

# **The State of Global Food Markets**

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<https://aede.osu.edu/research/andersons-program>

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THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

# Global Food Prices

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- ◆ **Commodity prices increased rapidly in 2021:**
  - **Increased global demand for feed/food grains**
  - **Drought in South America**
  - **Supply chain disruptions**
  - **Higher energy/fertilizer prices**
- ◆ **Price increases of wheat, coarse grains, and vegetable oils intensified in 2022 following Russian invasion of Ukraine**
- ◆ **North Africa, Middle East and Asia most affected regions – highly dependent on Russia and Ukraine for grain imports**

# Global Food Prices

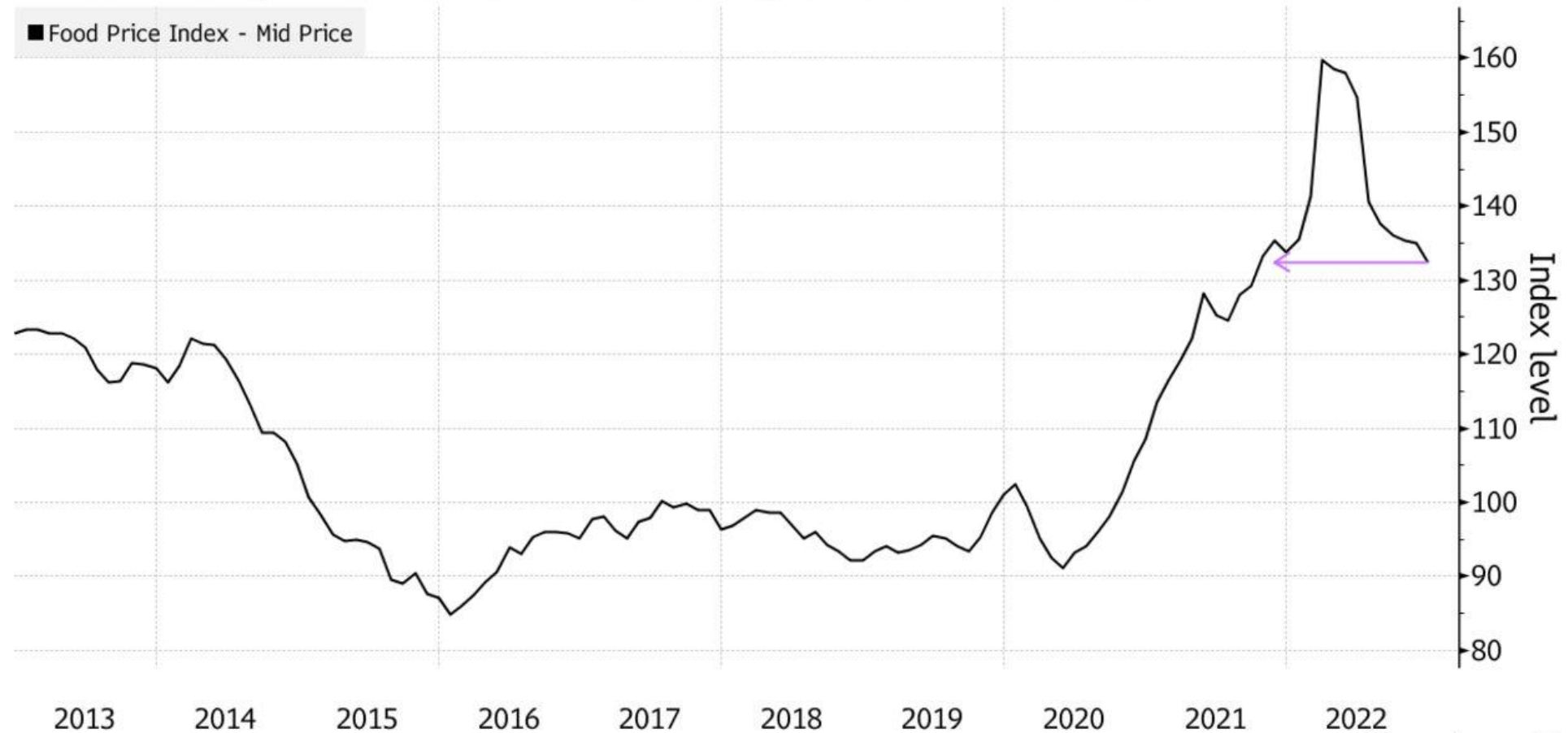
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- ◆ **Commodity prices have corrected to pre-invasion levels due to improved supply conditions, Ukrainian grain export deal, and macroeconomic factors**
- ◆ **Outlook uncertain – price risk still on upside:**
  - **Stability of Ukrainian grain export deal**
  - **Potential for export restrictions**
  - **Continued drought/weather conditions**
  - **Tight stocks**

