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COUNTRY SERIES

COUNTRY BRIEF 19

The Philippines: Impacts of the Ukraine and Global Crises on Poverty and Food Security

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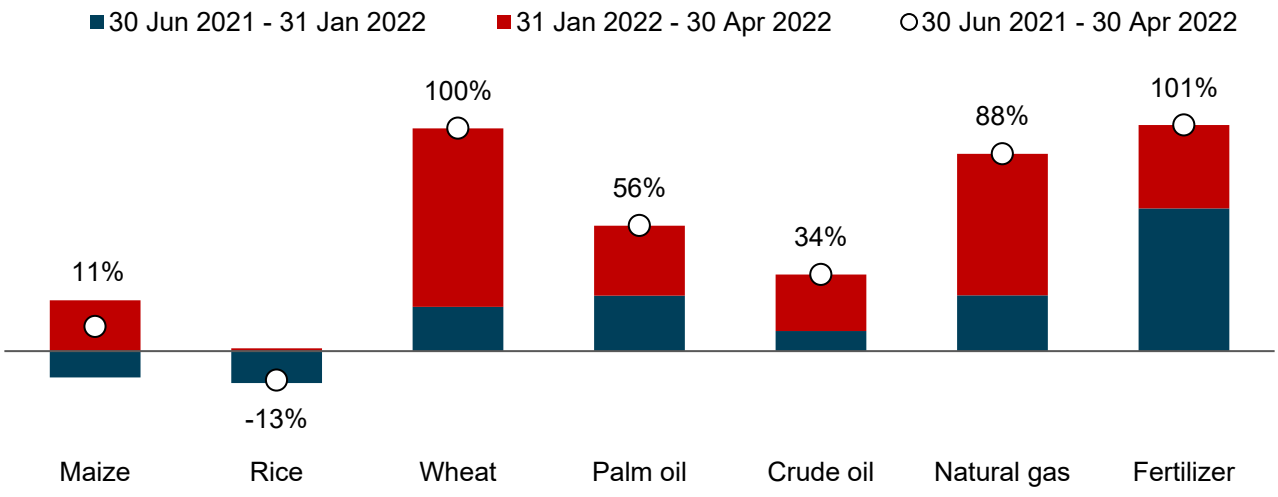
1. World Price Shocks and Domestic Price Transmission

Global food, fuel, and fertilizer prices have risen rapidly in recent months, driven in large part by the fallout from the ongoing war in Ukraine and the sanctions imposed on Russia. Other factors, such as export bans, have also contributed to rising prices. Palm oil and wheat prices increased by 56 and 100 percent in real terms, respectively, between June 2021 and April 2022, with most of the increase occurring since February (Figure 1).

Figure 1. Changes in global real commodity prices since mid-2021 (US dollars)



Source: Authors' calculations using data from World Bank Commodity Price Data (The Pink Sheet, https://www.worldbank.org/en/research/commodity-markets).

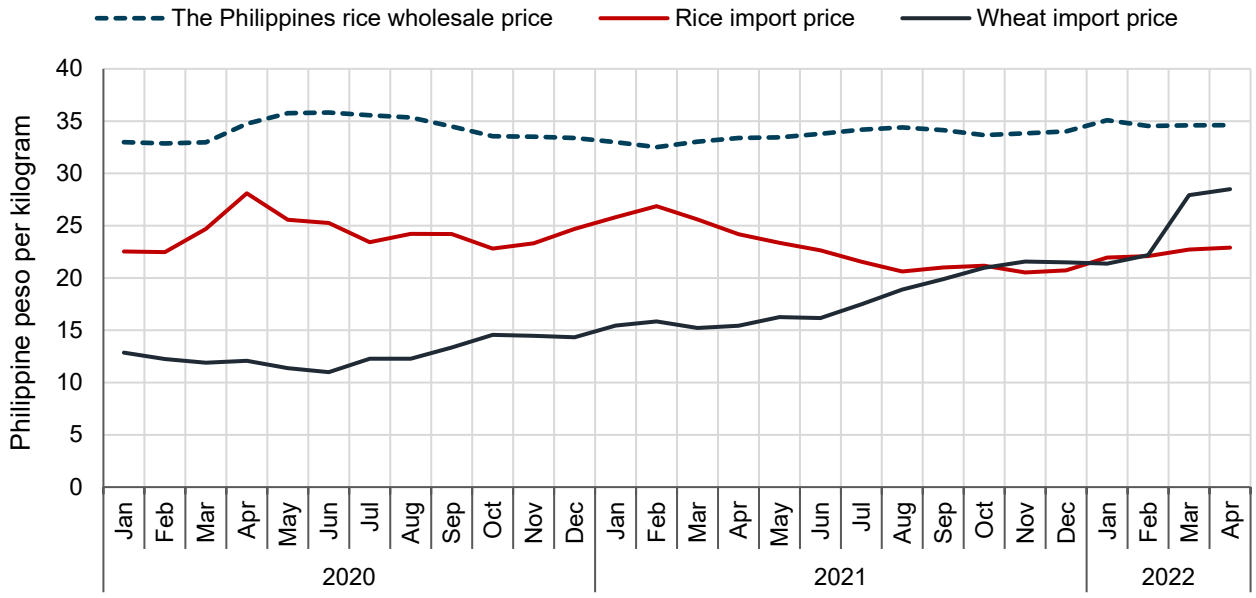
Note: Nominal prices in US dollars from World Bank Commodity Price Data (The Pink Sheet) are converted to real prices, which account for the overall increase in world prices over this period, deflated by the US consumer price index, which rose by 7.2 percent between June 2021 and April 2022.

