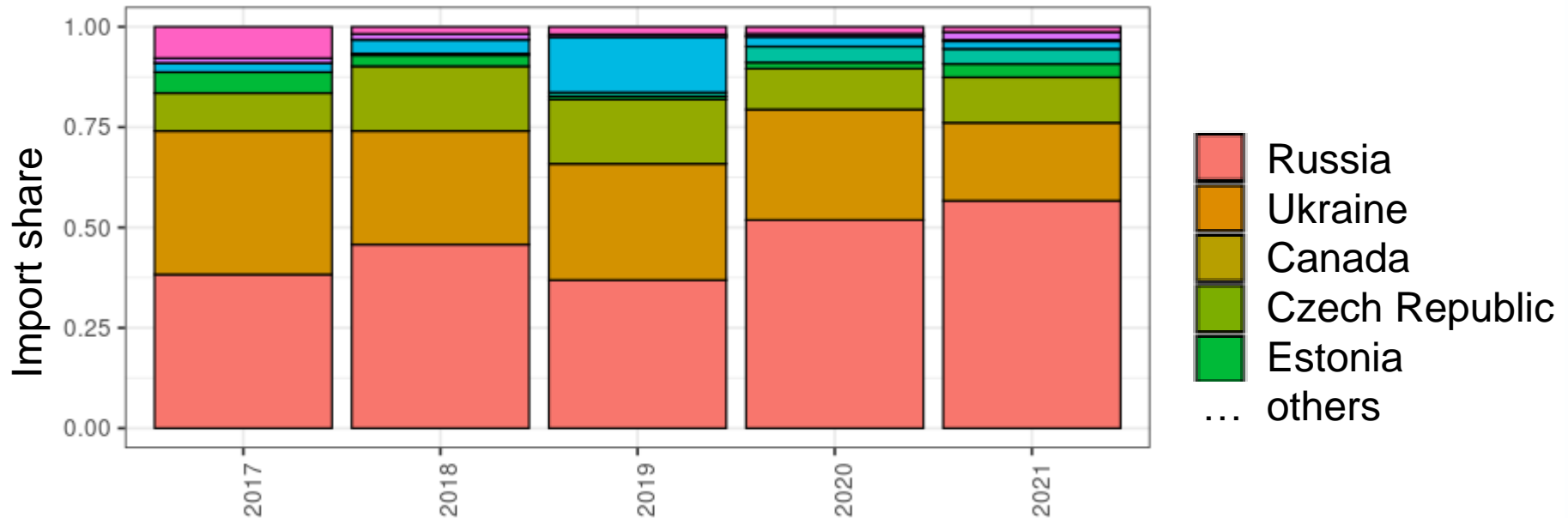
Global price for imports to Germany (2015-2022)