# Global Food Price Correction

## World Food Prices End 2022 Just Below Where They Started

UN commodity index fell for a ninth straight month in December



Source: UN's FAO

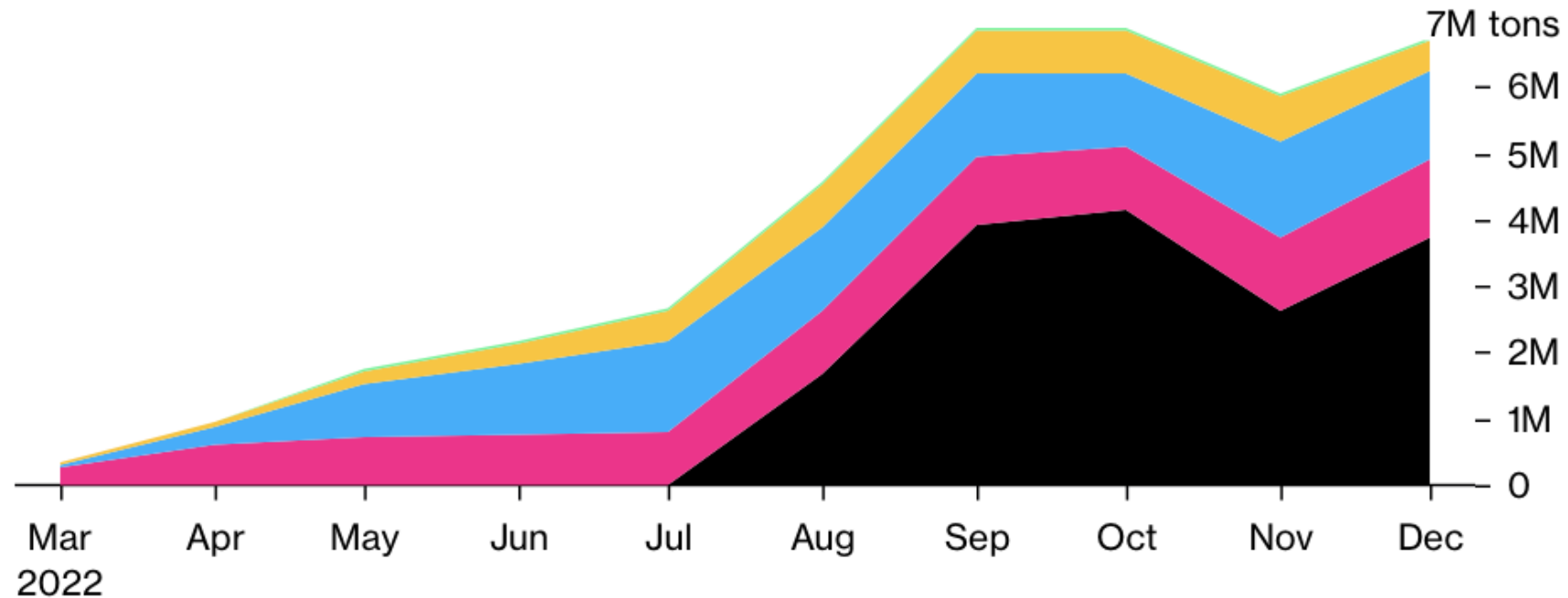
Bloomberg

# Grain Export Deal

## Ukraine Crop Exports Have Plateaued

Volumes have held about steady since September

■ Grain corridor ■ Rail ■ Danube ports ■ Trucks ■ Ferry



Source: UkrAgroConsult

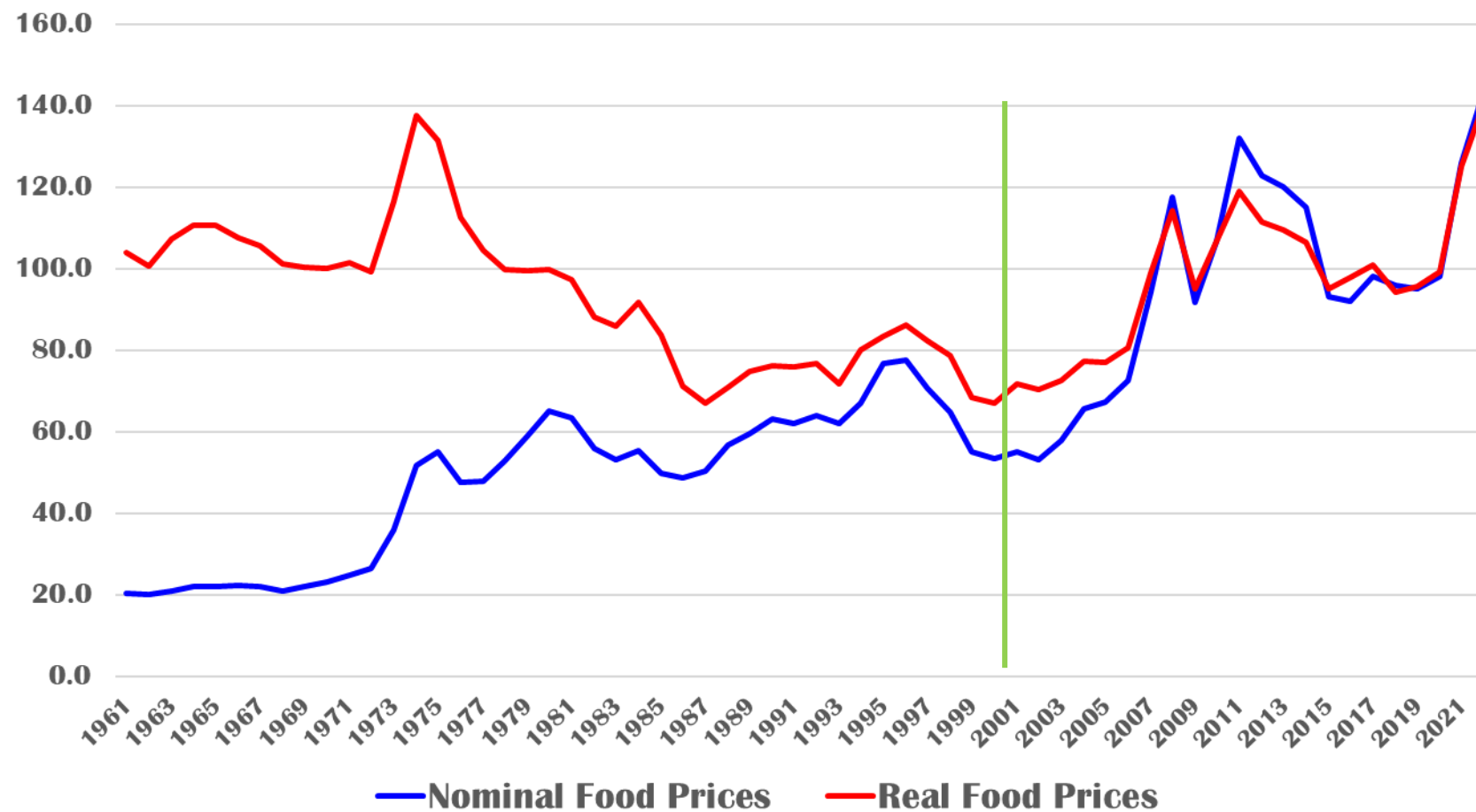
# Long-Run Food Prices

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- ◆ **1900-2010, real food prices fell on average by 1%/year while population increased by 5.3 billion**
- ◆ **Pressure on food supplies did not materialize due to:**
  - **Demand for food rising more slowly than income**
  - **Improved agricultural productivity**
- ◆ **Since 2001, real food prices have been rising, with two major spikes prior to 2021/22**
- ◆ **Renewed concerns about pace of agricultural productivity growth relative to demand for food**

