



Food and Agriculture
Organization of the
United Nations

UCDAVIS

Impacts of COVID-19 and policy responses on three continents: A LEWIE approach March 2021

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with

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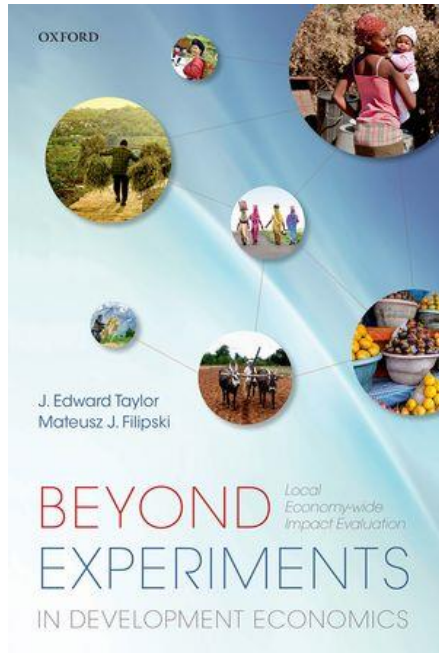
Inc.)

This presentation is a product of the UN Food and Agriculture Organization project, "Simulating Local Rural-economy Impacts of COVID-19 and Policy Responses," with International Development Research Associates (IDRAgroup.org) and the University of California, Davis

Studying COVID-19 Impacts Is Challenging!

- Randomized controlled trial (RCT) experiments are not feasible
 - There's nothing random about the pandemic or government responses
 - Everyone is affected
- We need answers now. How can we get data during lockdowns?
- What are the impacts of different mitigation policies?
- LEWIE is a simulation approach (this is [what epidemiologists do](#))
 - Build models of how economies work
 - Use them to simulate impacts of the virus and responses to limit its spread
 - ...especially on the poor
 - Simulate the effectiveness of different mitigation strategies

Local Economy-wide Impact Evaluation (LEWIE)



- Integrates **micro-economic** models of groups of actors (like poor and nonpoor households) into a **general-equilibrium** model of the local economy
- Model parameters estimated econometrically, using micro-survey data
- Examples of applications:
 - Social protection programs in Africa (FAO, UNICEF)
 - Eco-tourism in the Galapagos Islands (IADB)
 - Impacts of refugees in Rwanda and Uganda (WFP)
 - Impacts of fishery regulations in the Philippines (Packard Foundation)
 - Economic benefits from protected areas in Zambia, Nepal, Fiji and Brazil (The World Bank)
 - Trade integration in Central America and the Caribbean (IADB)
 - Migration and food price shocks in Mexico (Hewlett Foundation)

<https://beyondexperiments.wixsite.com/book>
<https://idragroup.org/>
<http://www.fao.org/economic/ptop/home/en/>



Details on LEWIE modeling

How a COVID-LEWIE Model Works

COVID-19 and Policies



Households directly affected

How do households spend their income?



How do local businesses spend their income?