→ detection of unpredicted changes in price throughout 2022

Mustard seeds: Descriptive analyses

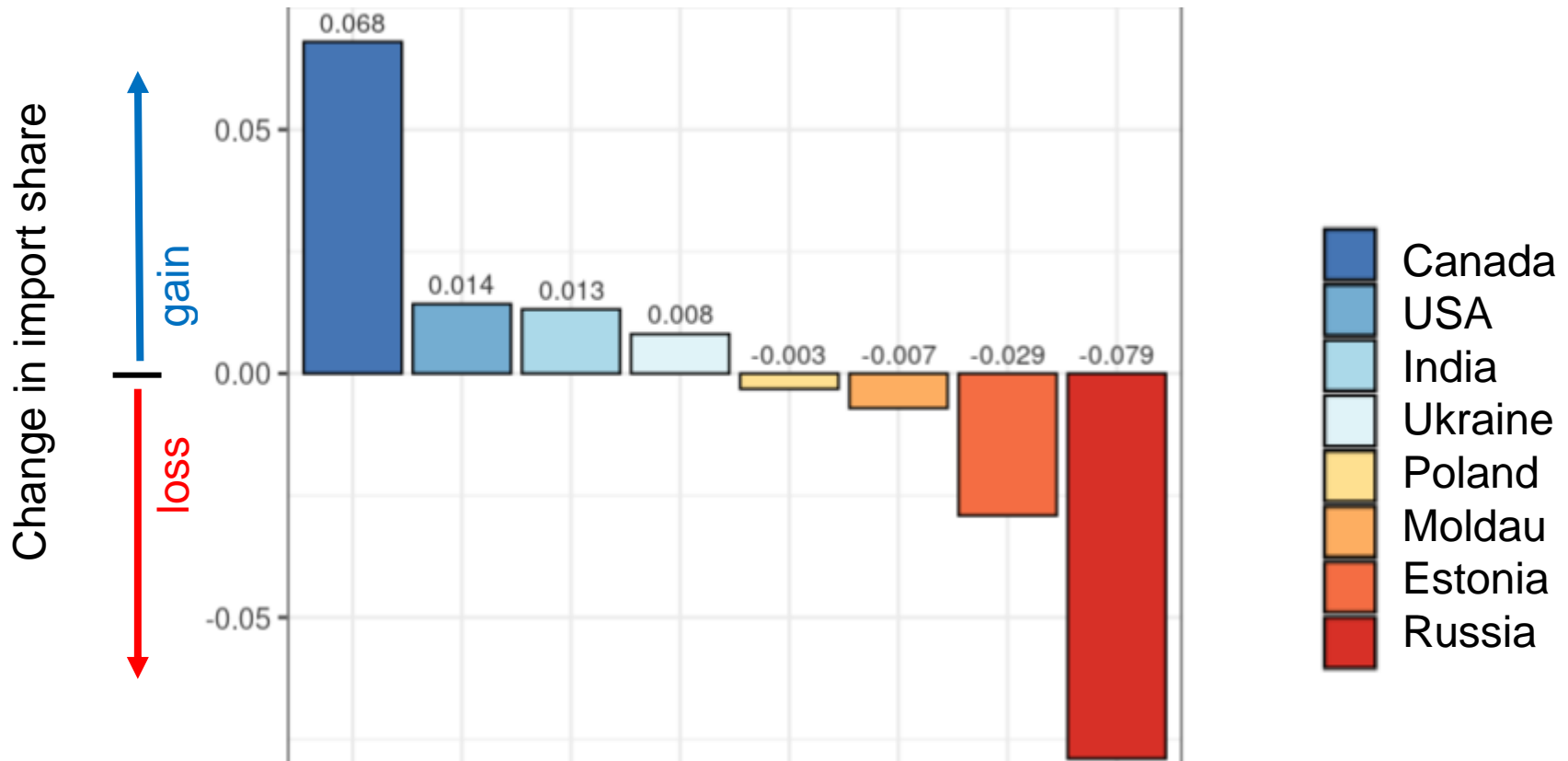
Share of imports to Germany over time (2017-2021)



→ Russia and Ukraine are key players for imports to Germany

Mustard seeds: Descriptive analyses

**Change of import shares
per exporting country (2021 vs. 2022)**



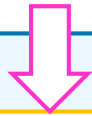
→ shift to imports from **Canada, USA and India...**

Mustard seeds: Conclusion

→ **Vulnerability of mustard seeds is increased**

Food fraud risk

- all time high of prices
- shortage



Focus on

- adulteration of ground mustard seeds and mustard flour

Food safety risk

- shortage
- disrupted supply chain
- shift of country of origin



Focus on

- cadmium
- pesticides
- polycyclic aromatic hydrocarbons



- Only a comprehensive view on the agri-food chain allows earlier identification of emerging risks
- ISAR enables us to systematically monitor commodity flows and prices of imported food
- ISAR helped us to assess the impact of the Ukraine war on the agri-food chain and to identify vulnerable food stuff
- To tackle complex challenges we need multidisciplinary approaches and cooperation among food safety authorities and other enforcement bodies



Earlier identification of emerging risks and therefore a better mitigation of health risks and fraudulent practices

Thank you!



Bavarian State Ministry of the Environment and Consumer Protection



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StaB|Lab
Statistisches
Beratungs
Labor



Federal Office of Consumer Protection and Food Safety



NRZ
Authent



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra



M. Kaufmann



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