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Effects of a change to fallow land in the EU on the global grain market

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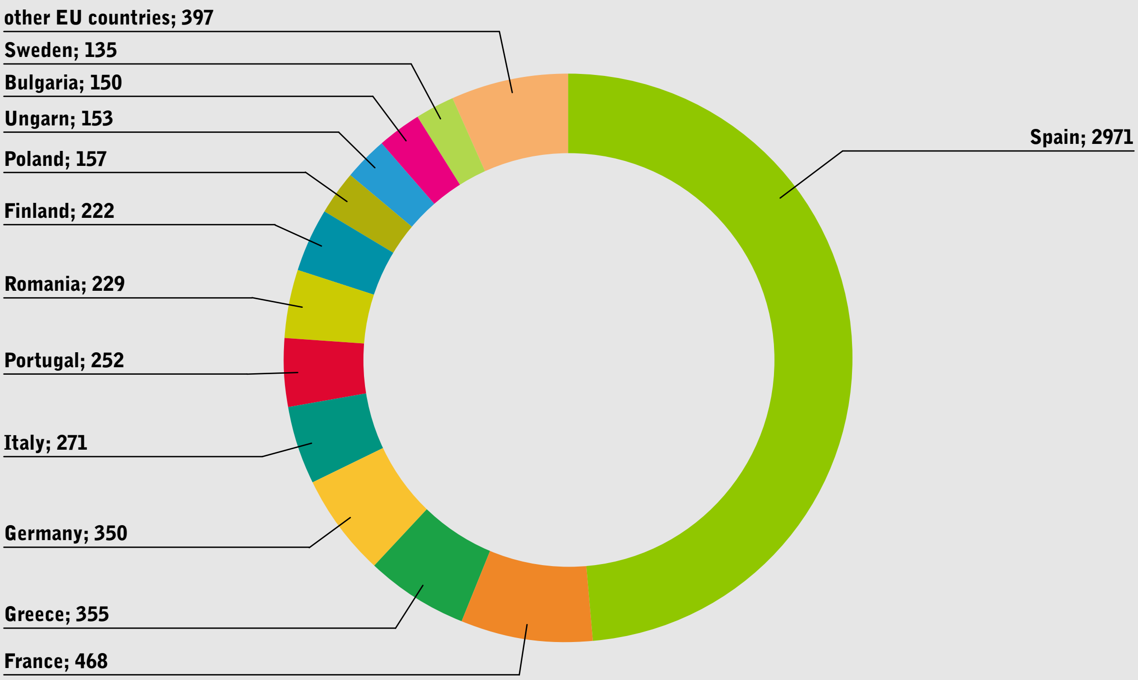
Contents

1 Background

Considering the steep increase in grain prices caused by the war in Ukraine, and the knock-on effects on food-importing countries, various options are being discussed in Germany and at EU level to help ease the situation on the grain market. The discussion particularly focuses on the proposal of suspending the minimum of 4% for fallow land which would be implemented at the start of the new funding period of the EU Common Agricultural Policy (CAP) in 2023, and on extending production to current fallow areas.

According to the latest data available from the FAO[1], there were around 6.1 million hectares of fallow land in the EU-27 countries in 2019. This represents about 6% of the arable farmland[2] in the EU. It is striking that the proportion of fallow land in the individual member states differed greatly. Mediterranean countries such as Spain, Greece, and Portugal had markedly higher proportions of fallow land than other EU countries. Spain alone accounted for almost half of all fallow areas in the EU (Figure 1).

Fig. 1: Fallow land in EU member states in 1.000s of hectars in 2019



Source: Own presentation based on data from FAOSTAT

1 *https://www.fao.org/faostat/en/#data*

2 Defined here as areas with annual crops, pastures and meadows, as well as fallow land; excluding permanent crops.

According to the FAO, nearly 3 billion tonnes of grain were produced worldwide in 2019, including more than 1.1 billion tonnes of maize and nearly 0.8 billion tonnes of wheat, the most important cereals. For these cereals, the EU, Ukraine, and Russia are also important producing regions. In 2019, the EU was responsible for about 10.1% of global grain production. In comparison, the proportion produced by Ukraine for the same year was around 2.5%, and 4.0% for Russia. For wheat, the global market shares for the EU, Ukraine and Russia were 18.2%, 3.7% and 9.7%, and for maize their market shares were 6.1%, 3.1%, and 1.3%, respectively.

