Food and Agriculture Organization of the United Nations

No. 55
DECEMBER 2023

ISSN 2707-2282 [Print]
ISSN 2707-2290 [Online]

TRADE POLICY BRIEFS

FAO SUPPORT TO THE WTO NEGOTIATIONS AT THE 13TH MINISTERIAL CONFERENCE

PRICE TRANSMISSION IN FOOD MARKETS

KEY MESSAGES

- Price transmission from international to domestic markets is key in understanding the extent to which countries are integrated in global trade and, as a consequence, in assessing their access to food.
- Across countries, food prices exhibit diverse patterns of price transmission due to trade costs and trade policies that may insulate domestic markets.
- Integration into global markets can strengthen competitiveness and increase productivity, but, at the same time, global shocks can affect both domestic price level and volatility.

Authors: Karolina Kozlowska and Adeline Awantang.

Do domestic food markets in developing countries respond to changes in international prices and how fast? In November 2023, the FAO Food Price index - a measure of the monthly change in international prices of a basket of basic food commodities - declined by nearly 25 percent from the all-time high reached in March 2022. However, as global food market prices declined, in many countries, domestic food prices did not follow suit. Domestic food price inflation remained high, and, in real terms, it exceeded overall inflation in 127 out of 163 countries (78 percent) (World Bank, October 2023), engendering problems for many low-income countries where high food prices create poverty traps and aggravate food insecurity and malnutrition.

1. The Law of One Price

Price transmission – the extent to which changes in international food prices lead to changes in local food prices – is central to assessing the functioning of markets. The Law of One Price suggests that price transmission is complete, with the prices of a food product sold on competitive foreign and domestic markets differing only by transportation costs. Such a complete price pass-through is attained by trade. Changes in supply and demand in one country affect prices, which will in turn instigate trade with other countries. As trade restores the market equilibrium, prices in the domestic market tend to equalize with those in foreign markets except for transport costs - hence the term "Law of One Price".

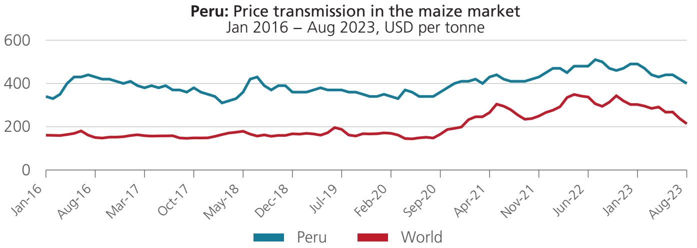
Nevertheless, domestic food prices exhibit diverse patterns of price transmission across countries. In general, the *Law of One Price* holds only under certain conditions and in the long term. For many countries, it does not hold in the short term, as markets need time to adjust. Often, for low-income countries, the impact of a change in international prices on their markets is enormously delayed and very small. Such incomplete price transmission can be due to several factors:

- Poor domestic transport infrastructure gives rise to high trade costs that can insulate domestic markets. As it is expensive to export locally produced food to the global market and to import food to the domestic market for consumption, changes in international prices are not fully transmitted to the domestic markets.
- Trade policies can also result in incomplete price pass-throughs. Import tariffs will allow international price changes to be fully transmitted to domestic markets in relative terms. However, if the tariff level is prohibitively high, changes in international prices would be only partly, if at all, transmitted to the domestic markets. Import licensing restrictions and export bans can also affect price transmission as they obliterate opportunities for arbitrage (Burke and Myers, 2014).
- Public food reserves' management and domestic procurement, combined with export and import restrictions aimed at stabilizing prices within a pre-determined band, may result in international and domestic prices being completely unrelated or being related in a non-linear manner. For example, in the case of a floor price, increases in international prices can be fully transmitted to the domestic level, while decreases are slowly and incompletely passed through (Rapsomanikis et al., 2006).

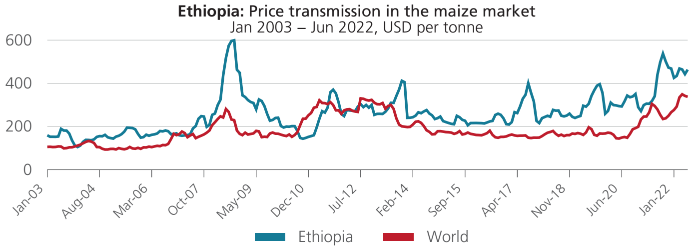
2. Price transmission analysis

Studies of price transmission assess the existence of a long-term relationship between international and domestic prices, and the speed with which market forces work for domestic prices to adjust to this relationship in the short term. Using a time series econometric framework, an empirical exercise was carried out to examine cereal price transmission for a number of selected low- (Ethiopia and Mali) and middle-income (Peru and South Africa) countries.