Households indirectly affected

Local Businesses



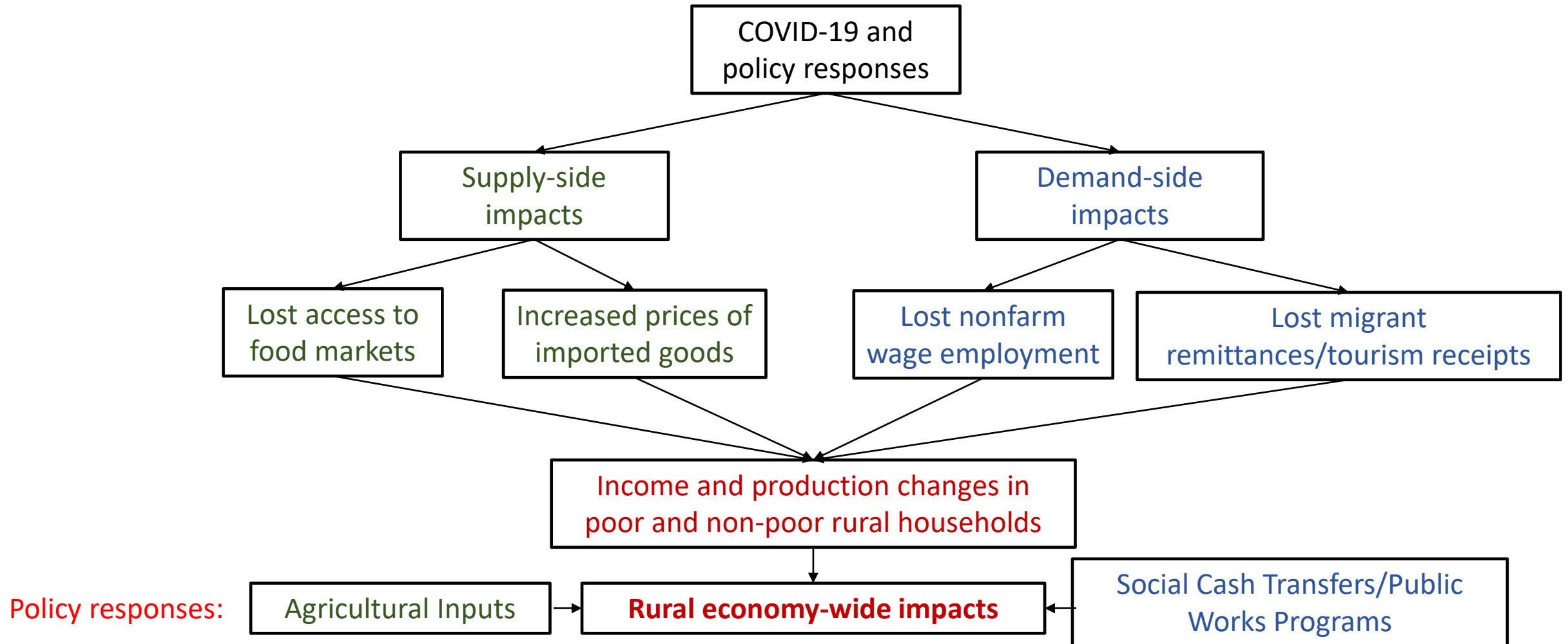
How do households interact with each other in local economies?