# Long-Run Food Prices

2014-16 = 100



Source: FAO

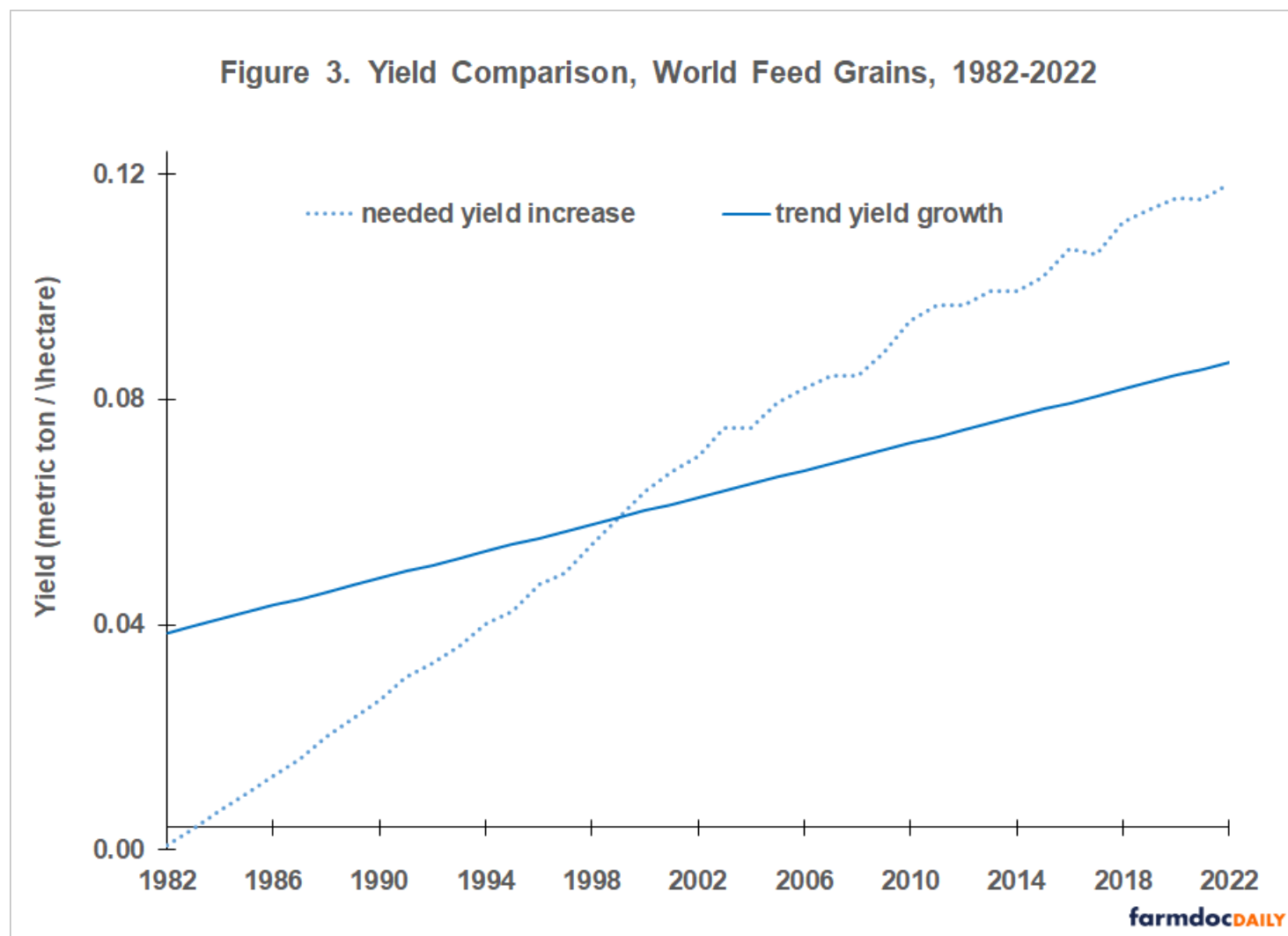
# Consumption-Yield Gap

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- ◆ **Demand forecast to rise 60% by 2050 (FAO, 2012)**
- ◆ **Increasing gap between consumption growth and yield of feed/food grains and oilseeds (Zulauf, 2022)**
- ◆ **16 million acres/year required to satisfy consumption (Zulauf, 2022)**
- ◆ **Increased supply likely to come at intensive (yield/cropping intensity) not extensive margin (land expansion)**
- ◆ **Without increased land conversion, and stable yield growth – higher food prices will be needed to ration supply**



