Extended Abstract
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Paper/Poster Title	**Agricultural Commodities' Price Transmission from International to Local Markets in Developing Countries**

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Abstract	***200 words max***
The transmission of commodities prices from the international to local markets is an interesting and deeply investigated topic. A fast and strong link between the two levels of the market is seen by economists as a sign of local market efficiency, allowing actors to respond fast to signals coming from the international market. However, the empirical evidence on the topic is very mixed, ranging from a very weak linkage between the two market prices to a high-speed and almost complete transmission. The present paper aims to advance the knowledge on the topic by focusing on the price transmission of four main cereals – maize, rice, sorghum, and wheat – in 23 developing and fragile economies. Employing a recent World Bank dataset with prices for several local markets in select countries, we estimate panel vector autoregressions (PVAR) to analyze the pass-through effects of international price shocks on local food prices. We find evidence for a relatively strong price transmission elasticity for all commodities except sorghum. Furthermore, the observed transmission of shocks is almost immediate. We present the policy implications of these findings	

Keywords	commodities prices; developing countries; price transmission; panel VAR
JEL Code	Q11; Q13; Q17; C33 see: www.aeaweb.org/jel/guide/jel.php?class=Q)

Introduction	***100 – 250 words***

The price of agricultural commodities is crucial in determining the economic and welfare conditions in developing countries. In a large household survey on the Indonesian island of Java, poor families were found to spend 75% of their budget on food products (Block and Webb, 2009), while Meyimdjui and Combes (2021), analyzing several developing countries, found income shares dedicated to food expenditures comprised between 40.1% and 56.4%. Emediegwu (2022b) observes that an average household in Nigeria spends 56.4% of its income on food whereas, an average household in the UK only 8.2% of its income. Moreover, the price of agricultural commodities affects households in developing countries not only in their role as consumers but also as producers. Agriculture absorbs a significant fraction of the workforce (Gollin et al., 2007) and may constitute a substantial portion of the household income. According to the World Bank data, the share of Gross Domestic Product (GDP) coming from agriculture, forestry and fishing in several developing

countries is above 25% with peeks beyond 50% for countries such as Somalia and Sierra Leone.

The present paper is part of the literature investigating the nexus between international and local food prices. A significant novelty characterizes the current work. First, we use a recent World Bank dataset offering local (market-level) monthly market prices for some food commodities in 23 developing and fragile economies. To our knowledge, this dataset has not yet been used for this type of analysis. Multiple local markets – all georeferenced – are considered for each covered country. Overall, we examine monthly price series consisting of four staple food products from more than 1200 markets from five developing regions of the world. This dataset allows us to use a panel setting rather than simple time series used in previous studies, thereby enriching the quantity of our observations and improving the quality of the estimation. Secondly, we estimate panel vector autoregressions (PVAR) to analyze the pass-through effects of international price fluctuations on local food prices. Our findings are partially in line with the existing literature, with the significant difference that we find, in general, a stronger and faster pass-thought of international price shocks for rice, maize, and wheat. On the other hand, we find that shocks to global sorghum price do not significantly pass-through to sorghum prices in developing economies' local markets.

Methodology	***100 – 250 words***

We employ a panel VAR approach to investigate the impact of shocks in international food prices (P) on local food prices (p) in developing economies for four food commodities separately - maize, rice, sorghum, and wheat. Love and Zicchino (2006) note that the fixed effects are likely correlated to the lags of the outcome variable due to the dynamic nature the PVAR model. Hence, the standard method of eliminating fixed effects, mean-differencing, would produce biased results. To overcome this empirical challenge, we use the forward mean-differencing or orthogonal deviation (Helmert transformation) approach proposed in Arellano and Bover (1995) as an alternative elimination strategy. This "orthogonal deviation" approach eliminates the average of all future observations for each market-month rather than using deviations from historical observations. This transformation allows the use of lagged covariates as instruments since it retains the orthogonal structure between the lagged covariates and the transformed variables (Baltagi, 2008). Hence, the model coefficients can be jointly estimated using system GMM. To compute the impulse-response functions (IRFs), we apply Cholesky decomposition to the residuals to orthogonalize them. Given that the intent of our paper is to measure the pass-through impact from international prices to local prices, we allow international food prices (P) to have a contemporaneous effect on local food prices (p) in the Cholesky ordering and not the other way around. By construction, such arrangement means that the variable that appears earlier (P) is weakly exogenous with respect to the rest of the covariates in the short run.

Finally, we estimate the IRFs using the method described in Love and Zicchino (2006), where the confidence intervals are estimated using Monte-Carlo simulations.

These estimations were done using the pvar package in Stata developed by Abrigo and Love (2016). The IRFs in this paper describe the response of local food prices over time to shocks to international food prices within the system for 12 months ahead.

Results	***100 – 250 words***

By using a panel VAR model, we have found sign of significant price linkages between local and international prices for three of the mentioned crops. The only exception is sorghum, a crop that is actually used mainly as animal fodder by industrialized countries, while it is an important staple for several developing countries. On the light of its different use and considering the scarce participation of SSA countries in the international trade of this crop, it does not surprise the lack of linkage between international and local prices. Furthermore, the result obtained for this crop is consistent with the dedicated literature.

When comparing our results with the ones obtained by similar research papers, we can say that the transmission mechanism we observe is relatively strong. In fact, several papers, previously mentioned, evidence short-term pass-through values that are lower than 1% or even 0.5%, whereas our lowest fond values is 0.82% (maize). A further difference is the speed of transmissions that, in our case, appears to be fast: the international price shock is passed to local markets mostly in the first two months, then its effect vanishes. Once again, this differs from the results of other papers where shocks may keep to influence local prices for several months.

Discussion and Conclusion	***100 – 250 words***

A strong mechanism of commodities price transmission between international and local markets is generally seen as a useful feature for a country. A full and prompt transmission of movements of international prices to local markets encourages agents to direct their investments and efforts properly. Delays or a partial transmission may instead cause a misallocation of resources that may have to be subsequently corrected with costly measures. Clearly, a certain sluggishness in the transmission of prices from the international to local markets is impossible to eliminate. Besides this physiological gap between international and local prices, there may be several other reasons to slow down the transmission of movements. The desire of governments to stabilize local prices, particularly sensitive prices such as the ones of food commodities, is a reason, followed by the scarce integration of a country into the international market for political or physical reasons. These examples

show some theoretically valid reasons for local prices to be rather unresponsive to movements in international prices.

How actually strong and efficient is the transmission mechanism is an empirical question that has received a consistent interest in the literature. Several authors focused on the effects of the liberalization processes undertaken by several developing countries on this mechanism. In general, results have been very mixed, with some authors claiming that liberalizations did not have much effect and others contradicting such findings. Depending on the commodities and the group of countries analysed, authors have found, generally using VAR or ECM models, either signs of a strong transmission mechanism or a weak, when not completely absent, one. It is difficult, therefore, to find a clear pattern form the previous literature. Each country-product tuple seems to deserve an ad hoc analysis.