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in Transition Economies

VolkswagenStiftung

MATRACC

ReCCA Workshop 2014 | 24 – 26 Nov

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Overview of the MATRACC Project and outlook on future research directions

Dr. Ramona Teuber

ReCCA Workshop 2014 | 24 – 26 November

Project Overview

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The Global Food Crisis – Impact on Wheat Markets and Trade in the Caucasus and Central Asia and the Role of Kazakhstan, Russia and Ukraine

Funding agency:

Volkswagen Foundation

Funding initative: Between Europe and the Orient - A Focus on Research and Higher Education in/on Central Asia and the Caucasus

What is it about?

- Investigation of wheat markets in the Caucasus and Central Asia and the major supplier countries of this region, namely Kazakhstan, Russia and Ukraine (KRU)
- Capacity building

Project Background (I)

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Research component

- Long-term rising prices and increasing price volatility on the world markets for agricultural raw materials have considerably affected the countries in Central Asia and the Caucasus.
- However, until today research has more or less neglected the impact of the global food crisis on this region.
- There is nearly no empirical evidence on how wheat markets in this region work and how prices are formed.
- The MATRACC project wants to close this research gap. Three different but closely connected working groups carry out empirical analyses on (i) price transmission and price volatility, (ii) structure of the wheat supply chains, and (iii) wheat trade patterns and relationships.

Project Background (II)

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Capacity building

- PhD students coming predominantly from the CCA countries are trained at IAMO working in an international research team;
- PhD students take part in graduate courses, PhD workshops and present their work at international conferences;
- Building up sustainable research cooperation with local project partners

Local Project Partners

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- International Center for Agribusiness Research and Education (**ICARE**), Armenia
- The Fund "Georgian Center for Agribusiness Development" (**GCAD**), Georgia
- Analytical Center of Economic Policy in the Agricultural Sector (**ACEPAS**), Kazakhstan
- Higher School of Economics Moscow (**HSE**), Russia
- All-Russian Nikonov-Institute of Agrarian Problems and Informatics of the Russian Academy of Agricultural Sciences (**VIAPI**), Russia
- Samarkand Agricultural Institute (**SAI**), Uzbekistan
- Central Asia and Caucasus Association of Agricultural Research Institutions (**CACAARI**), Uzbekistan
- World Bank

Wheat in the CAC region (I)

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Political dimension of wheat after independence

- Wheat is considered a strategic crop
- Particularly important for food security and thus wheat production has been prioritized by most governments
- Wheat self-sufficiency as goal in most countries
  - Wheat Seed Production Development Plan 2010-2014 for the Republic of Armenia State procurement mechanism for wheat in Uzbekistan
  - State managed crop allocation in Turkmenistan
  - Per hectare subsidy for wheat production in Azerbaijan
- Wheat expansion at the expense of other commodities

Wheat in the CAC region (II)

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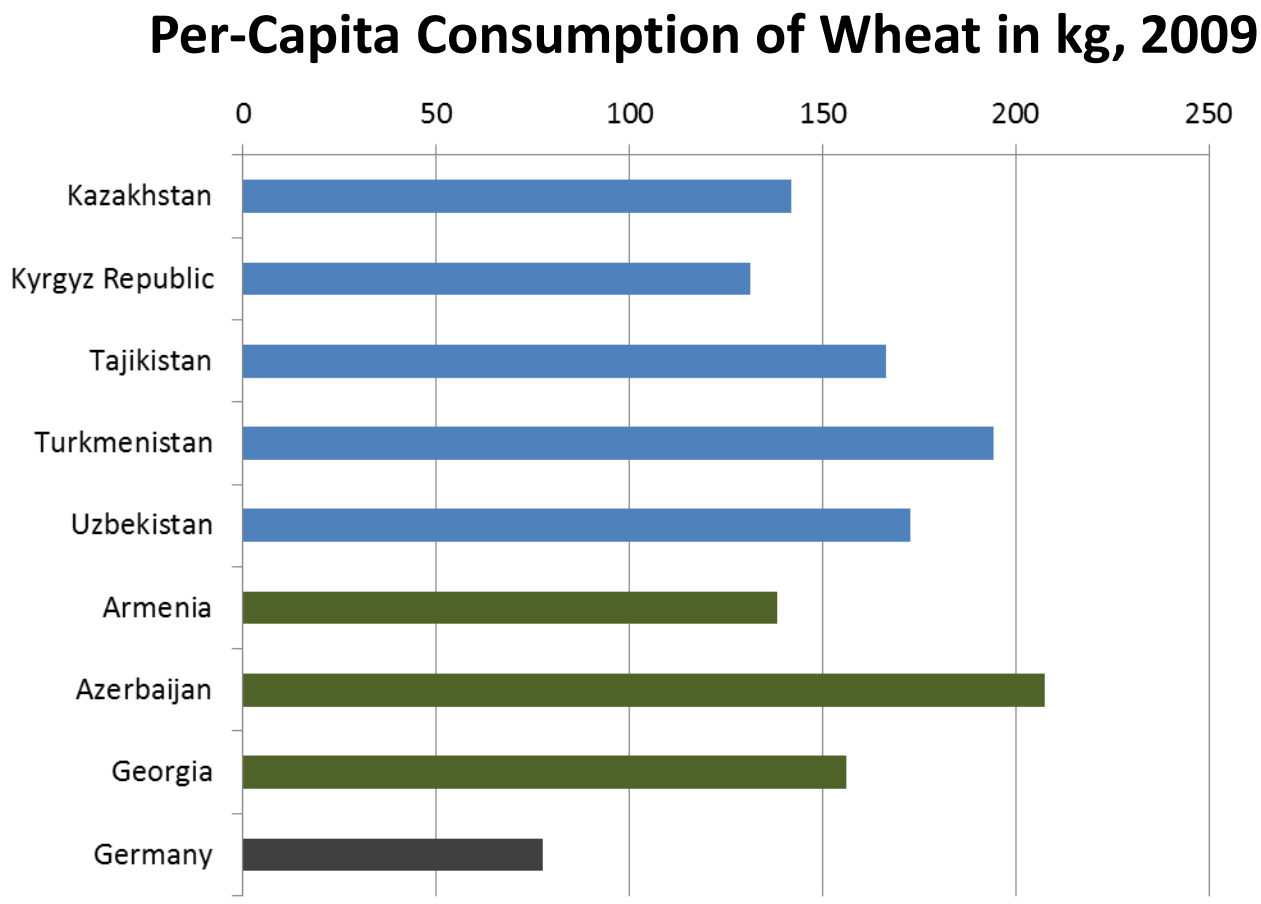

Wheat in the CAC region (III)

