

Agricultural Prices

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(FAO-OECD Agricultural Outlook 2013-2022)

Production, prices, trade, population:

- **Wheat and coarse grains yields are estimated to increase by 12% on average between 2013-2022.**
- **Rice production projected to increase by 9,8% to 549 Mt.**
Developing countries ...would account for virtually all of the projected production increase.
- **Relative profitability of oilseeds versus coarse grains is expected to favour the distribution of land towards oilseeds and lead to a 26% increase in world production.**
- **Agricultural trade to increase in response to strong demand in developing countries**
- **Traditional agricultural exporters of advanced economies such as Australia, Canada, the European Union, New Zealand and the United States will remain important players in global trade**
- **World population is expected to be 8 b (IFPRI)**
- **Prices of wheat, rice and oilseeds are projected to decrease in real terms.**

Shocks:

- 1.2%-TFP of wheat
- 2.7%-TFP of oilseeds
- 1%-TFP of paddy rice
- 1.1%- pop

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FAO Projections for some Agricultural Crops and Relative Changes		
Products	% change in production	Relative changes-SHOCKS
wht	12	1,2
osd	26	2,7
rice	9,8	1,0

Source: FAO-OECD 2013-2022 Agricultural Outlook

Secondly; Let's assume the average tariff rates on those products ;

- Developed countries/regions decreased by 10%
- Developing countries/regions decreased by 5%

Effects:

- The effects of productivity shocks wheat,oilseeds, rice production and trade and prices
- The effects of tariff shocks on wheat,oilseeds, rice production and trade and prices

GTAP Simulation Results

Variable	Products	1 BRA	2 CAN	3 CHN	4 EU27	5 IDN	6 IND	7 USA	13 MENA	14 SSAFR ICA	Total
qo(i,r)	pdr	0,3	1,2	0,1	0,1	0,5	0,4	0	0,4	0,3	5
	pdr-tms	0,3	1,2	-0,2	-3,6	0,5	0,5	3,6	0,2	0	2,7
	wht	0,7	0	0,2	0,3	1,1	0,4	0	0,5	0,4	6,3
	wht-tms	1,5	2,9	0,2	0	0,4	0,2	1,4	-0,4	-0,8	5,2
	osd	-0,2	-0,3	0,5	0,9	1,3	0,7	-0,1	0,5	0,2	7,5
	osd-tms	-0,3	-0,7	0,5	1	1,2	0,7	-0,1	0,4	0,2	3,6
ps(i,r)	pdr	-1,4	-1,5	-1,3	-1,1	-1,6	-1,2	-1,2	-1	-1,1	-17,3
	pdr_tms	-1,4	-1	-1,5	-1,6	-1,7	-1,2	-0,7	-1,1	-1,2	-18
	wht	-1,5	-1,4	-1,6	-1,3	-1,5	-1,4	-1,4	-1,4	-1,4	-20,1
	wht-tms	-1,4	-1,1	-1,6	-1,4	-1,8	-1,4	-1,2	-1,5	-1,5	-21,5
	osd	-3,2	-3	-3,2	-2,8	-3,6	-3,3	-3,2	-3	-3,1	-44,6
	osd-tms	-3,2	-3	-3,2	-2,8	-3,7	-3,3	-3,2	-3,1	-3,1	-46,8
qxs (i,r,s)	pdr	28,7	43,3	20	-12,8	61,7	-3,6	-3,5	-22,1	-0,7	69,6
	pdr-tms	-37	-18,6	19,5	68,4	41,1	-75,3	233,3	-62,4	-116,2	-83,9
	wht	14,6	1,6	23,4	-6,1	18,1	-1,5	0,2	2,8	1,5	104,6
	wht-tms	-17,7	6,7	2,7	10,6	21,1	-32,4	18,1	-2,8	-34,3	141,1
	osd	-16	-15,8	-8,6	-19,9	39,7	12,2	-8,1	-0,5	1,3	-13,7
	osd-tms	-25,9	-12,7	0,7	5,7	65,2	19,6	9,5	2,2	8,4	191,1

- Interpretation Results:

Shocks on all region 'aoall' «wht-1.2», «osd-2,7», «rice-1»						
Commodity	Production		Export		Prices	
	Increase	Decrease	Increase	Decrease	Increase	Decrease
pdr (rice)	Production in all regions particularly in Developing Countries such as Indonesia, India, MENA, Brazil increased		Mainly BRA, IDN, CAN, CHN		EU, USA, MENA	
wht (wheat)	Production in all regions particularly in Brazil, IDN, IND and rest of Asia increased		increased almost in all regions especially, BRA, CAN, CHN, IDN and rest of Asia		EU, IND	
osd (Oilseeds)	In many regions especially, CHN, IDN, IND, EU, Rest of Asia		IDN, IND, Rest of South East Asia, Rest of Asia		BRA, CAN, SHN, EU, USA, Last of LA, MENA	

Secondly, Let's assume that; (ceteris paribus) the import tariffs (tms) for pdr, wht and osd decreased by 10% for developed countries and 5% for developing countries/regions.