[1] These country studies are conducted by IFPRI with financial support from BMGF, FCDO, and USAID. All studies use data and models developed with ongoing support from BMGF, USAID, and CGIAR's Foresight and Metrics Initiative. The study also benefits from working with the National Economic and Development Authority (NEDA), the Republic of the Philippines. For further information, please contact Xinshen Diao (x.diao@cgiar.org) or James Thurlow (j.thurlow@cgiar.org).

Wide variation exists across products, with real maize prices increasing by only 11 percent, and rice prices declining by 13 percent. The price of crude oil and natural gas has also risen substantially, while the weighted average price of fertilizer has doubled. With these changes in global prices, many developing countries and their development partners are concerned about the implications for economic stability, food security, and poverty.

A comparison of import prices with the Philippines' rice prices suggests that world price changes have not been fully transmitted to local markets. For example, national average nominal rice wholesale prices in the Philippines were stable between July 2021 and April 2022, while over the same period, the nominal price of imported rice rose by 6.2 and for imported wheat by 63 percent (Figure 2).

Figure 2. Nominal rice and wheat prices in the Philippines, 2020–2022



Source: Authors' calculations using data from FAO, IGC, and World Bank Commodity Price Data (The Pink Sheet).

Note: The Philippines rice wholesale price is a national average. Import prices include cost, insurance, and freight (CIF).

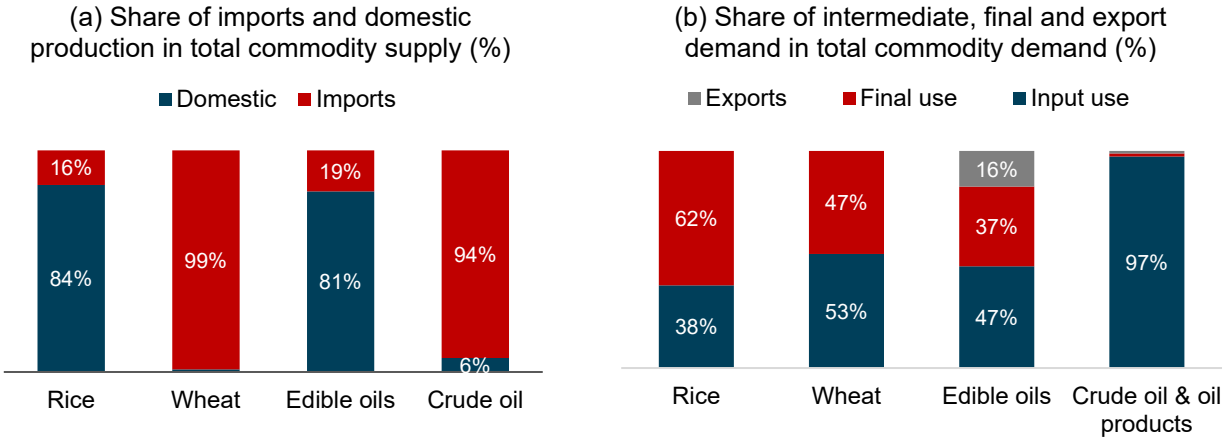
2. Measuring Impacts on the Philippines' Economy and Population

We use an economywide model of the Philippines to estimate the impacts of the global price shocks on all sectors, workers, and households.[2] The model allows us to capture a range of considerations that will determine the overall impact of the crisis on the country. For example, the effect of higher world prices on the Philippines' economy depends on the importance of the affected products in the total supply of each commodity, and whether local producers and consumers can readily substitute away from higher-priced imports. Only a small portion of the Philippines' total supply of maize is imported, while almost all wheat grains are imported (Panel A in Figure 3). Thus, we expect rising world wheat prices to have a large effect on domestic prices for wheat. The Philippines also imports about 20 percent of edible oils, and changes in world prices will have some effect on domestic prices for oilseeds and products, as imported products are close substitutes for domestically produced and consumed edible oils.

[2] Information on the Rural Investment and Policy Analysis (RIAPA) data and modeling system can be found here.

Almost all crude oils used in the Philippines are imported, while about 50 percent of petroleum is domestically processed from imported crude oil. The impact of higher oil prices on households cannot be directly assessed by looking at the share of petroleum products in households' consumption baskets. This is because oil products are primarily used as an input into the production of other goods and services, with input use accounting for 97 percent of total demand for oil products in the Philippines (Panel B in Figure 3). Most petroleum products, for example, are used by the transport sector, the cost of which affects the price of all marketed goods and services in the economy. IFPRI's model tracks the flow of domestic and imported inputs between sectors and estimates the net effect on final product prices.