# Required Yield Increase



# Output Growth and Productivity

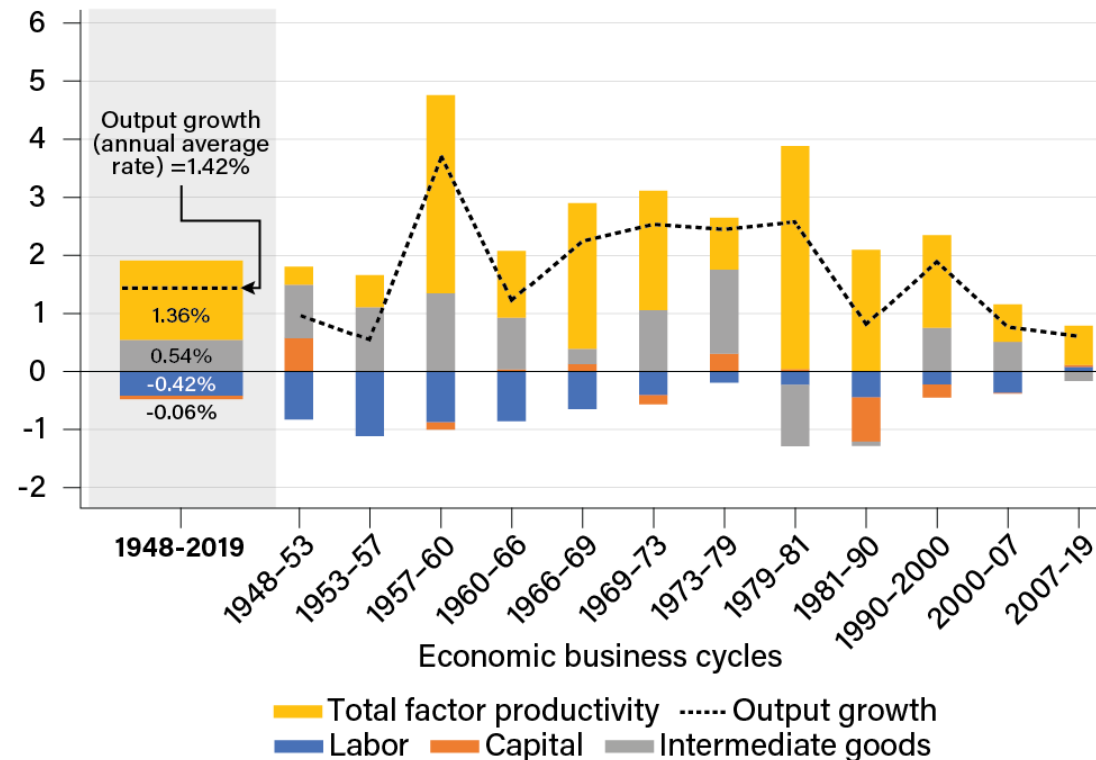
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- ◆ **Global agricultural output growth fell in 2010s, likewise in US**
- ◆ **Total factor productivity (TFP) growth also declined – TFP is overall efficiency with which agricultural inputs are combined**
- ◆ **In developing countries, output has also declined, Brazil is key exception where production and acreage have increased**
- ◆ **Several factors linked to slowdown: (i) weather shocks associated with climate change; (ii) emergence of new/resistant crop diseases/pests; (iii) insufficient investment in agricultural R&D**