2 EU fallow scenarios

On the basis of the FAO data, various scenarios have been developed for the crop year of 2022/23 regarding changes in fallow areas in the EU, and the implications of these changes for production quantities and prices on global grain markets have been calculated. It has been assumed that the yield potential of the fallow areas corresponds to the average yields of the respective EU countries. This means that the potential production contribution of the fallow areas tends to be overestimated, as it is generally weaker locations with below-average potential yields that are left fallow. The effects on production quantities and prices should therefore be interpreted as upper limits.

To estimate the global market price effects, for all the scenarios it is assumed that the own-price elasticity of global grain demand is -0.3 and the own-price elasticity of supply is 0.3[3]. This is an inelastic market reaction, which is typical for basic foodstuffs like grain. As the market reaction is subject to uncertainty, a sensitivity analysis has been carried out with very low quantity adjustments (own-price elasticity of demand: -0.1 and supply: 0.1), and with higher flexibility (own-price elasticity of demand: -0.5 and supply: 0.5)[4]. This allows us to narrow down the range within which the price changes caused by production quantity changes will probably lie.

Scenario I: 4% Fallow land
In this scenario, a minimum fallow of 4% of cropland is implemented across the EU. It is assumed that only countries with a fallow area of less than 4% at national level in 2019 will set aside additional areas. It is also assumed that the distribution of areas taken out of production corresponds to the current proportions of individual crops in current land use, which tends to overestimate the effect on grain, which is generally grown on better than average land.

Scenario II: No fallow land
This scenario assumes no fallow areas in the EU. This means that the fallow areas present in 2019 are distributed on the basis of the existing land-use structure to the different types of use (crops and grassland)[5]. Possible limitations to the use of these areas on the basis of

3 The own-price elasticity shows the change in demand or supply quantities resulting from a one percent change in the price of that good.

4 The values for elasticities are based on Seale et al. (2003): *https://www.ers.usda.gov/publications/pub-details/?pubid=47430*

5 With the exception of Spain, where the proportion of crops is limited to 48% of the fallow areas, as this proportion has been specified to be appropriate for cropping: *https://www.agroberichtenbuitenland.nl/actueel/nieuws/2019/12/17/spain-has-more-than-2.32-mh-of-abandoned-and-unused-agricultural-land* a lack of resources such as workforce or water are not considered, which again tends to overestimate the production potential.

Scenario III: Fallow land to grain

This scenario assumes that grains are grown on all areas that were fallow in 2019. This is very unrealistic, as not all locations are appropriate for growing grains. This scenario should be used to clarify the maximum potential for use of fallow areas in the EU.

To better classify the effects of a change in fallow areas in the EU, two comparative scenarios arising from the war in Ukraine are considered:

Scenario IV: Harvest loss in Ukraine

In this scenario, the effects of a complete loss of the grain harvest in the coming season in Ukraine is analysed. This is based on the current situation in the country, where there is a lack of workforce and operating resources at farms, so arable land cannot be cultivated. The blockade and the destruction of trade infrastructure also mean that grain that is available in the country may not reach the global market.

Scenario V: Harvest loss in Ukraine + halt to trade with Russia

This scenario goes beyond the previous scenario by assuming that Russia will also be entirely excluded from international trade, so no foreign trade in grain will occur and Russia will be entirely decoupled from the world market. The reduction in Russia's contribution in the form of net grain exports could result from a full embargo (including countries such as China and others), or it could be caused by a reduction in Russian production capacity due to an economic crisis and a lack of spare parts for agricultural machinery because of sanctions. In fact, Russia has already started to limit export of grains.

3 Quantity and price effects

Scenario I: If all EU member states that had a proportion of fallow land below 4% in 2019 increased this proportion to 4% in line with the agreed policy, using the assumptions applied, a further 1.2% of the cropland in the EU would not be farmed, corresponding to around 900 thousand hectares. This would mean that European grain production would fall by a little more than 1% overall. This would correspond to a reduction of 0.1% in global production. As can be seen in Table 1, the effects would be felt a little stronger for wheat and slightly less for maize.

The decreased production in the EU would lead to an increase in the average grain price on the global market of about 0.2%. The sensitivity analysis shows that the expected change could range from 0.1% to 0.6%, depending on the assumed elasticities. For wheat the resulting price change on the global market is about 0.4%, with a possible change range from 0.2% to 1.1%, and for maize the range is from 0.1% to 0.3%.

Scenario II: In this scenario, without fallow areas, grain production could be increased by up to 4.4%. In terms of global production, this would mean an increase of up to 0.4%. Wheat production levels in the EU would be up to 3.8% higher, globally this would lead to a production increase of up to 0.7%. The quantity of maize produced globally would increase by 0.3%.