Figure 3. Breakdown of commodity supply and demand in the Philippines, 2019



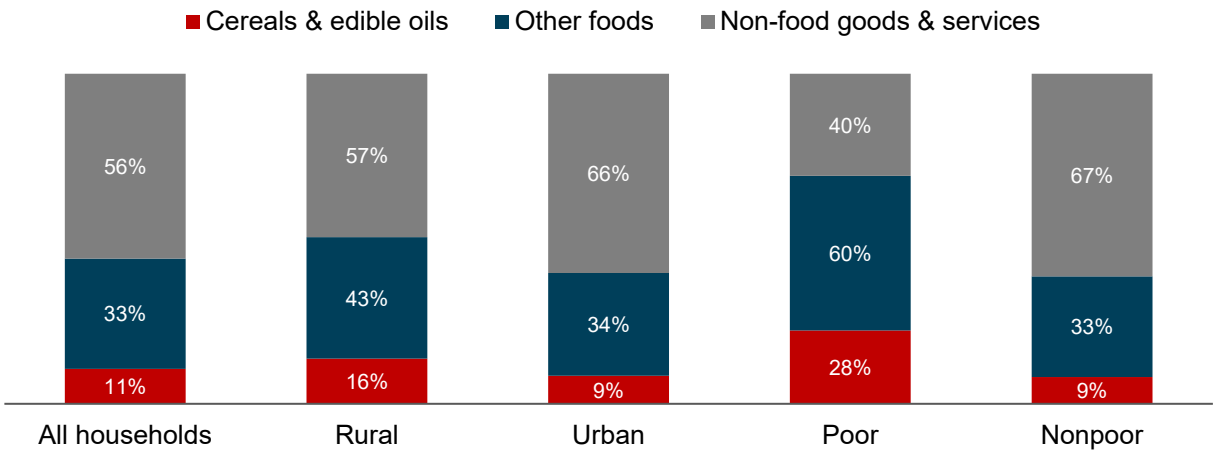
Source: Authors' calculations using social accounting matrix (SAM) data from IFPRI's Philippines RIAPA model.

Note: Edible oils include oilseeds and processed oils. Most imports are edible oils, while the supply of oilseeds is mainly from domestic production. Input use includes products used as intermediates in the production of other processed foods and nonfood products and by some service sectors. Final use includes private and public consumption and gross capital formation.

Impacts on households also depend on the importance of commodities in their consumption baskets. Cereals and edible oils make up 11 percent of the total value of household consumption in the Philippines, which is about one-quarter of total food expenditures (Figure 4).[3] However, rice is the most important cereal crop in the Philippines and rice prices are relatively stable in the world as well as in the domestic markets. IFPRI's model tracks income and expenditures for different population groups and is linked to a survey-based micro-simulation tool that tracks the consumption patterns of individual households. Unpacking populations is crucial, because cereals and edible oils are more important for poorer households in the Philippines than for other groups.

[3] These figures include the imputed value of home consumption, which is also tracked within the RIAPA model.

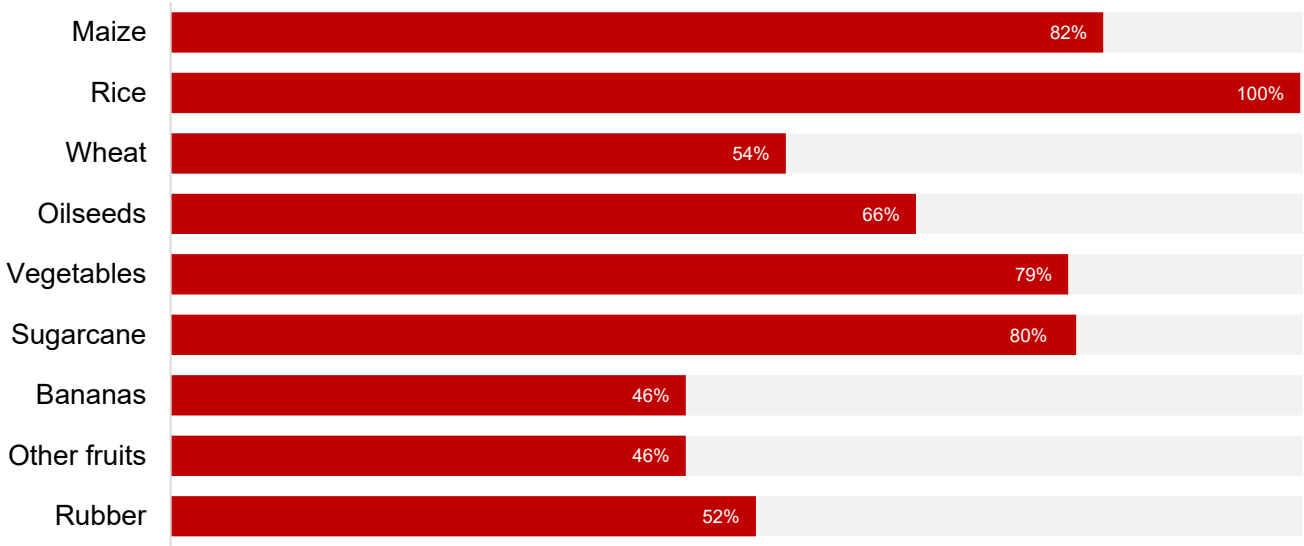
Figure 4. Composition of household consumption spending in Philippines, 2019



Source: Authors' calculations using social accounting matrix (SAM) data from IFPRI's Philippines RIAPA model.