Wrap it all together into a General-equilibrium model of whole local economy

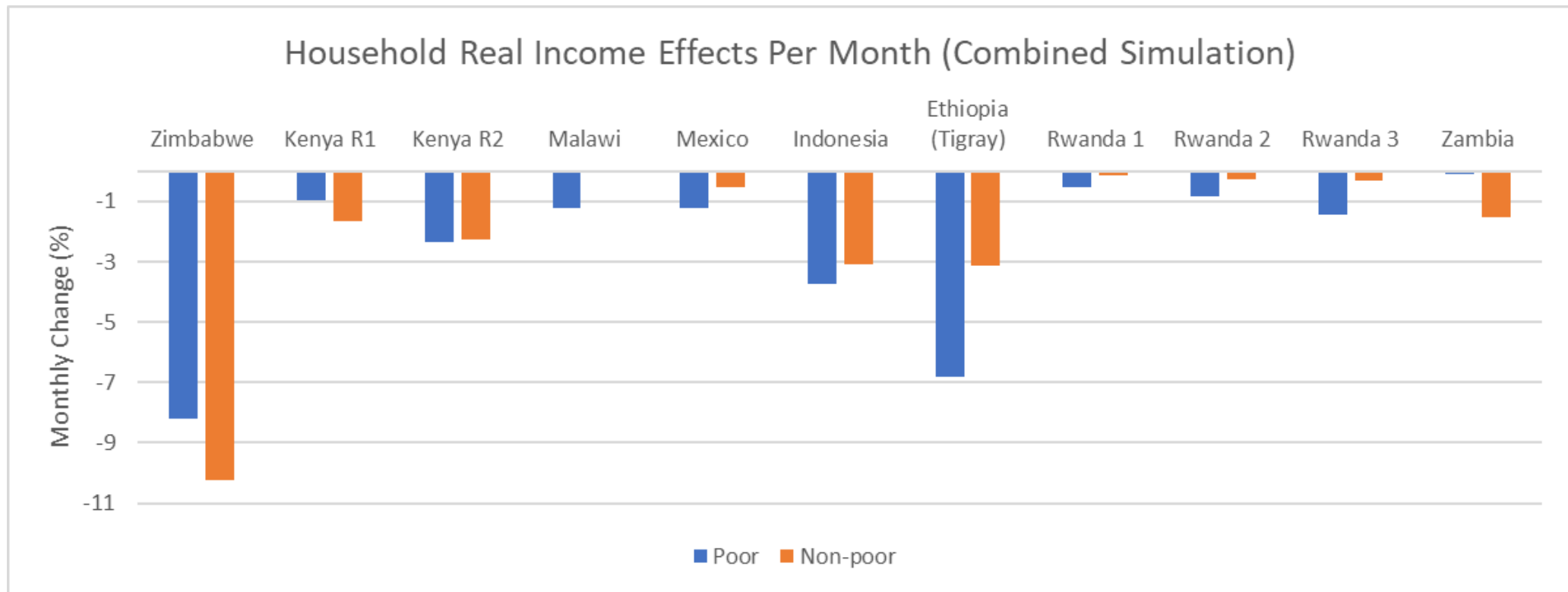
The FAO-IDRA-UCD “Many LEWIEs” Approach

- There’s no time to build new LEWIE models from scratch
- Fortunately, LEWIE models have been constructed for many different kinds of rural economies
- We repurpose these models to simulate the impacts of COVID-19 on poor and non-poor households in rural areas
 - ...including the spillovers they create within local economies
- Then we use these models to explore possible impacts of social protection and other policies to mitigate the negative impacts

What to Simulate? Supply and Demand Side Impacts on Rural Households



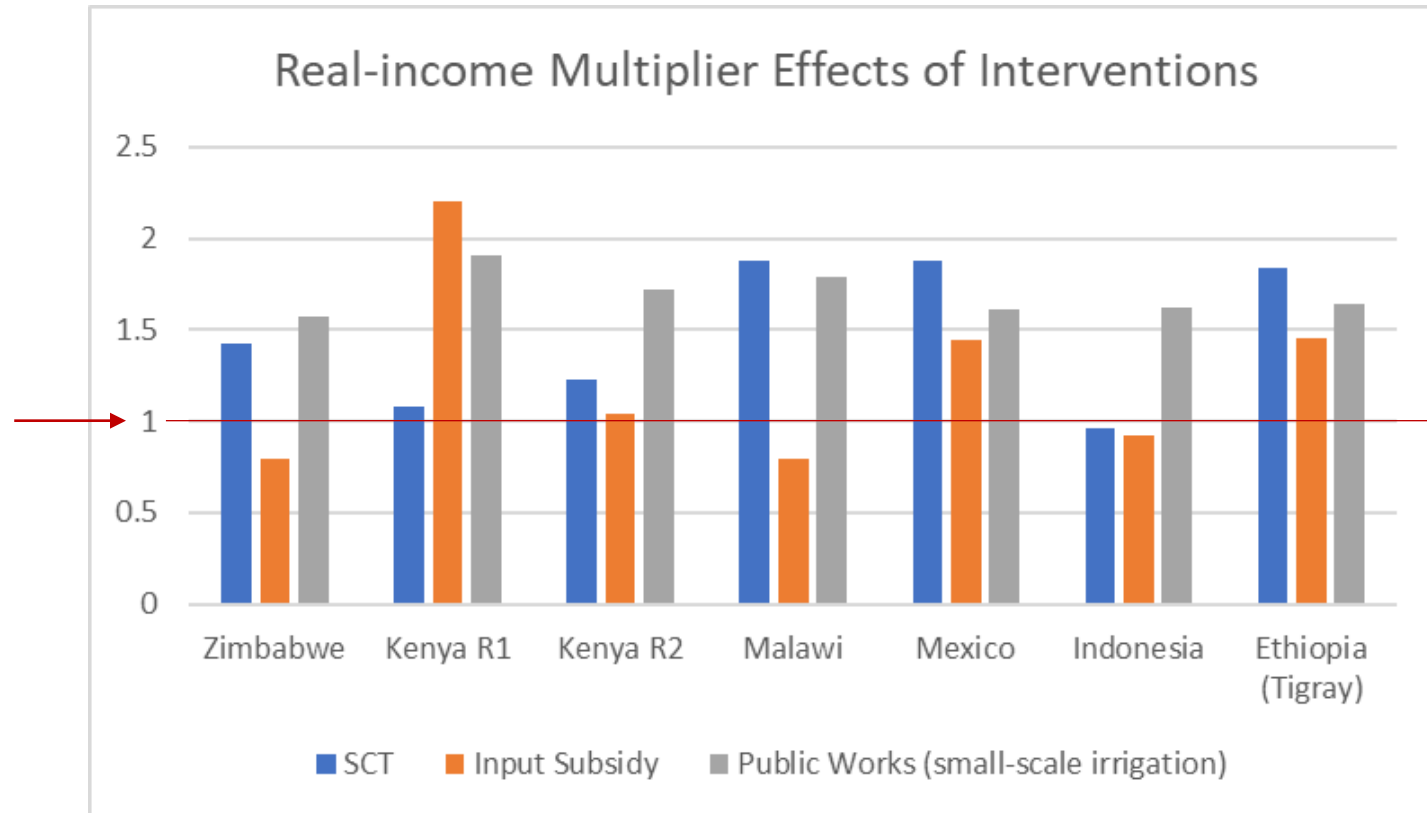
Impacts of COVID-19 Vary Across Sites and Hit both Poor and Non-poor Households



