



Peru

DID LOWER TARIFFS ON YELLOW CORN HAVE A POSITIVE EFFECT ON THE WELFARE OF PERUVIAN HOUSEHOLDS?

CONTEXT

Yellow corn is the third most important agricultural crop in Peru and the main input for the production of chicken meat. Taken together, the production of yellow corn and chicken meat accounted for 23 per cent of agricultural gross domestic product in 2012. With per capita consumption having increased from 19 kg in 2000 to 37 kg in 2011, chicken meat has become one of the most important products in the food expenditure basket of Peruvian households.

Even with tariff protection by the government, domestic production of yellow corn has not increased significantly in recent years. Due to small-scale operation and an informal sales market, domestic farmers cultivating yellow corn are not in a position to supply the volumes required by formal sector firms in the compound feed and broiler industries. For this reason, domestic demand for yellow corn has mainly been met by imports. As the international price of yellow corn increased by 186 per cent between 2000 and 2011, the

government became concerned about the effects on household welfare and reduced the level of tariff protection in an attempt to reduce local prices. The effective tariff applied to yellow corn was cut from an annual average of 33.3 per cent in 2000 to zero in 2011.

During the same period when the tariff reductions were implemented, average domestic prices of yellow corn and chicken meat increased by 31.1 and 28.4 per cent, respectively. The effectiveness of tariff reductions applied to yellow corn imports in Peru has therefore come under scrutiny because their expected benefits did not seem to have been significantly transferred to buyers of yellow corn and its main derivative product, chicken meat. In this context, it is important to understand how and to what extent the tariff reduction has been reflected in domestic prices of

yellow corn and chicken meat, and how it has affected the welfare of households buying chicken meat. The assessment of the impact of the tariff reduction on consumer welfare has not been undertaken so far and could therefore be of interest to policymakers in the international trade and social development areas.

The coastal regions of Peru meet their yellow corn demand mainly through imports, while the highlands and jungle regions consume mostly domestically produced corn. It is therefore expected that trade policy measures aimed at altering border prices of yellow corn would have a more significant effect on the coast, where, in addition, more than 90 per cent of the broiler industry is located. For these reasons, our analysis focuses on the markets for yellow corn and chicken meat in the coastal regions of Peru.

METHODOLOGY AND DATA

We use a two-step approach to provide a tentative explanation of the apparent mismatch between the reduction of tariffs and the increase in domestic prices, and the effects of tariff reduction on the welfare of Peruvian households: (a) estimation of the effect of tariff changes on domestic wholesale prices of yellow corn (tariff pass-through), and the subsequent effect of domestic prices of yellow corn on retail prices of chicken meat (price pass-through); and (b) estimation of the impact of price changes of chicken meat on household welfare depending on the share of chicken meat in total consumption (first-order effect).

The first step estimates the tariff pass-through to yellow corn prices following the theoretical framework applied in Nicita (2009). Accordingly, wholesale prices of yellow corn depend on international and producer prices, effective tariffs, trade costs related to imports, and an index of market concentration of importing firms. We use Chicago market closing spot prices and monthly data on producer and wholesale prices of yellow corn in eight coastal regions in Peru where

most of the production and demand for yellow corn are concentrated. Subsequently, since yellow corn is not directly consumed by households, we estimate to what extent its prices affect prices of chicken meat, the most important derivative product of yellow corn. We also consider other factors affecting chicken meat prices, in particular prices of soy beans (alternative poultry feed) and fish meat (substitute for chicken meat). The analysis uses monthly data from Lima, a region that accounts for 65 per cent of chicken meat sales in the country.

The second step estimates the welfare gain for each household from the change in retail prices of chicken meat induced by the tariff reduction. In order to better understand the distribution of the welfare impact among different types of households, we report changes in welfare for urban versus rural households, and for households with different levels of poverty. This part of the analysis uses data from the 2011 National Household Survey in Peru, which covers 9,561 households in the coastal regions.