Rising prices of fertilizer may cause some farmers to reduce their use of this input, leading to lower agricultural production and higher food prices. The magnitude of this decline depends on (1) the responsiveness of fertilizer demand to changes in prices; (2) the amount of fertilizer currently used to grow crops; and (3) the expected productivity losses for farmers who reduce their use of fertilizers. Fertilizer adoption in the Philippines varies significantly by crop, with almost all rice land cultivated using fertilizers, compared to 54 percent for wheat. The amount of fertilizer used on different crops also varies. For our initial impact analysis, we adopt a conservative set of assumptions regarding farmers' response to rising fertilizer prices. We assume an own-price elasticity of fertilizer demand of −0.15, implying that a 100 percent increase in real fertilizer prices leads to a 15 percent decline in fertilizer use. Drawing on a recent survey analysis, we assume that farmers who do not use chemical fertilizers are about 20 percent less productive than farmers who do.[4]

Figure 5. Share of cultivated cropland using chemical fertilizers in the Philippines



Source: Authors' estimates based on national experts' assessments.

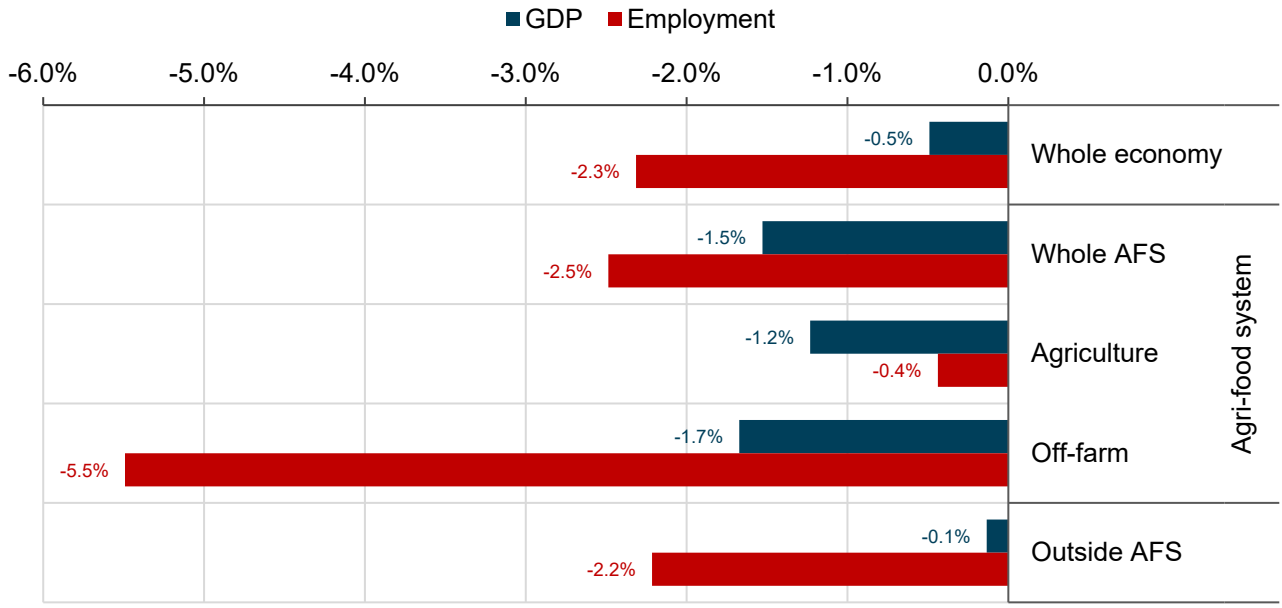
[4] The final impact on crop productivity is: [Change in domestic market price] × [Price elasticity of demand] × [Share of cultivated land using fertilizer] × [Productivity gain from using fertilizer per hectare].

We simulate the effects of both higher world prices (recall Figure 1) and the potential productivity losses from reduced fertilizer use in the current growing season. Simulation results should be interpreted as "medium-term" impacts; that is, after the immediate spillover effects across sectors and households have occurred, but before the government and private sector make significant changes to their investments and policies in response to the crisis (see Section 5 for next steps).

3. Impacts on the Philippines' Economy and Agrifood System

The world price and fertilizer demand shocks negatively affect GDP and employment. Real GDP falls by 0.5 percent due to the combined effects of the negative terms-of-trade shock (that is, the negative effect of higher import prices outweighs the positive effect of higher export prices) and rising import costs that reduce spending on domestically produced goods (Figure 6). Employment also declines by 2.3 percent, as falling production leads to job losses. The percentage declines in both total agrifood and agricultural GDP and employment exceed the decline in total national GDP and employment, while GDP falls less outside of the agrifood system. At the national level, about 80 percent of the decline in total GDP and 40 percent of the fall in total employment occur within the agrifood system.