Secondly, Let's assume that; (ceteris paribus) the import tariffs (tms) for pdr, wht and osd decreased by 10% for developed countries and 5% for developing countries/regions, preserving previous shocks.

Shocks on all region 'aoall' «wht-1.2», «osd-2,7», «rice-1» PLUS tms shocks						
Commodity	Production		Export		Prices	
	Increase	Decrease	Increase	Decrease	Increase	Decrease
pdr	IND, USA, xse	CHN, EU, xea, xla, SSA	USA, EU, IDN, xse	BRA, CAN, IND, MENA	prices in all regions decrease more than the previous ones	
wht	USA, BRA, CAN	Mostly in developing countries	Mostly high increases except from some developing countries	BRA, INDA, xsa, SSA	prices in all regions decrease more than the previous ones	
osd	Decrease almost in all regions except EU		Increases almost from all regions		World Average price is slightly increased	

- Liberalizing agricultural markets seems to be more beneficial for developed countries.
- Although liberalizing trade for rice and wheat does make sense, decreasing import tariff rates for oilseeds markets gives contrary results.

OECD – FAO

Agricultural Output Report: *Expansion In China & Price Effects*

- **Base:**
- The report has some predictions about the supply prices of specific commodities for all of the regions on the world – for the year 2022
- Special focus on China's future outlook regarding commodity production

- **Claim of the report:**
- Both cereal grain and wheat production of China will increase by %28 and %8 respectively.
- Main driver of the increase: an improvement on the productivity of land.

Testing the prediction

- To track down the relation between productivity gains and the changes in production → create an alternative closure
- The «alternative» one is designed to give us the ability to shock change in output
- Firstly; swap the output change with the technical change in the related sector; that is:

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swap qo("wht","CHN")=aoall("wht","CHN");  
swap qo("gro","CHN")=aoall("gro","CHN");
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- Shocking the «qo» with the rates FAO-OECD Report predicted to be true;
- $qo(gro,CHN) \rightarrow 8$;
- $qo(wht,CHN) \rightarrow 28$;

<i>Technological Change</i>	<i>China</i>
Wheat	10,98
Cereal Grains	98,94

But what about price reflections?

- The report emphasizes the relation between enhanced productivity in 2 specific commodities and their total production.
- The influence of this **'technology triggered growth'** on other variables are unclear within the report. There *can* be additional effects especially on price levels of those agricultural commodities; since we believe China is an economy capable of manipulating global macro values by output expansions.

Agricultural Commodity	Change in World Prices After Productivity Driven Expansion in China
Wheat	-1,48
Cereal Grains	-5,81
Oilseeds	-0,249
Paddy Rice	-0,286

Decline In All Agricultural Products' Prices

- As it seems, world prices declined in all of the 4 commodities.
- But what is triggering that price decline should be different.
- For wheat and cereal grains; productivity improvement happened. That improvement led those 2 industries to be less dependent on land usage.
- Since the factor cost of wheat and cereal grains went down due to productivity gain, world prices of these commodities declined.

% Change in the Land Demand In China	
Wheat	-1,78
Cereal Grains	-32,1
Oilseeds	2,12
Paddy Rice	1,01

Explaining The Decline: Increased Availability !

- Despite the demand levels of other agricultural commodities toward main endowment (land) rose; the final world price of these industries fell down *as if there is an improvement in productivity...*
- Because, more land had been freed up on account of technical progress in wheat (%98) and cereal grains (%11). The expanded availability of more land caused other 2 sectors (paddy rice & oilseeds) to use the land more cheaper.
- Out of technical improvement, oilseed and paddy rice production began to be much cheaper in terms of land. This contributed to the decline in the world prices in the commodities whose production technology did not experience any progress.

% Change in the Land Price In China	
Wheat	-6,05
Cereal Grains	-35,3
Oilseeds	-2,04
Paddy Rice	-2,24