Source: Prishchepov

Wheat in the CAC region (IV)

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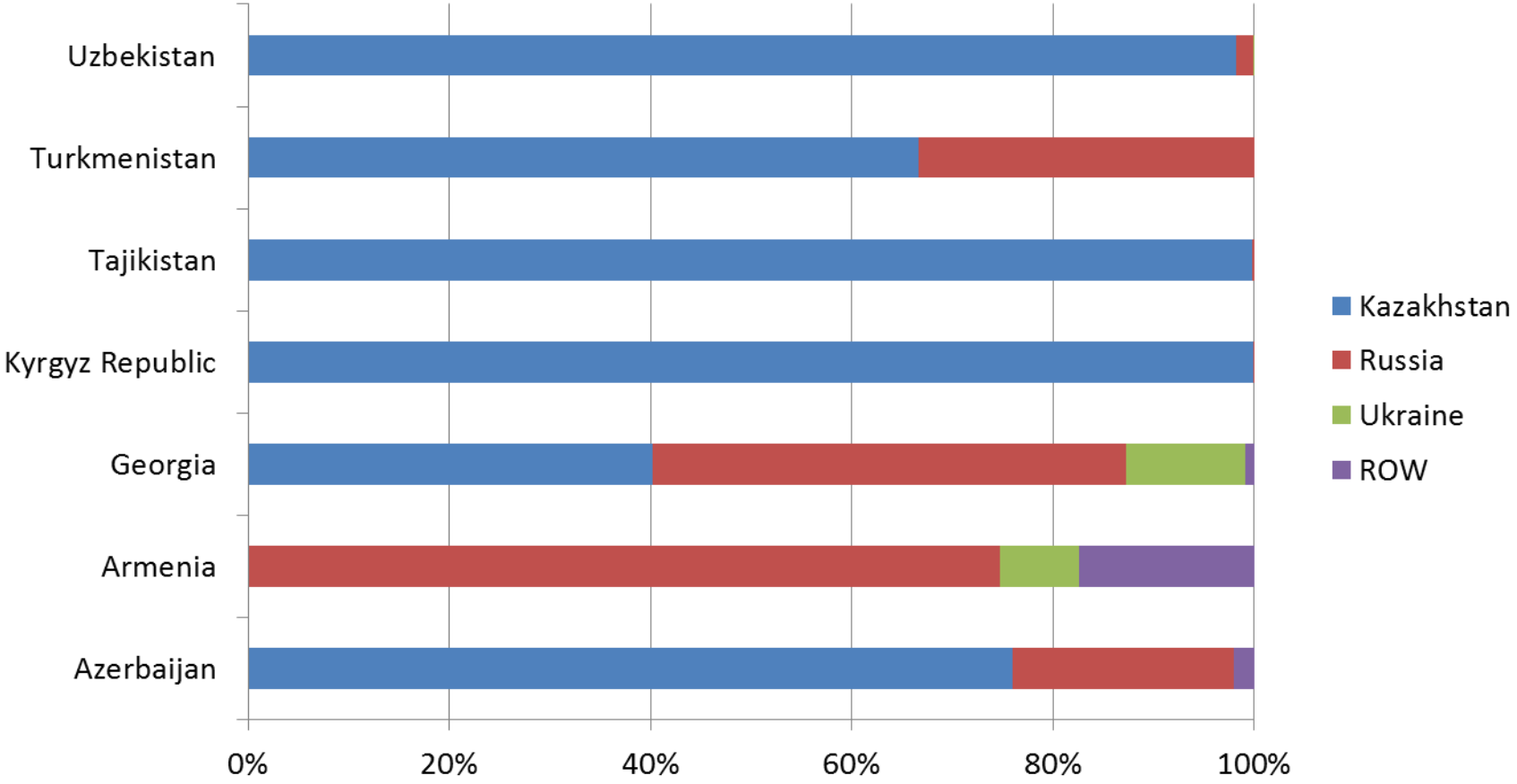
Share of wheat from Kazakhstan, Russia and Ukraine (KRU) in total wheat imports, average 2010-2012



Source: Own calculation based on FAOStat

International wheat markets

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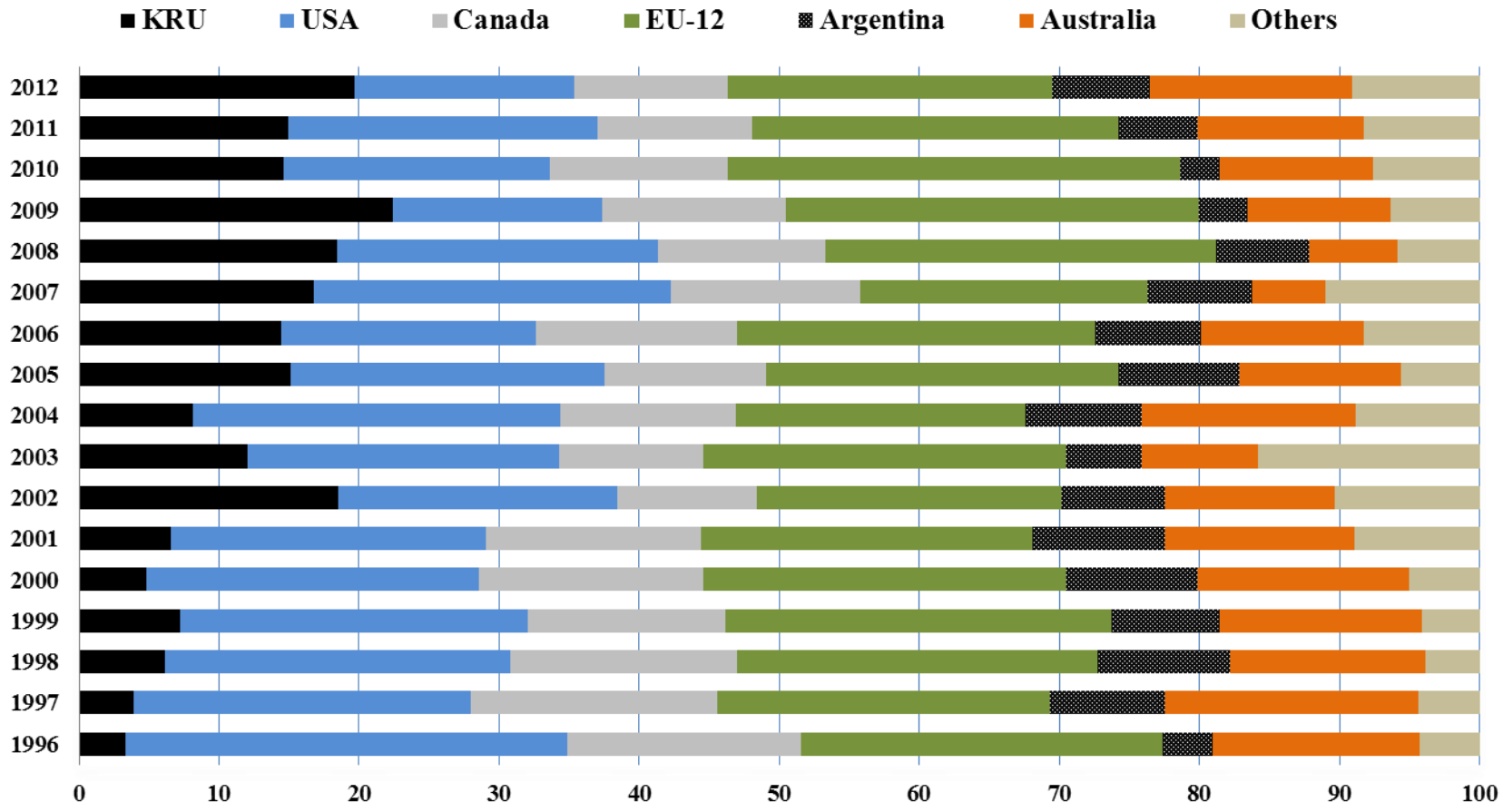
Market shares of major wheat exporting countries in international wheat trade, 1996-2012