* Source: FAO-IDRA-UC Davis project [“Simulating Local Rural-economy Impacts of COVID-19 and Policy Responses.”](#) Real impacts are adjusted for inflation. These simulated impacts are indicative of the possible impacts of COVID-19 on local economies. They are not intended to be predictions or estimates of actual impacts.

SCTs, Agricultural Supports, and Public Works Projects Can Have Multiplier Effects

\$1 of spending creates more than \$1 of real income gain in most cases



* Source: FAO-IDRA-UC Davis project “[Simulating Local Rural-economy Impacts of COVID-19 and Policy Responses.](#)” Real impacts are adjusted for inflation. These simulated impacts are indicative of the possible impacts of COVID-19 on local economies. They are not intended to be predictions or estimates of actual impacts.

Why Do Impacts Vary Across Sites?

- The structures of local economies shape direct and indirect impacts
 - How connected are households with outside markets that are disrupted by the pandemic?
- Multipliers tend to be larger in relatively isolated economies
 - Impacts tend to leak out through linkages with outside markets
- How price-responsive are local suppliers of goods and services?
 - If local supplies do not go up when prices rise, inflation is likely
 - The opposite happens when prices fall
 - What's good for producers is not necessarily good for consumers, and vice versa

Some Concluding Thoughts

- This is an on-going project, with new LEWIE simulations added along the way, but several key findings are emerging:
 - The global COVID-19 pandemic is creating disruptions throughout the world, including policies ***thought to mostly affect densely populated urban areas***
 - ***LEWIE models reveal large impacts on rural economies***
 - Lockdowns targeting urban areas can affect the rural sector through *indirect* channels, for instance, as food value chain and labor market disruptions ripple to the farm level
 - Indirect impacts on income are likely to be swift and severe
 - ***Impacts are different under different local economic conditions***
 - ***Poor households are affected at least as much as nonpoor households***
 - Multiple interventions hold promise to counteract negative impacts of the pandemic and “build back better”
 - ***Carefully designed interventions can have multiplier effects on local incomes***
- ***Simulation modeling is a crucial complement to other methods to understand impacts, especially in these challenging times!***

Thank you!

