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Societal benefits of modern poultry meat production in Germany and the EU

An economic and environmental analysis

Harald von Witzke
Hans-Wilhelm Windhorst
Steffen Noleppa

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Harald von Witzke
Humboldt Forum for Food and Agriculture e.V. (HFFA)

Hans-Wilhelm Windhorst
Wissenschafts- und Informationszentrum
Nachhaltige Geflügelwirtschaft (WING)

Steffen Noleppa
HFFA Research GmbH

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Executive summary

The global environment in which world food and agriculture as well as food and agricultural policy makers must make their decisions has changed significantly since the turn of the millennium. The long-term trend of declining agricultural commodity prices has come to an end. The turn of the millennium marks a mega-trend reversal in international agricultural markets. Since 2000 agricultural prices have tended to rise – with significant volatility, as in the past. The reason is that global demand has been outpacing supply growth. This development may be expected to continue. The demand growth will materialize predominantly in developing and newly industrializing countries – in particular for livestock products, especially poultry meat.

The rapidly growing demand could be met by expanding the agricultural acreage or by producing more on the land being farmed already. Expanding the agricultural acreage is not an option. As land is limited, most of the production growth must come from yield growth. In addition, water is becoming increasingly scarce. Hence, water efficiency is also a significant issue to consider.

The markets for poultry meat in both Germany and the EU at large have been growing rapidly. At the same time, there has been a growing tendency towards diversity of preferences for quality. The measure to account for this which is consistent with a market economy is credible labelling of different qualities.

A central insight of economic theory is that every decision has its cost. The cost of a decision is what one must give up for it. As modern poultry production sometimes is the subject of public debate and criticism, this study has answered the research question of what to give up if modern and highly productive poultry meat production were replaced by some alternative methods of production. Regional focus of the analysis is on Germany and the EU respectively. More specifically, we compare the common production method of modern broiler and turkey production with two alternatives which are referred to in the literature as “extensive” and “ecological”.

As it turns out, these alternative methods of poultry meat production are neither extensive nor ecological. The reason is that they are less efficient as they use more resources to produce a given quantity of meat than the standard method. This particularly applies to land, water and labour.

Replacing the standard method of modern poultry production by the “extensive” method would raise production costs in the range of 25 percent to 30 percent. This compares to a cost increase in “ecological” production of more than 100 percent.

Therefore, production declines and the price goes up, however, by less than the production declines. As a consequence, agricultural incomes decline in the case of "extensive" production by EUR 400 million in Germany and by almost EUR 3 billion in the EU. When switching to "ecological" production these numbers amount to EUR 1.1 billion in Germany and more than EUR 8 billion in the EU. In addition, there are income losses in the same order of magnitude in the upstream and downstream industries of agriculture.

Declining domestic production acts to increase the incentives for additional production abroad. Both feed efficiency and yields of feedstuffs abroad are lower than at home. Therefore, global cropland would be expanded. In the "extensive" scenario for Germany the global cropland expansion would amount to more than 70 000 hectares and for the EU to more than 450 000 hectares. The numbers for the "ecological" scenario are about 160 000 hectares and 900 000 hectares respectively.

The global agricultural cropland expansion would result in additional CO_2 emissions. At a cost to society of EUR 72/t CO_2 the social cost of switching to "extensive" production in Germany and the EU would amount to almost EUR 1 billion and more than 6 billion respectively. In the case of "ecological" production, these numbers would be almost EUR 2.2 billion for Germany and more than EUR 12 billion for the EU.

In addition, the expansion of the global cropland acreage implies a loss of biodiversity which in Germany's case would be equivalent to up to 36 000 hectares of rainforest in the "extensive" scenario and 77 000 hectares in the "ecological" scenario. For the EU, these numbers would amount to up to 223 000 hectares and 449 000 hectares respectively.

Modern poultry meat production in Germany and the EU is also very efficient in the use of water. In the "extensive" scenario for Germany, global water use would increase by more than 750 million m^3 and for the EU by 5.3 billion m^3. In the "ecological" scenario the additional global water use would increase by about 2 billion m^3 and 14.5 billion m^3 respectively.

In conclusion, the value to society of modern poultry meat production is very high both in Germany and the EU when compared to "extensive" or "ecological" production. Moving to "extensive" or "ecological" production would result in substantial income losses for poultry meat producers as well as for upstream and downstream industries. In addition, this would cause a significant expansion of global cropland and – along with it – losses in natural habitats and more CO_2 emissions. The climate cost of the alternative scenarios would be as large as the income loss in agriculture and its upstream and downstream industries. There also would be a negative impact on world food security.

Content

List of figures

List of abbreviation

AMI – Agrarmarkt-Informations-Gesellschaft

AOCP – Association of Ontario Chicken Producers

ASEPRHU – Asociación Española de Productores de Huevos

BEIS – Department for Business, Energy and Industrial Strategy

BMEL – Bundesministerium für Ernährung und Landwirtschaft

BÖLW – Bund Ökologische Lebensmittelwirtschaft

CBD – Convention on Biological Diversity

CDG – Country Development Groups

CFO – Chicken Farmers of Ontario

CIWF – Compassion in World Farming

CW – Carcass Weight

DG AGRI – Directorate-General Agriculture and Rural Development

DLG – Deutsche Landwirtschaftsgesellschaft

EC – European Commission

EPA – United States Environmental Protection Agency

EU – Europäische Union

FAO – Food and Agriculture Organization

FAEN – Forschungsverbund Agrar- und Ernährungswissenschaften in Niedersachsen

GDP – Gross Domestic Product

GEF-BIO – Global Environment Facility Benefits Index of Biodiversity

GHG – Greenhouse Gas(es)

IMF – International Monetary Fund

KTBL – Kuratorium für Technik und Bauwesen in der Landwirtschaft

LDC – Less Developed Countries

LW – Live Weight

LLDC – Least Developed Countries

LWK NRW – Landwirtschaftskammer Nordrhein-Westfalen

MEG – Marktdaten Eier und Geflügel

MMM – Multi-Market-Model

NBI – National Biodiversity Index

NIC – Newly Industrialised Countries

OBT – Observaçao da Terra

OECD – Organization for Economic Co-operation and Development

OIC – Old Industrialised Countries

RoW – Rest of the World

UN – United Nations

UNEP – United Nations Environment Programme

USDA – United States Department of Agriculture

VLM – Virtual Agricultural Land Trade Model

WBA – Wissenschaftlicher Beirat für Agrarpolitik beim BMEL

WING – Wissenschafts- und Informationszentrum Nachhaltige Geflügelwirtschaft

WRI – World Resources Institute

ZDG – Zentralverband der Deutschen Geflügelwirtschaft e.V.

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HFFA Research GmbH
Bülowstraße 66/D2
10783 Berlin, Germany

E-Mail: office@hffa-research.com

Web: www.hffa-research.com