Source: Gafarova et al. (2014)

Project Team and Working Groups

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- 6 PhD students plus 1 Post-Doc financed by the Volkswagen foundation
- 6 IAMO Senior Researcher as Supervisor/Coordinator

The research project is organized around three working groups (WG) which address pricing, market and trade issues from different perspectives

- **Transmission of Market Prices (WG-I)**
- **Market Structure and the Supply Chain (WG-II)**
- **Trade Patterns and Relationships (WG-III)**

WG-I: Price Transmission (I)

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Research objectives

- focuses on the analysis of price transmission between the world and the domestic wheat markets as well as within domestic markets
- The knowledge of the degree of the transmission of price changes from the world to local markets and an understanding of determining factors is decisive for correctly assessing the implications and welfare effects of high prices.
- For example, welfare assessments, i.e. identifying who benefits and who loses from increasing food prices and to which extent are often based on the assumption of complete price transmission. If this assumption is violated, i.e., price transmission is incomplete, the derived welfare assessments might be strongly biased

WG-I: Price Transmission (II)

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Research questions :

- To what extent are high and volatile food prices transmitted from the world market to local markets?
- To what extent do political market interventions, trade costs and market power in the supply chain explain country differences?
- How are price changes transmitted across regional markets within a country?

WG-I: Price Transmission (III)

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Team: Dmytro Serebrennikov, Miranda Svanidze, Linde Götz

Topics addressed:

- **Spatial integration of Russian wheat markets (D. Serebrennikov)**
- **Marketing Margin Analysis in the Georgian Milling Sector: Is there Market Power? (M. Svanidze)**

WG-I: Price Transmission (IV)

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Spatial Integration of Russian domestic wheat markets (D. Serebrennikov et al. 2014)

Research aim:

Analyze spatial integration of major wheat growing regions in Russia

Background: Russia implemented several policies in recent years to restrict grain exports such as export bans and export taxes

Methodology: Threshold autoregressive model (TAR)

Data: Regional wheat prices and trade flows for January 2005 - December 2012

Preliminary results: 20 market pairs are analyzed. In all cases *integration* is confirmed. However, the strength of integration varies across pairs. In the export ban time, trade between domestic markets is more active. This might be a consequence of reduced transport tariffs.

WG-I: Price Transmission (V)

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Marketing Margin Analysis in the Georgian Milling Sector: Is there Market Power? (M. Svanidze)

Background:

In 2006, a Azerbaijani milling company called “Karmen” entered the Georgian market.

Gradually, this company purchased big local milling companies and became dominant player on the market (roughly 60% of total flour sales were attributed to this company).

Other Georgian millers accused “Karmen” for its dominant position in the public media and government authorities.

They stated that “Karmen” sets *lower* prices than market average and in this way discriminates other flour sellers.

Georgian millers state, future threat is that other companies are eliminated from the business and then “Karmen” will set high noncompetitive price.

While, on the other hand, “Karmen” explains that their strategy is to set lower prices but sell large amounts of flour.

WG-I: Price Transmission (VI)

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Research aim

Investigate if “Karmen” company indeed abuses its dominant position using market power and affecting flour prices.

Methodological approach

Vertical Price transmission (marketing margin) analysis will be conducted using an Error Correction Model

Data

Interviews with wheat trader (1), wheat millers (2), head of miller’s association (1), bread factories (2)

“Karmen” data: weakly wheat and wheat flour prices from January 2007 to June 2014; wheat price is their buying price (including transportation and all other costs) while flour price is their selling price

WG-II: Market Structure and Supply Chains (I)

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Research objectives

The sub-projects in this working group aim at providing results on how wheat markets in the CCA countries and in the major supplier countries work

In particular it will be investigated what kind of market imperfections are present and in what way they influence the price formation process and thus the market outcome.

- How do domestic wheat markets in the CCA and KRU countries work? Who are the major actors? How are transactions conducted?
- In what way do market imperfections and local public authorities influence the market outcome?

WG-II: Market Structure and Supply Chains (II)

Leibniz Institute of Agricultural Development in Transition Economies

Team: Nurzat Baisakova, Giorgi Chezhia, Ihtiyor Bobojonov, Thomas Herzfeld, Oleksandr Perekhozhuk, Ramona Teuber

Topics addressed:

- **Drivers of Structural Change in Central Asian Flour Processing Industry (N. Baisakova)**
- **Food Security and Welfare Impacts of Commodity Price Volatilities in Kyrgyzstan (N. Baisakova)**
- **Oligopoly and Oligopsony Power in the Kazakhstan grain supply chain: Production-theoretic-approach (G. Chezhia)**
- **Agrifood sector transformation and its implications on development of small farmers in Central Asia (I. Bobojonov)**
- **Comparative analysis of wheat supply chains (I. Bobojonov)**