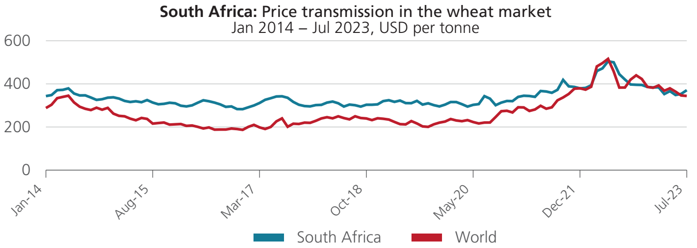
Figure 1: Price transmission in cereal markets for selected low- and middle-income countries



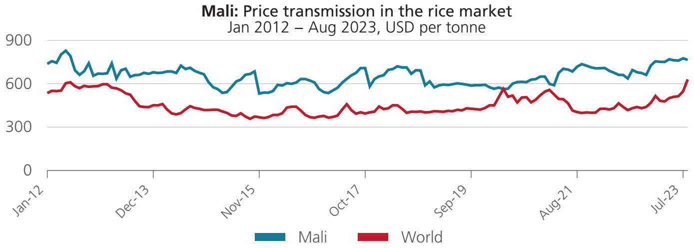
- **A change in the world maize market price is transmitted to Peru in 3.7 months.**
- Peru faces trade costs that, on average, amount to 235 percent *in ad valorem* equivalent. (FAO, 2022).
- Peru is a net importer of maize, with imports accounting for about 70 percent of total supply.
- Maize accounts for about 60 percent of Peru's annual cereal imports and is primarily used in feed production for its growing poultry sector. In 2011, Peru unilaterally eliminated import tariffs on most commodities, including maize.



- **It takes 9.2 months for a change in the international maize market price to be transmitted to the Ethiopian market.**
- Ethiopia faces trade costs that, on average, amount to 220 percent *in ad valorem* equivalent. (FAO, 2022).
- Ethiopia is generally a surplus producer of maize with the potential to supply maize-deficit countries in Eastern Africa.
- Annual maize import volumes have remained quite low in recent years. A maize export ban has been in place since 2008, though there are exceptions during bumper harvests or droughts in neighboring countries.



- **Wheat market prices in South Africa adjust to changes in the international wheat price within 3.7 months.**
- South Africa faces trade costs that, on average, amount to 158 percent *in ad valorem* equivalent. (FAO, 2022).
- Imports of wheat account for about 40 percent of total supply.
- South Africa's grain markets are generally well integrated with global markets and wheat prices are primarily influenced by exchange rate fluctuations, global trends, and wheat import volumes and tariff.



- **A change in the world rice market price is transmitted to the rice market of Mali in 6 months.**
- Mali faces trade costs that, on average, amount to 222 percent *in ad valorem* equivalent. (FAO, 2022).
- Mali is a net importer of rice, with imports, mostly from Asia, accounting for about 20 percent of domestic supply.
- As an ECOWAS member, Mali implements a common external tariff of 12.5 percent for imported milled rice. The government occasionally intervenes in the rice market for food security reasons by temporarily reducing import tariffs or banning exports.

Source: FAO/GIEWS Food Price Monitoring and Analysis (FPMA) Tool: FPMA Tool V4 (fao.org).
Note: World prices refer to Thailand (Bangkok), Rice (5% broken), United States of America (Gulf), Maize (US No. 2, Yellow) and United States of America (Gulf), Wheat (US No. 2, Hard Red Winter). Domestic prices refer to USD prices at the wholesale level for selected countries.

Conclusions

Markets are important channels for economic integration, but they can also transmit shocks. In this respect, the results of the conducted analysis show that high import dependence and a liberalized trade regime are associated with faster price transmission. By contrast, countries experience a more incomplete pass-through of changes in international prices when trade costs are comparatively higher and trade policies are more restrictive. Finally, the results also suggest that when countries are import dependent and domestic markets are less integrated with international markets, consumers prices are generally much higher than world prices.

Although it can be difficult for policy makers to assess the right balance between the need to protect domestic consumers from external shocks and reaping the benefits from integrating into international markets, it should be noted that market integration and complete price transmission enhance the price information available to producers, consumers and other market agents and allow for decisions that lead to more efficient outcomes. Moreover, it is important to consider that while incomplete price transmission may to some extent insulate countries from external shocks, such as global food price spikes, it can substantially raise domestic prices and also have an impact on both the level and volatility of international prices, thereby affecting food security and nutrition in third countries.

Actions to address key challenges:

- Improve trade infrastructure and enhance trade facilitation measures to reduce trade costs.
- In the short run, properly assess the balance between policies to achieve increased market integration and measures that can mitigate the negative effects of the transmission of sudden global market shocks to domestic markets.
- In the long run, support trade policies that promote integration into international markets to achieve improved food security, better nutrition, and sustainable economic growth.

References

Burke, W. J., & Myers, R. J. 2014. Spatial equilibrium and price transmission between Southern African maize markets connected by informal trade. Food Policy, 49, 59-70.

FAO. 2022. *The State of Agricultural Commodity Markets 2022*. The geography of food and agricultural trade: Policy approaches for sustainable development. Rome, FAO.

Rapsomanikis, G., Hallam, D. & P. Conforti. 2006. Market integration and price transmission in selected food and cash crop markets of developing countries: Review and applications. In Sarris, A. & Hallam, D. (eds) *Agricultural Commodity Markets and Trade: New Approaches to Analyzing Market Structure and Instability*. Edward Elgar Publishers.

World Bank. 2023. Food Security Update. October 12.

Required citation:

Kozlowska, K. & Awantang, A. 2023. *Price transmission in food markets*. Trade policy briefs, No. 55. Rome, FAO.
https://doi.org/10.4060/cc9107en

Markets and Trade Division
www.fao.org/markets-and-trade

Food and Agriculture Organization of the United Nations
Rome, Italy