# US Agricultural Output/Productivity Growth

**Total factor productivity was the leading contributor to U.S. agricultural output growth from 1948 to 2019**

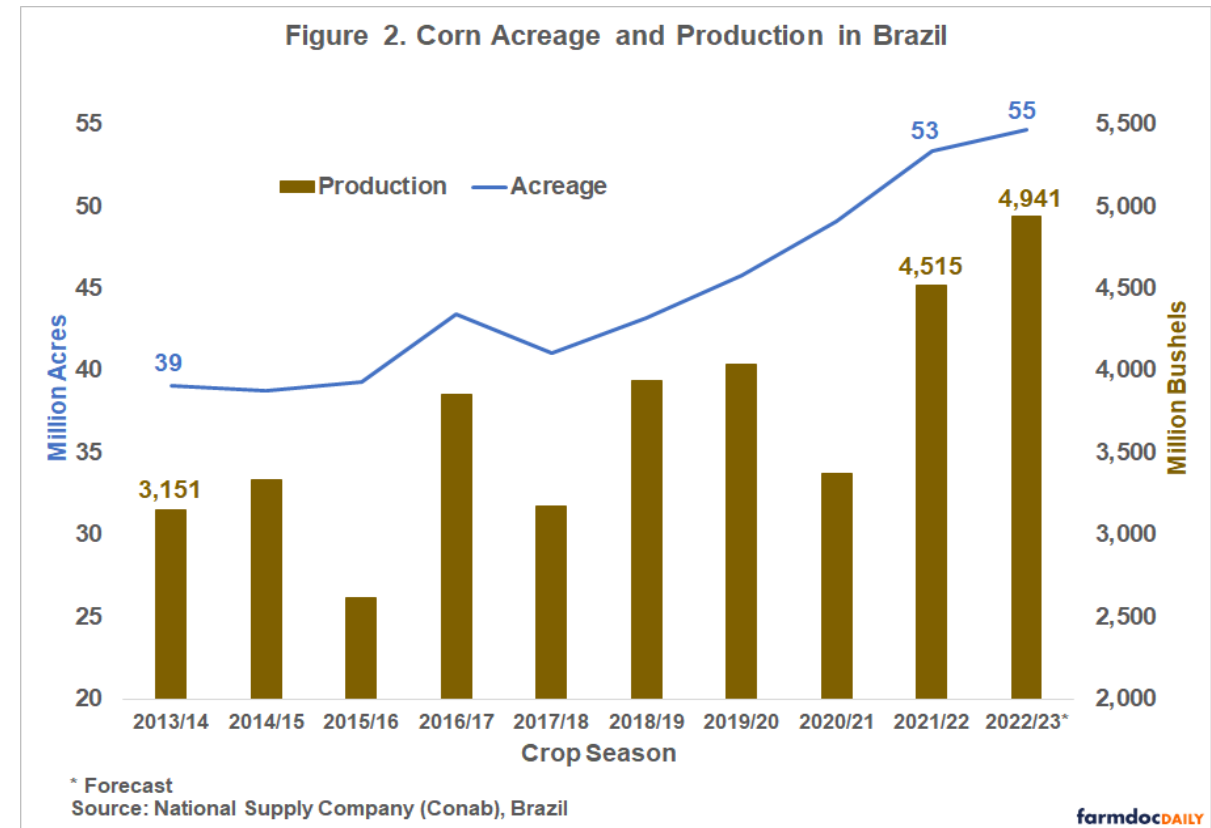
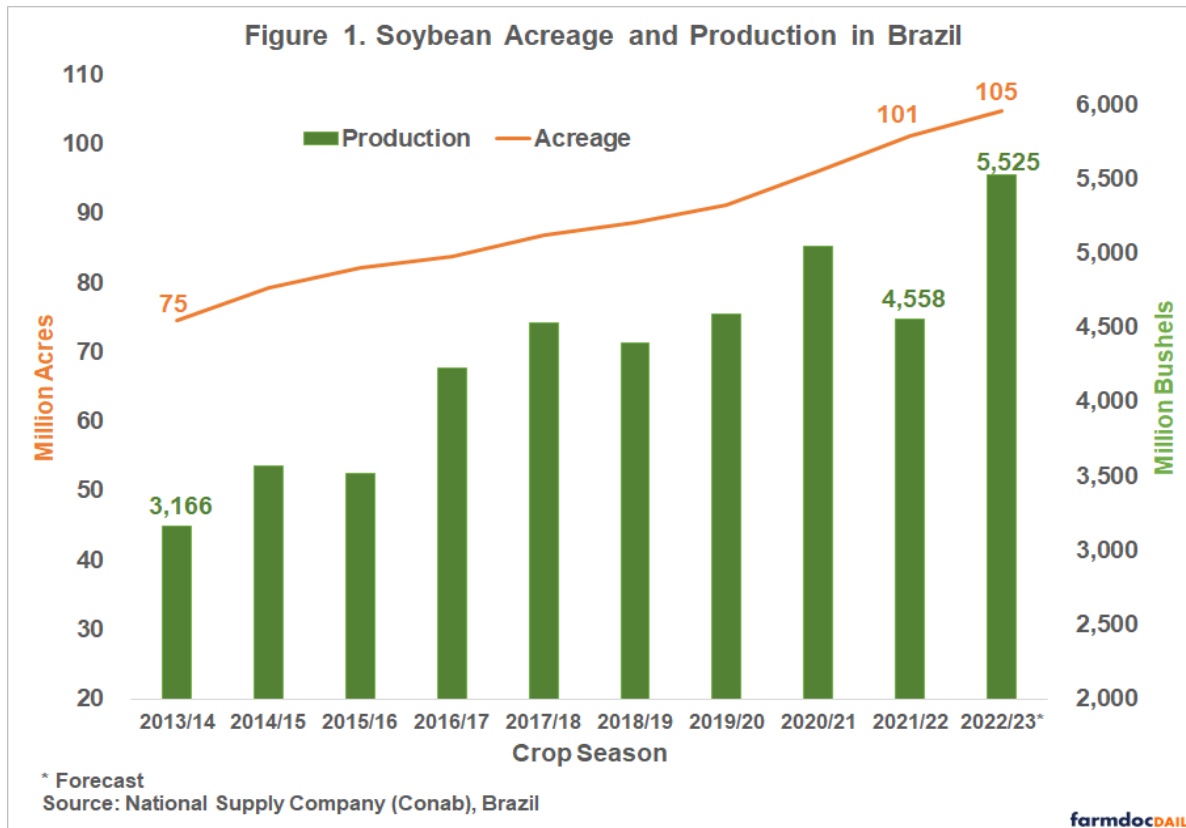
Contribution to annual output growth rate (percentage point)



Note: **Economic business cycles** are measured from cyclical peak to peak in aggregate economic activity.