Drivers of Structural Change in Central Asian Flour Processing Industry

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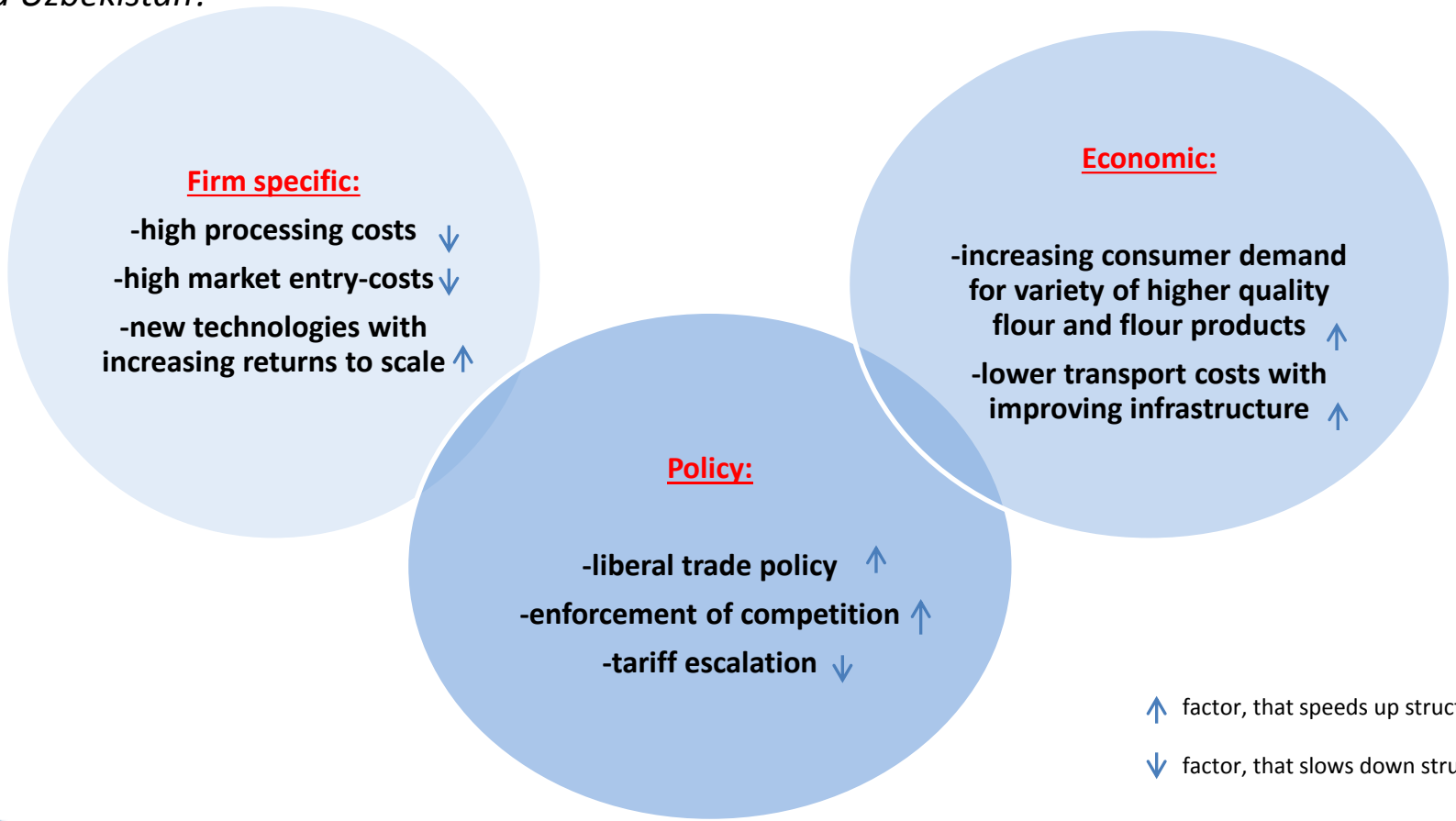
- *Research problem: Ongoing structural change in the flour processing industry of Central Asian countries (case study)*
- *Research question: What are the drivers of the structural change in the milling industry of Kyrgyzstan and Uzbekistan?*



Contact person: **Nurzat Baisakova**, Department Agricultural Policy (IAMO)

Determinants of Structural Change in Central Asian Flour Processing Industry

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Expected Results:

- Structural change in the flour processing industry of Kyrgyzstan is proceeding faster through *perfect competition* among the milling companies and the government‘s *liberal trade policy*.
- Uzbekistan‘s *protective trade- and industry policy*, in contrary, inhibits the structural development in the flour processing sector and *eliminates competition* among mills.

Food Security and Welfare Impacts of Commodity Price Volatilities in Kyrgyzstan

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Research question: How did global wheat price volatility and Kazakhstan and Russia's embargo (2008 and 2010, respectively) on grain export affect the household welfare in Kyrgyzstan?

Method: Econometric estimation of the heterogeneous welfare effects of food price volatility and price policies (supply-demand functions)

Data: **Kyrgyz Integrated Household Survey (KIHS)**

- Rotating panel data on households budget expenditure
- Sample: 5000 (with about 1/4 being replaced every year)
- Conducted quarterly (2003 – 2012)
- Diary on food consumption (more than 150 food items) for 2 weeks each quarter of the year filled by households
- Information on expenditure for non-food items and services collected during the quarterly interviws

Contact person: **Nurzat Baisakova**, Department Agricultural Policy (IAMO)