With standard elasticities, this scenario leads to a decrease of 0.7% in the average grain price on the world market. The change range is between -0.4% and -2.2%. In this scenario, the wheat price falls more than the average, namely by 1.1%, with a change range from -0.7% to -3.4%. For maize, a smaller price reduction of 0.5% is expected, with a range from -0.3% to -1.4%.

Scenario III: If all fallow was stopped, and these areas were used exclusively to grow grain, this would lead to an increase of 7.5% in EU grain production quantity, which would mean an increase of 0.8% in global production. For wheat, EU production would increase by 6.5%, corresponding to an increase of 1.2% in global wheat production. For maize, the global production quantity in this extreme scenario could be increased by a maximum of 0.5%.

In line with the quantity effects, the global market price effects in this scenario would be slightly higher: The average grain price would fall by 1.3% with standard elasticities, with the wheat price dropping by 2.0% and the maize price by 0.8%.

Scenario IV and V: In comparison with the scenarios described above, the global production effects of a harvest loss in Ukraine due to war are substantially higher (Table 1). The quantity of grain available globally would drop by 2.5%, and combined with a halt to trade with Russia it would drop by as much as 4.0%. The effects would be most pronounced in the wheat market, as the relatively high market shares of Ukraine and Russia would mean that the available quantity would fall by up to 8.7% (Scenario V).

The price effects would also be substantially higher than those resulting from the change in fallow in the EU. It is to be expected that a harvest loss in Ukraine would increase grain prices by 4.2% on average. Combined with a halt to trade with Russia, this figure would be 6.7%. With very low market flexibility prices could rise by as much as 20%. In the wheat market in particular, above-average price rises are to be expected. The price increase on the world market with standard elasticities would be 14.6% (Scenario V). With low market flexibility the global market price for wheat could even increase by up to 43.7%. The effects are not as marked for maize, because Ukraine and Russia are responsible for a smaller proportion of global production in this market. The maximum price rise for maize in Scenario V would be 17.3% (Table 1).

Table 1: Change in production quantity and prices as percentages

Scenario:			**I** **4% fallow land**	**II** **No fallow land**	**III** **Fallow lang to grain**	**IV** **Harvest loss in Ukraine**	**V** **Harvest loss in Ukraine + halt to trade with Russia**
Grain	Production quantity	EU	-1,1	4,4	7,5		
		Global	-0,1	0,4	0,8	-2,5	-4,0
	Global market price	Average	0,2	-0,7	-1,3	4,2	6,7
		Min.	0,1	-0,4	-0,8	2,5	4,0
		Max.	0,6	-2,2	-3,8	12,6	20,0
Wheat	Production quantity	EU	-1,2	3,8	6,5		
		Global	-0,2	0,7	1,2	-3,7	-8,7
	Global market price	Average	0,4	-1,1	-2,0	6,2	14,6
		Min.	0,2	-0,7	-1,2	3,7	8,7
		Max.	1,1	-3,4	-6,0	18,5	43,7
Maize	Production quantity	EU	-1,0	4,6	7,7		
		Global	-0,1	0,3	0,5	-3,1	-3,5
	Global market price	Average	0,1	-0,5	-0,8	5,2	5,8
		Min.	0,1	-0,3	-0,5	3,1	3,5
		Max.	0,3	-1,4	-2,4	15,7	17,3

Source: own calculations based on data from FAOSTAT and USDA

4 Conclusion

A reduction in fallow areas in the EU would only have a minor effect on the global market price for grain, as the extra quantity that could be produced on the new cultivated areas would be low on a global scale. Likewise, there would only be a marginal reduction in global grain production if the EU's 4% fallow goal was implemented. This would therefore hardly affect the global market price. We should bear in mind that the assumptions made in these calculations of potential production should be viewed as upper limits; in fact, the effect on the global market would probably be even smaller than these calculations indicate.

If we compare these effects with the consequences of the war in Ukraine and the possible result of a halt to trade with Russia, it is clear that the balancing effect achieved by cancelling the 4% fallow goal would in fact be low in relation (Scenario II could compensate for around 10% of the effects expected to result from Scenario V).

Furthermore, grain prices are currently rising more steeply than could be explained just by the drop in grain quantity analysed here caused by the war in Ukraine. There are other reasons for this phenomenon, including increased energy and fertiliser costs, and logistical problems in trade. Likewise, this analysis does not consider potential price effects that may result from the current uncertainty and linked speculation, through stockpiling and on the commodity futures market. Thus, given current price increases, the price-reduction effect of lifting fallow goals in the EU, is found to be very low.

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