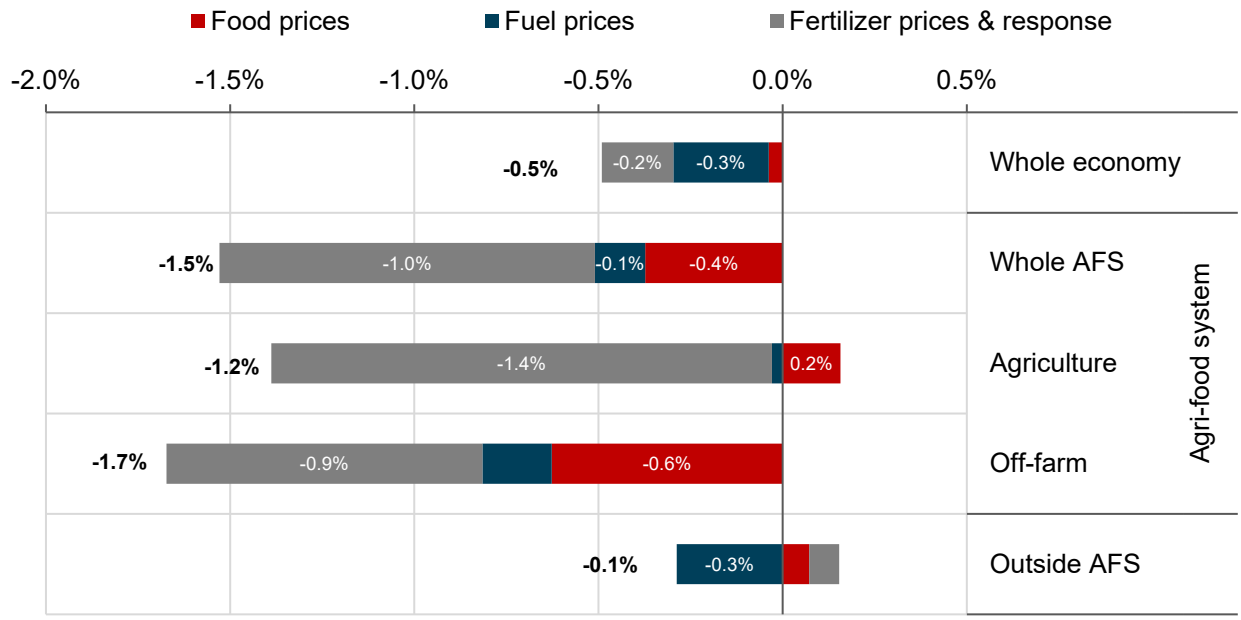
Figure 6. Percentage change in GDP and employment due to food, fuel, and fertilizer shocks



Source: Simulation results from IFPRI's Philippines RIAPA model.

Fuel and fertilizer shocks drive most of the decline in national GDP. The fuel shock accounts for more than 50 percent (or 0.3 percentage points) of the total fall in real GDP, compared to fertilizer shocks, including reduced fertilizer use in response to higher prices, at 40 percent (or 0.2 percentage points). The impact of the food price shock on total GDP is very small (Figure 7). However, agriculture GDP losses are almost all driven by fertilizer shocks, which directly affect crop production and cause disruptions in downstream supply chains. Off-farm GDP losses within the agrifood system are mostly driven by fertilizer and food price shocks. Higher food prices increase the production cost of food processing and food-related services and thus lower their production. GDP losses outside the agrifood system are mostly driven by higher fuel prices, which raise transaction costs and market prices and reduce consumer demand.

Figure 7. Percentage change in real GDP decomposed by food, fuel, and fertilizer shocks

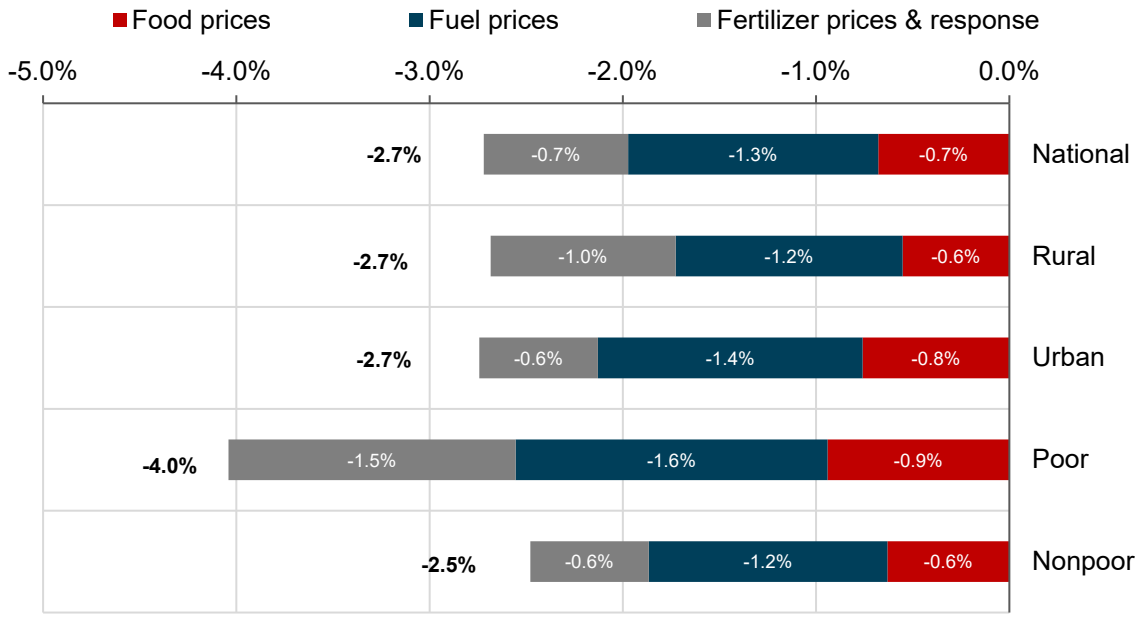


Source: Simulation results from IFPRI's Philippines RIAPA model.