Food Security and Welfare Impacts of Commodity Price Volatilities in Kyrgyzstan

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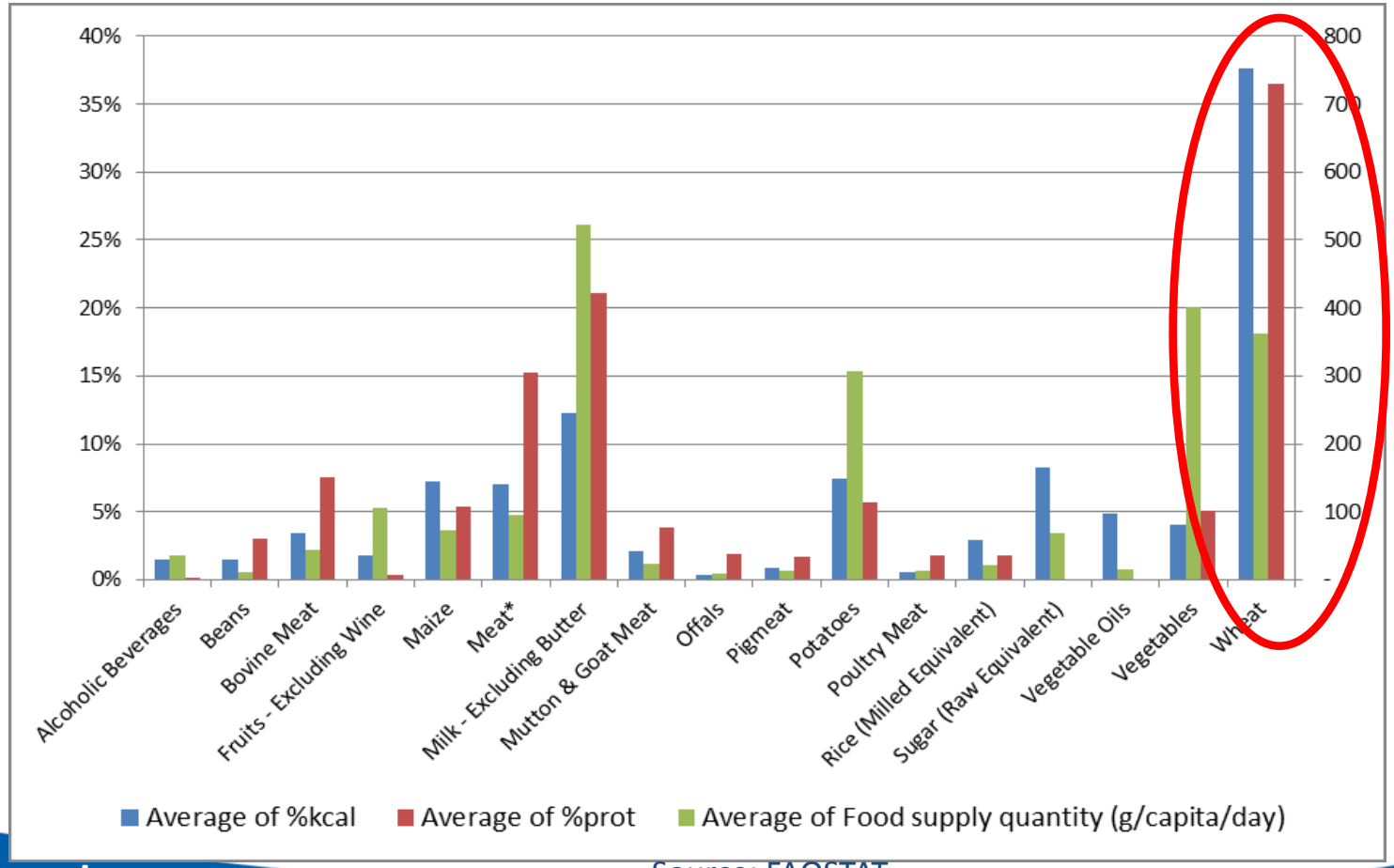
Relative importance of different food commodities in the average Kyrgyz diet, in terms of quantity consumed (g/capita/day), caloric contribution and protein contribution (%)



Source: FAOSTAT

WG-II: Market Structure and Supply Chains (II)

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Oligopoly and Oligopsony Power in the Kazakhstan grain supply chain: Production-theoretic-approach (G. Chezhia)

Background:

- Agroholdings play a rather important role in Kazakhstan, especially in wheat production;
- Most of them originated in grain trading and gradually expanded into grain production sector and nowadays appear to be vertically and horizontally integrated in processing and production sector;
- Investigating the aspects of market structure and market behavior seems to be especially interesting given the fact that in Kazakhstan significant market imperfections exist such as underdeveloped transport and technology infrastructure and local authorities that still intervene in agricultural commodity markets in many ways

WG-II: Market Structure and Supply Chains (III)

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- Under such circumstances it seems likely that some actors in the supply chain might be able to extract market power rents.
- This assumption is supported by anecdotal evidence on anticompetitive behavior. The Agency of the Republic of Kazakhstan for Competition Protection (Antimonopoly Agency) pays particular attention to the grains and oilseeds product supply chain for which they discovered 28 antitrust law violations for the period 2009 through 2010 (Antimonopoly Agency of Kazakhstan, 2012).
- In Konstanay province, the largest agroholding company controls 20% of total sown area and owns 70 % of grain elevators.

WG-II: Market Structure and Supply Chains (IV)

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Research question:

Analyze the degree of competition among grain processors/traders on Kazakhstan grain markets.

Methodological Approach:

New Empirical Industrial Organization approach

Data:

Regional data for the period 1995-2011 such as production quantities (gross yield) and prices of agricultural inputs (wheat, maize, rice, barley, rye, oat, buckwheat and millet) used in grain processing industry; production quantities and prices of the outputs of the grain processor: flour mill products, cereal food and baking mixes; prices and quantities of nonagricultural inputs etc.

WG-III: Trade Patterns and Relationships (I)

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The sub-projects in the third working group address trade-related issues. A special emphasis is put on the analysis of the impact of the policy actions implemented during the food crisis on trade flows and trade relationships of the CCA countries

- Is there any evidence that the KRU countries price discriminate in international wheat trade against the CCA countries?
- To which extent did the crisis and the imposed governmental interventions affect trade patterns in terms of trading partners and traded quantities and qualities?

WG-III: Trade Patterns and Relationships (II)

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Team: Gulmira Gafarova, Nizami Immaverdiyev, Sören Prehn, Thomas Glauben

Topics addressed:

- **Price discrimination and pricing to market behavior of black sea region wheat exporters (G. Gafarova)**
- **Residual demand analysis of Azerbaijan wheat imports (G. Gafarova)**
- **Competitive structure of Kazakhstan, Russia and Ukraine in world wheat markets (N. Imamverdiyev)**
- **Trade duration analysis of Kazakh wheat exports (N. Imamverdiyev)**

WG-III: Trade Patterns and Relationships (III)

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Competitive structure of Kazakhstan, Russia and Ukraine in world wheat markets (N. Imamverdiyev et al.)

Research objective: Investigate potential market power in international wheat markets with a focus on KRU wheat exports/trade

Methodology: Gravity approach > can take into account third country and quality effects

Preliminary results: Empirical results indicate that the international wheat market/trade is competitive, no signs of market power

Policy implications: There is no reason for governmental interventions into wheat markets

WG-III: Trade Patterns and Relationships (IV)

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Price discrimination and Pricing to Market behaviour of Black Sea Region wheat exporters (Gafarova et al. 2014)

Research objectives: (1) to test behavior of Black Sea Region wheat exporters (KRU Exporters) in foreign markets during 1996-2012, and (2) to analyze pricing strategies among the exporting countries in the wheat export market.

Methodology: : Pricing-to-Market Approach developed by Krugman (1987) and empirical applied by Knetter (1989).

