# Do trade agreements activate new links and increase flows? A data-driven analysis of the global cereal market

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# Do trade agreements activate new links and increase flows? A data-driven analysis of the global cereal market.

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Given the importance of food imports for food security and the role of exports in income generation, food trade is an indispensable component of most countries' development strategies. Global and regional agreements set the rules for trade policies between countries. In this context, we investigate the impact of trade agreements on the trade network of agricultural products. We study whether the ratification of agricultural-oriented trade agreements has an influence on the topology of the cereal trade network (link establishment) and the variation of flows through existing links.

Our analysis differs from previous studies for three main reasons. Firstly, it is a data-driven analysis, based on a dataset that combines the trade agreement structure provided by the World Bank and cereal trade flow data from FAOSTAT. Secondly, the analysis focuses on a global scale, considering data for all countries where information is available. Finally, we carried out the analysis at the level of aggregated cereals, both from a monetary (US$) and diet-based (Kcal) perspective, over the period from 1993 to 2015. This time interval includes the most important recent reforms in the agricultural sector.

The results show that a new trade agreement between two countries increases the probability of activating a grain trade link by 7.3% in the year after the agreement is ratified. In the case where trade agreements are not considered, the probability of triggering a new link between two countries drops to 1.3%.

Regarding the volume of flows, we classify variations into three categories: flow decrease (negative variation of the flux), mild increase (<50% increase in the flow intensity), and sharp increase (>50% increase).

The results obtained, both in economic value (US$) and in quantitative variations (Kcal), show that the entry force of a trade agreement has two main effects: in flows covered by trade agreements, there is a significant increase in the percentage of flows experiencing a sharp increase, and a reduction of the percentage of flows experiencing a negative variation.

We, therefore, provide here global-scale, data-based evidence. Previous results suggest that trade agreements are facilitators of the connections between different countries and, therefore,

facilitators in terms of global food trade accessibility. This work aims to be a first attempt to investigate the impacts of international agreements simultaneously on the topology of the agricultural product trade network, and on the increase of existing link flows. Our intention is to dedicate further analysis about which trade agreements perform better, increasing the traded volume, to explore the role of trade liberalization at a worldwide level.