4. Impacts on Household Poverty, Inequality, and Diets in the Philippines

Household consumption falls significantly, with larger losses for poor households. National consumption spending, including the value of home consumption, falls by 2.7 percent (Figure 8). The percentage decline in consumption is much larger than that in GDP because households are hit twice, by rising prices and falling income. Moreover, food accounts for a much larger share of household consumption than of GDP. Most of the decline in total household consumption is driven by the fuel price shock, which raises the market price of most consumer goods and services in the economy. Overall, the fuel shocks account for close to 50 percent (or 1.3 percentage points) of the absolute decline in household consumption, followed by the fertilizer and food price shocks, each at about 25 percent (or 0.7 percentage points). Important differences arise in consumption outcomes across population groups. While the total declines are similar for rural and urban households, at 2.7 percent, the negative impact from fertilizer shocks is larger for rural households than for urban households. Conversely, impacts of fuel and food price shocks are larger for urban households than for rural households. The most affected household group is the poor households, for which the negative impacts from all three shocks are larger than for any other household group. Rural households earn more of their income from farming, and so are more adversely affected by the decline in agricultural production that follows the increase in fertilizer prices. The poverty rate is much higher among rural households in the Philippines, which explains why the decline in real consumption from the fertilizer shocks is much larger among the poor than nonpoor households. However, poor households also include those in urban areas, and for them, food purchased from markets makes up a larger share of consumption baskets, and as a result, they are affected more by the food price shock than nonpoor households.

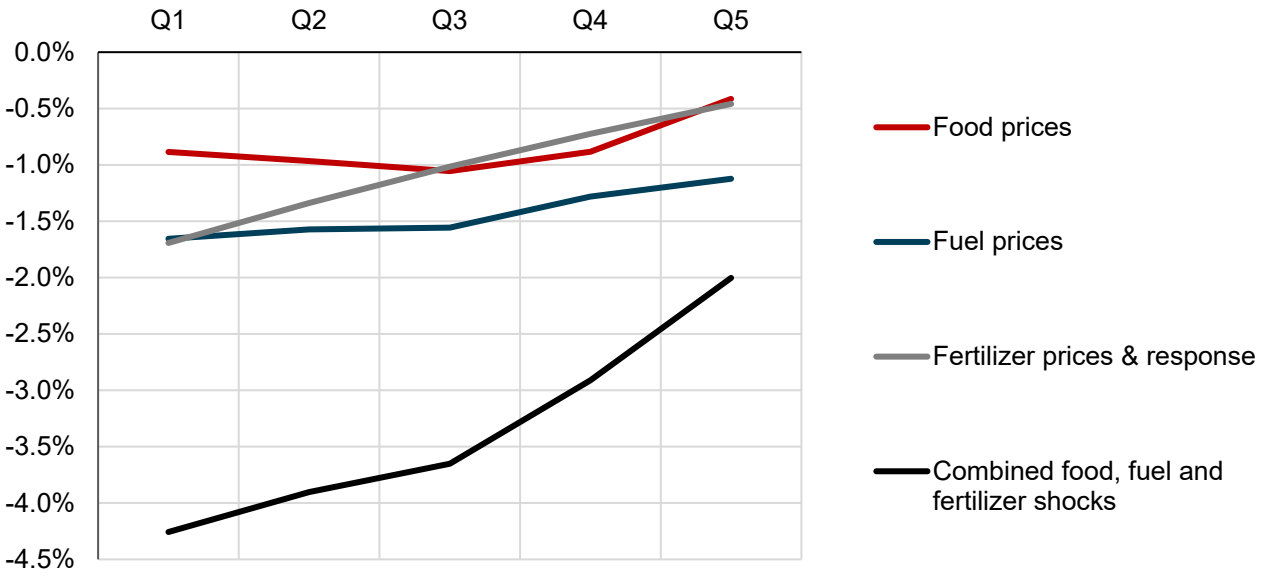
Figure 8. Percentage change in real household consumption due to food, fuel, and fertilizer shocks



Source: Simulation results from IFPRI's Philippines RIAPA model.

Inequality worsens, although all households are adversely affected. The food, fuel, and fertilizer shocks have quite similar implications for (income) inequality in the Philippines. The increases in fuel and food prices and fertilizer shocks lead to larger consumption losses for poorer households than households in the top quintile, which faces only a relatively large consumption loss from the fuel shock (Figure 9). Overall, because all three shocks are more detrimental for poorer households, particularly those in the lowest two quintiles, the global crises cause an increase in inequality within Philippines.