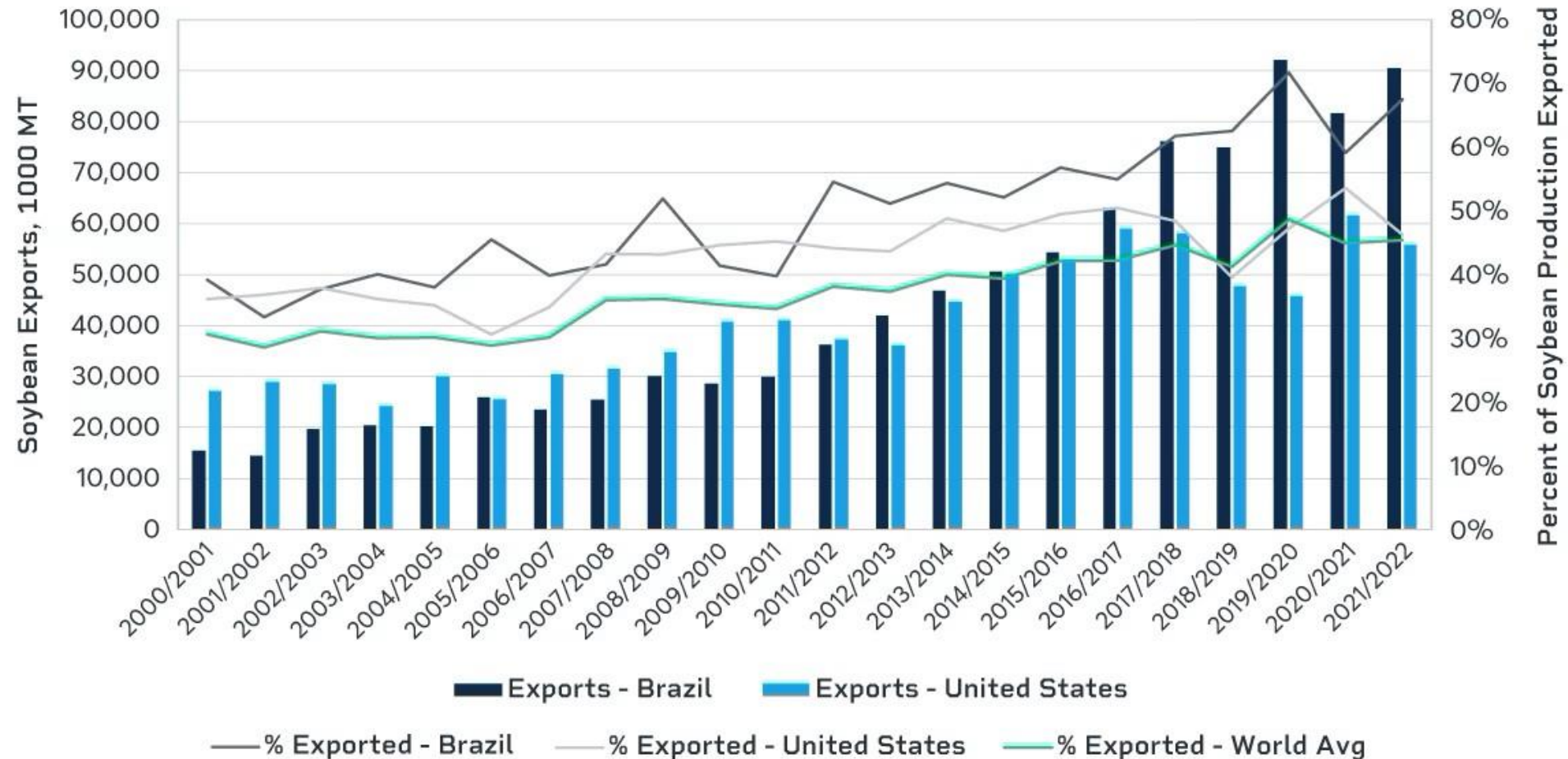
Source: USDA, Economic Research Service's Agricultural Productivity in the U.S. data product, updated January 2022.