Data: (a) Market: HS code 1001 - wheat and meslin; (b) Investigation period 1996-2012; (c) Number of destination countries for Kazakhstan - 48, Russia- 72 and Ukraine – 65;

Preliminary results: In most destinations the results indicate perfect competition but there are also destinations in which price discrimination is detected

Outlook (I)

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Which research directions to go in the future:

Linking agricultural and food systems with health and nutritional outcomes

- Changing agriculture and food systems impact nutritional outcomes
- Changing demand patterns also impact on agricultural systems
- Diet quality in Central Asia (Follow-up project based on work carried out on Russia > Demand for diet quality in the Russian Federation)

Outlook (II)

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- Nearly no empirical evidence on these aspects for Central Asia
- First report on this topic by Mazzocchi et al. (2014), **Agri-Food Systems for Better Nutrition in Europe and Central Asia**
  - Central Asia is affected by three dimensions of malnutrition: undernutrition, micronutrient deficiencies, and overnutritition
  - One the one hand rather high prevalence of stunting (low height for age) and iodine deficiency among children
  - On the other hand high prevalence of adult obesity

  => A **major nutrition transition** is ongoing in CA

Outlook (III)

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What is the nutrition transition?

Nutrition transition describes the shift in dietary composition and energy expenditure that coincides with economic, demographic and epidemiological changes associated with economic development

The term is specifically used for recent shifts in dietary patterns in low- and middle income countries from

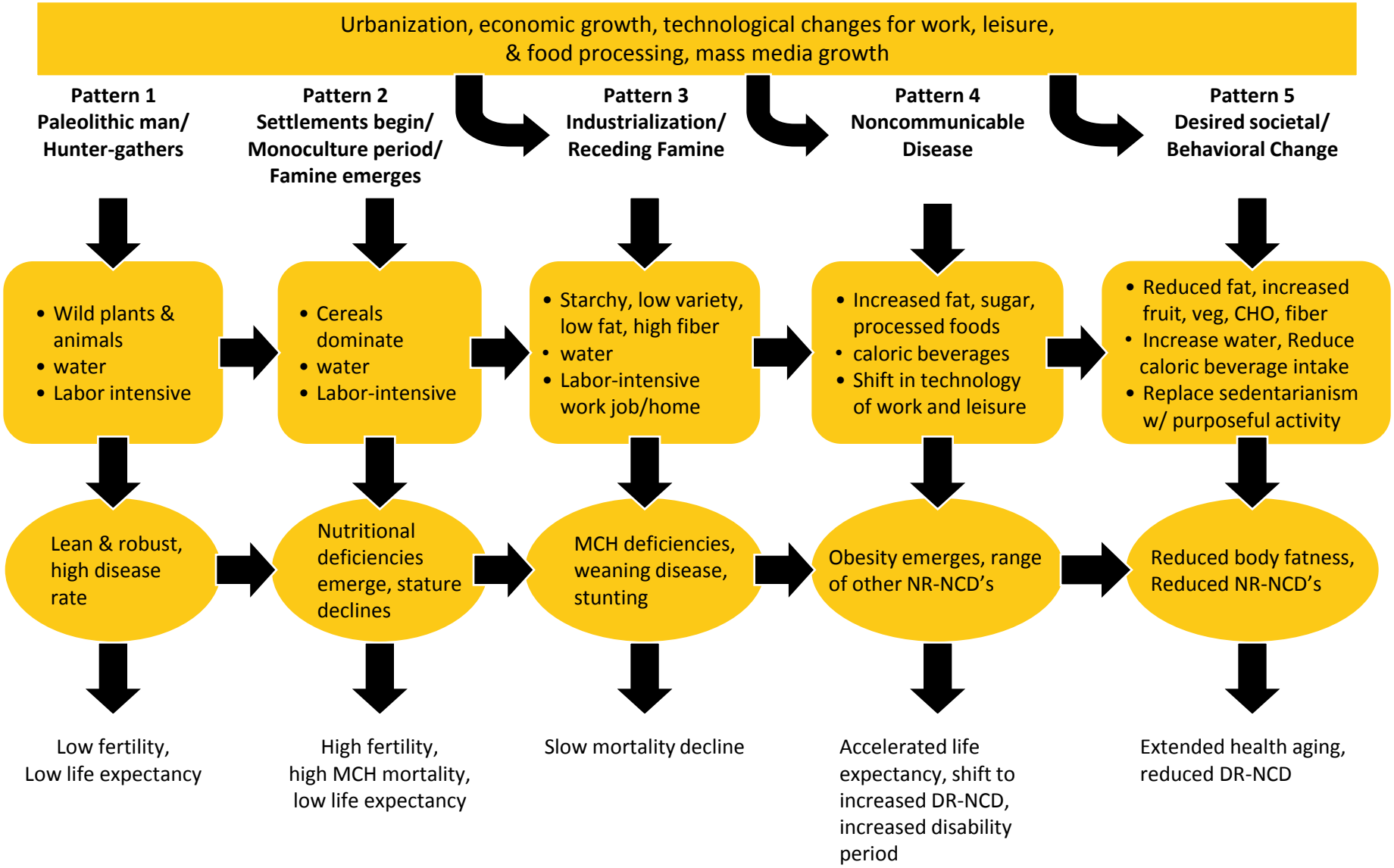
- Traditional diets high in cereal and fiber

To

- (Western style) diets high in sugars, fats and animal-source food

Epidemiological experiences show that there is a positive link between nutrition transition and the incidence of overweight, obesity, and various chronic diseases, including diabetes.

Figure 2. Stages of the Nutrition Transition



Source: Popkin 2002 revised 2006.

Malnutrition (I)