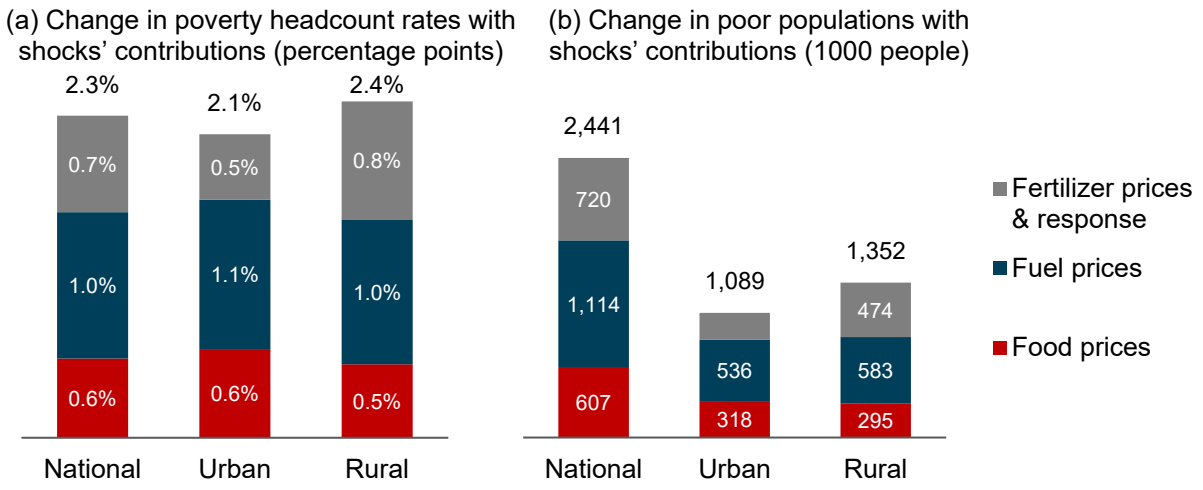
Figure 9. Percentage change in real household consumption across per capita expenditure quintiles



Source: Simulation results from IFPRI's Philippines RIAPA model.

Falling household consumption leads to greater poverty, particularly in rural areas. According to the most recent household survey in the Philippines, about 40 percent of the country's population has an adult equivalent consumption level that falls below the US$1.90 international poverty line. The increase in world prices raises the national poverty headcount rate in the Philippines by 2.3 percentage points (Panel A in Figure 10), equivalent to an additional 2.4 million people falling below the poverty line (Panel B). Most of the increase in poverty is caused by the fuel shock. This is consistent with the consumption changes in Figure 8. Impacts on rural poverty rates are larger, and the fertilizer shocks become important for rising rural poverty in addition to the fuel shock. About 55 percent of the increase in the poor population is in rural areas, while in terms of absolute numbers, the increased poor population is more than 1 million in both rural and urban areas.

Figure 10. Changes in poverty due to food, fuel, and fertilizer shocks



Source: Simulation results from the survey-based microsimulation module within IFPRI's Philippines RIAPA model.

Notes: Poverty headcount rate is the share of the population with daily adult equivalent consumption levels below the US$1.90 poverty line.

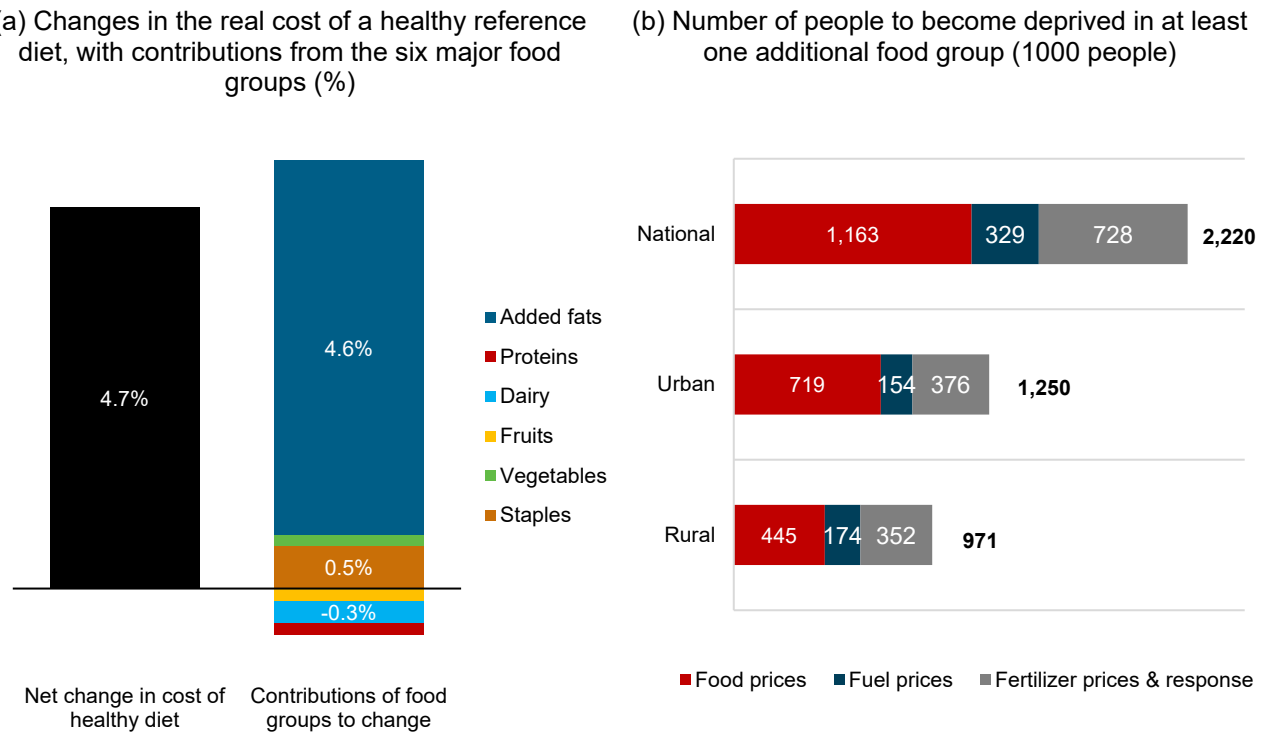
The cost of a healthy diet rises significantly for the Philippines' households. The model tracks changes in the real cost of a "healthy" reference diet (CoRD) with six major food groups as defined by the EAT-Lancet Commission.[5] The combined food, fuel, and fertilizer shocks cause the CoRD to rise by 4.7 percent measured in real terms (the first bar in Panel A in Figure 11).[6] This is primarily because of the higher cost for edible oils within the "added fats" food group, and also due to the modest increase in the cost of "staples," both resulting from rising world prices. Moreover, a large decline in household incomes reduces demand for some other major food groups, including fruits, dairy, and protein foods (meats and fish), and thus lowers their costs slightly (the second bar in Panel A in Figure 11). The staples food group is dominated by cereals, and wheat is only a small component of this group in the Philippines. Rising maize and wheat prices are compensated for by the falling cost of rice, which is a much more important staple food, when households reduce overall food consumption due to lowered income. Staples currently dominate most households' consumption baskets, but achieving the diversity of the healthy reference diet requires a relative decline in the share of cereals in the average household diet. As such, the increases in maize and wheat prices have only a modest contribution to the changing cost of a healthy diet. On the other hand,