# Brazilian Competition



- **Brazilian soybean production has been larger than US since 2019**
- **Brazilian corn production much smaller than US but growing fast**
- **Critically, Brazilian crops are replacing demand for US crops**

# Brazilian Competition: Soybeans

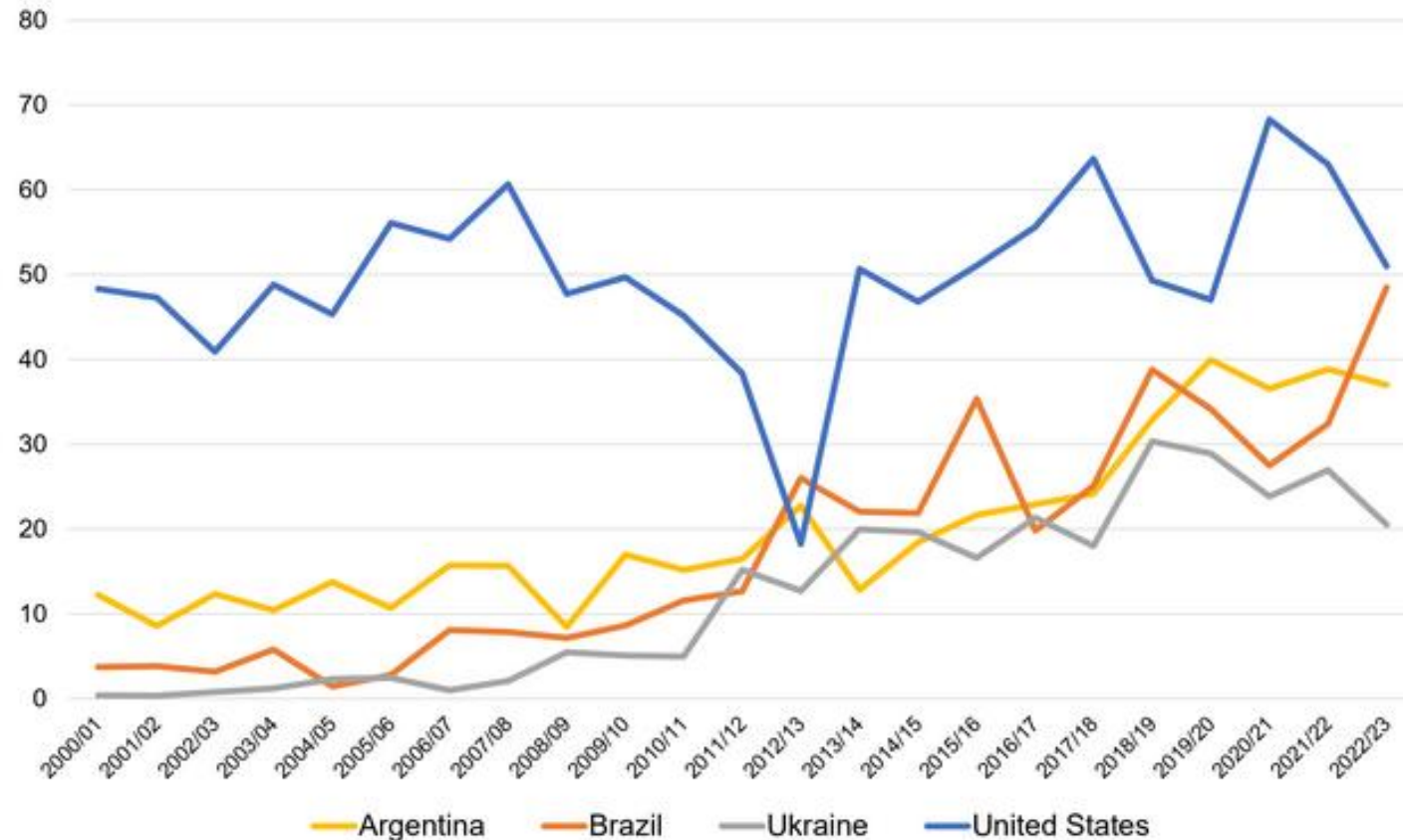


Source: Institutional Investor, *South American Soybeans: A Global Market*

# Brazilian Competition: Corn

## Annual Corn Exports: Top 4 Global Suppliers

(millions of tonnes; October-September trade year shown)



Data source: U.S. Department of Agriculture as of January 2023

@kannbwx

# Conclusions

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- ◆ **2021/22 - combination of events caused intense food price spike**
- ◆ **Raised concerns about future global agricultural output growth and productivity relative to forecast food demand**
- ◆ **Significantly, rate of output and productivity growth has also slowed down in US in past decade**
- ◆ **Brazil becoming key competitor to US in export markets**
- ◆ **Can Brazil close consumption growth – yield gap?**