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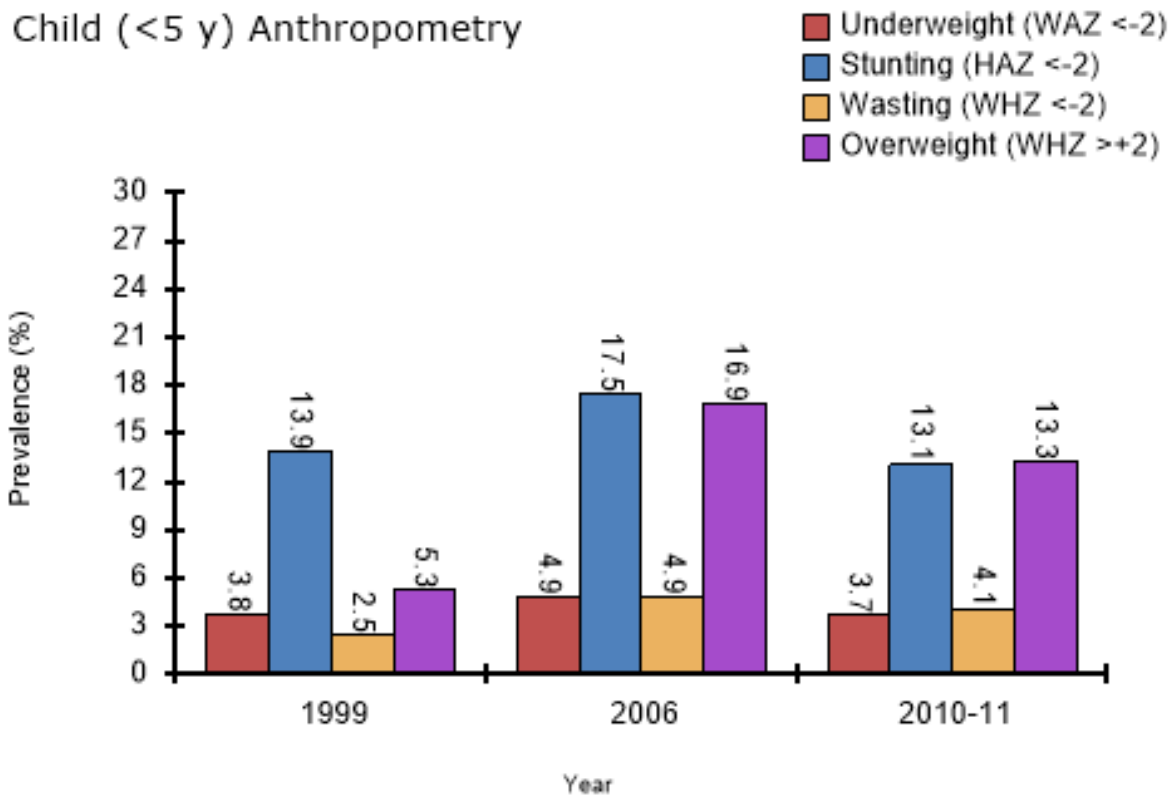
Kazakhstan – Under- and Overweight of Children



Source: WHO, Nutrition Landscape Information System

Malnutrition (II)

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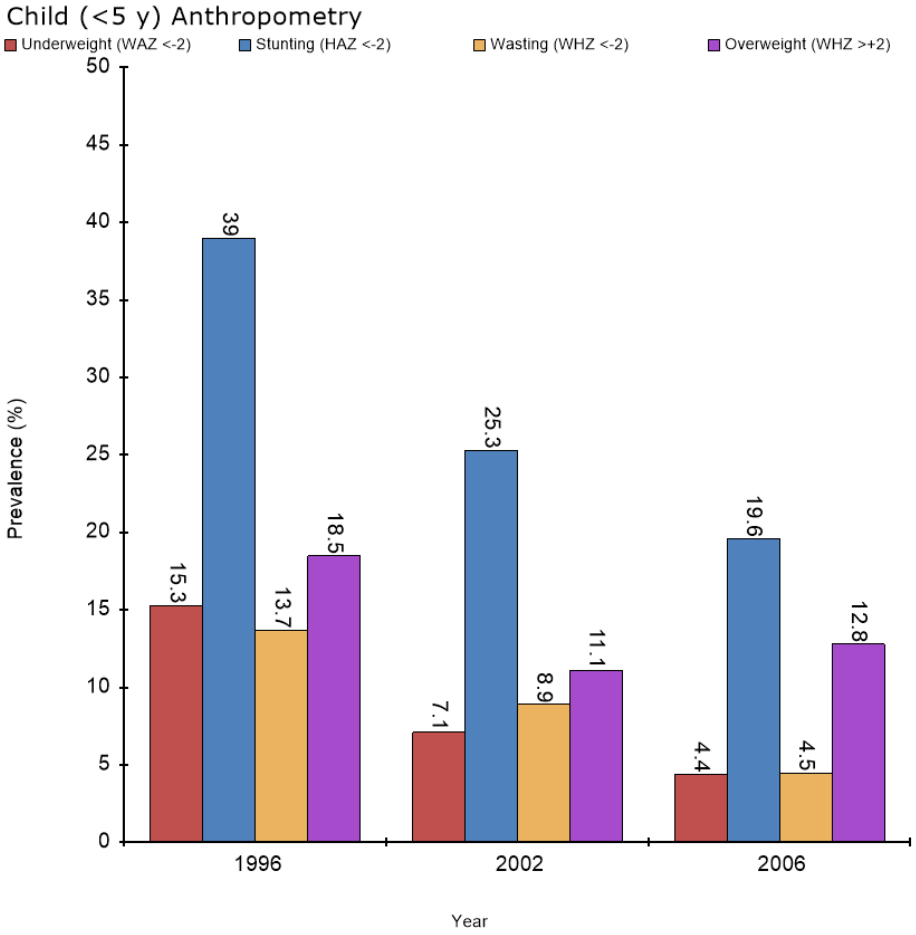
Uzbekistan – Over and Underweight of Children



For comparison:
2006 data
Germany
Underweight 1.1%
Overweight 3.5%
United States
Underweight 1.1%
Overweight 8.1%

Source: WHO, Nutrition Landscape Information System

Malnutrition (III)