[5] For further information on the RIAPA model's diet module and indicators, see Pauw et al. (2021).

[6] The CoRD is estimated using calorie targets from EAT-Lancet (for major food groups) and the World Bank's International Comparison of Prices (IPC) dataset. The estimated budget shares for the healthy diet include: staples (11.2 percent), vegetables (11.5), fruits (15.2), dairy (9.7), proteins (45.7), and added fats (6.7).

consumption of vegetables, fruits, dairy products, and meats and fish are far below the levels required for a healthy diet among many households in the Philippines. The higher costs of the overall "healthy" reference diet (CoRD) cause households' deteriorating access to these foods.

Figure 11. Changes in diet costs and household diet deprivation due to food, fuel, and fertilizer shocks



Source: Simulation results from the survey-based microsimulation module within IFPRI's Philippines RIAPA model.

Diet quality worsens for many households. The survey-based micro-simulation tool also measures the increased number of people who experience a decline in diet quality. People are considered deprived in a food group if they obtain fewer calories from that food group than recommended by the healthy reference diet. Prior to the crisis, few households had the consumption levels and diversity needed for a healthy diet in the Philippines. Rising food prices have much larger impact on diet quality deterioration than on income and poverty, and this shock, together with fuel and fertilizer shocks, causes 2.2 million people to become deprived in at least one additional food group. Interestingly, the urban population accounts for more the deterioration in diet quality than rural households in the country (Panel B in Figure 11), reflecting the fact that rural households already suffer more food deprivation than urban households, leaving little scope for a further increase in food deprivation.

5. Summary and Next Steps in the Analysis

Global food, fuel, and fertilizer prices have risen rapidly in recent months, raising concerns about how this will affect economic stability, food security, and poverty in developing countries. We used IFPRI's economywide model – known as RIAPA – to simulate the impacts of the global crises on the Philippines' economy and population. The model allows us to track the direct and indirect effects of rising world prices, taking account of key considerations that will determine the overall impact.

These include, for example: the share of imports in total product supply; the importance of different sectors and products for households' employment, income, and consumption levels; and farmers' responses to rising fertilizer prices and the knock-on effect this could have on agricultural production.

Our analysis indicates that the global crises cause GDP and employment in the Philippines to contract, and the impact is larger on employment than on GDP. Most of the GDP losses are from the agrifood system — agriculture is adversely affected by fertilizer shocks while the off-farm agrifood system is also negatively affected by higher food prices that increase cost of food processing and food-related services. The overall impact on GDP from higher food prices is modest. This is because, although the import prices of wheat and edibles oils are rising, these products are not typically large items within household consumption baskets in the Philippines. To some extent, rural farmers also benefit from higher prices for agricultural products, but the net effect on their welfare is negative once we account for the effects of higher fertilizer prices, reduced fertilizer use, and lower agricultural productivity.

Overall, national household consumption falls much more than GDP declines. Impacts are larger on poorer households, leading to an increase in inequality in the Philippines. That said, all households are adversely affected by the crises. Falling household consumption also leads to greater poverty, particularly in rural areas. Finally, the gap between household consumption levels and what is required to achieve a healthy diet is significantly widened by higher food prices. While the global crises will cause a modest slowdown in the Philippines' economic growth, their adverse impacts on poverty and food insecurity are likely to be more pronounced, especially in rural areas.

This study is part of a series of case studies that IFPRI is undertaking using economywide models to capture current world market shocks on developing countries. The analysis presented above is an initial impact assessment designed to gauge the vulnerability of countries and key population groups. Subsequent analyses will simulate the mitigating effects of different policy and investment options, including the potential roles of cash transfers, food aid, and subsidies for food, fuel, and fertilizers. Particular attention will be paid to possible synergies and trade-offs between these policy responses, including their implications for government budgets and longer-term development goals.

ACKNOWLEDGMENTS

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