FINDINGS

The estimation of the tariff pass-through to wholesale prices of yellow corn suggests a moderate to high transmission of tariff changes to domestic prices. We find that 74 per cent of the tariff changes in yellow corn are transmitted to wholesale prices of yellow corn. This result is not surprising because most of the yellow corn demand on the coast is met through imports. On the other hand, the estimate of the price pass-through of yellow corn to chicken meat prices shows that only 22 per cent of the reduction in yellow corn prices is transmitted to retail prices of chicken meat. This may be explained by the fact that the broiler industry is highly concentrated – the market share in Lima of the four largest firms is 70 per cent – and that yellow corn, although an important input, accounts for less than half of the production costs of chicken meat.

The estimation shows that the tariff reduction for yellow corn helped mitigate increases in local prices of yellow corn and chicken meat. The reduction in yellow corn tariffs resulted in the reduction of yellow corn and chicken meat prices by 24.7 per cent and 5.5 per cent, respectively. A counterfactual interpretation of these results

implies that if the tariffs had not been reduced, local prices of yellow corn and chicken meat would have risen by 55.8 per cent and 33.9 per cent, respectively (instead of 31.1 and 28.4 per cent).

With regard to consumer welfare, the results imply that the reduction in chicken meat retail prices induced by the tariff reduction for yellow corn generated an average welfare gain of 0.24 per cent on the coast of Peru. This can be explained by the fact that, despite being an important component of the food expenditure basket (with a 15 per cent share), as a single product, chicken meat can only have a marginal impact on welfare. An additional explanation may be that the effects of the tariff reduction on household labour income are not considered in this analysis.

Welfare gains were slightly higher in urban areas (0.24 per cent) than in rural areas along the coast (0.22 per cent). The estimated effect of yellow corn tariff reductions had a pro-poor bias: on average, poor households on the coast registered a higher welfare gain (0.29 per cent) compared to non-poor households (0.23 per cent).

POLICY RECOMMENDATIONS

The results suggest that the benefits of the tariff reduction may not have been fully transmitted to consumers, but rather mostly captured by firms importing yellow corn and by the largest broiler producers, which are vertically integrated firms producing their own compound feed from imported yellow corn. There is some evidence that the yellow corn market in Peru is moderately competitive, but the opposite is true in the broiler industry, where the four biggest producers account for 70 per cent of total sales in Lima, a region that represents 65 per cent of chicken meat sales in the country.

Different patterns used by the broiler industry to source yellow corn on the coast compared to the highlands and jungle regions point to a low degree of integration in the national yellow corn market. Therefore, trade policy measures aimed at altering border prices of yellow corn have a more significant effect on the coast and a marginal effect on the highlands and jungle regions. This result highlights the importance of furthering market integration as a means of extending the benefits of tariff reduction, in particular to the poorest groups in the highlands and jungle regions. Port and highway infrastructure development are among the measures that could be used to enhance market integration.

ABOUT THE AUTHORS

Carmen Cecilia Matta Jara is a Senior Economist in the Office of International Economic Studies of the Ministry of Foreign Trade and Tourism of Peru. Ana María del Carmen Vera Ganoza is a Senior Economist in charge of the Office of International Economic Studies at the Ministry of Foreign Trade and Tourism of Peru.

This brief draws on a study titled “Estimation of the pass-through and welfare effects of the tariff reduction for yellow corn in Peru between 2000 and 2011” prepared by the authors for the UNCTAD Virtual Institute book titled “Trade policies, household welfare and poverty alleviation: Case studies from the Virtual Institute academic network” available at: <http://vi.unctad.org/tap>. The views expressed in this brief are those of the authors and do not necessarily reflect the views of the United Nations Secretariat, nor the Ministry of Foreign Trade and Tourism of Peru.

REFERENCES

Nicita, A. (2009). “The Price Effect of Tariff Liberalization: Measuring the Impact on Household Welfare.” *Journal of Development Economics*, 89 (1): 19-27.

Photos © Adam Bienford, PublicDomainPictures/Pixabay



Contact

Ms. Vlasta Macku, Chief
Virtual Institute
Division on Globalization and
Development Strategies
vlasta.macku@unctad.org
<http://vi.unctad.org>



UNITED NATIONS
UNCTAD

UNCTAD
VIRTUAL
INSTITUTE