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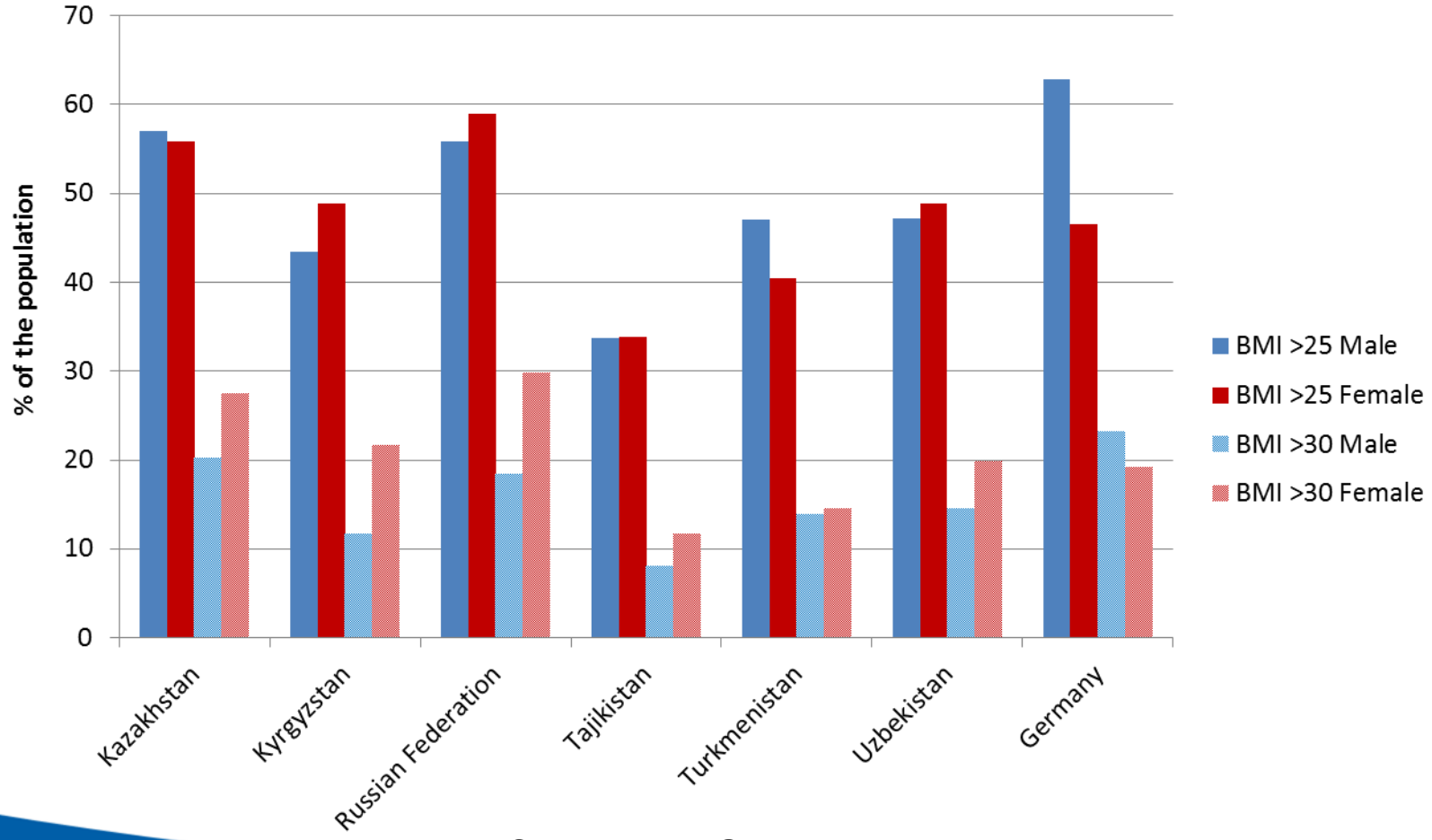
Prevalence of overweight and obesity in Central Asia and Russia among adults, 2008



Source: WHO

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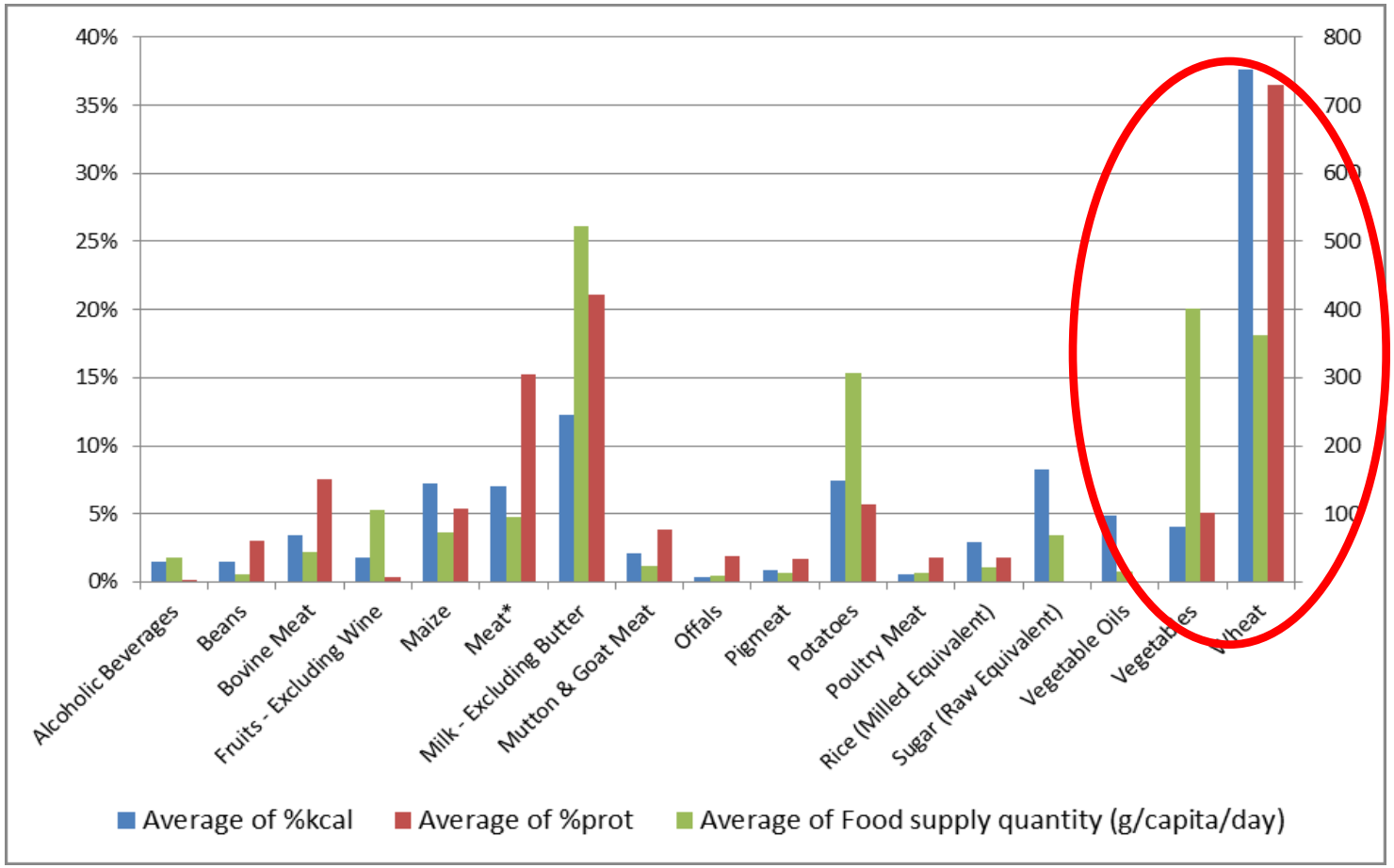

Source: FAOSTAT

Outlook (IV)

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What is driving the nutrition transition?

- Rising incomes
- Urbanization
- Technological changes for work, leisure and food processing
- Rapid shifts in food value chains and consumption of processed food

Crucial research area: Role of (modernization of) supply chains in nutrition transition

➢ Future research direction to pursue for Central Asia

➢ Pre-proposal on the topic submitted last week

Thanks for your attention!

For further information please visit http://www.iamo.de/matracc

Selected References

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