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RESEARCH PROGRAM ON Policies, Institutions and Markets
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Brief synopsis of discussion from Day1 of the *BioSight* workshop

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Goals of the Workshop

1. Discuss the body of work that has been generated in the last months to better understand its scientific implications – for the topic of SI and for the work of the project
2. Contextualize the work of *BioSight* within other research activities that are going on
3. Start to synthesize and pull together the insights gained from our work, so far, so we can focus on the most promising elements
4. Start to solidify some important partnerships that we can carry forward for future work

Some desirable properties of models

- A primal approach – need to deal in quantities so that you can communicate with biophysical models & other scientists (not everything is priced). But duality can be exploited where needed (especially when the shadow prices have relevant information) – should never 'throw information away'
- Modularity is always good
- Flexibility (perhaps need to be ad-hoc) – although more functional form flexibility may not always be helpful
- Shouldn't have to start from scratch – although having a completely generic template is hard (some customization always needed)
- We know our models are "wrong" – but we should try & make them useful

Data: the never-ending story

- Working in data-rich environments is great – but we need to have robust empirical methods that can be applied to data-scarce environments (that are normally the ones we work in)
- The “Rumsfeld doctrine”: We have to work with the data we have – not the ones we wish we had….
- Need to think where experimental methods can supplement the information we have – in the absence of nice time series of responses (at the same time we can design current data efforts for future use)
- Models are useful data-cleaning tools
- Our model design & database design should also inform each other

Uncertainty in data and structure

- We should try and be objective about the uncertainty we face – either in the data we're using or in process we're modeling
- Parameter uncertainty – can be addressed by MC/stochastic analysis (esp if the model is simple enough to be computationally tractable)
- Structural uncertainty – goes a bit deeper and touches on our uncertainty about the data-generating process itself
- Biophysical models help us to define some of the underlying structure of agricultural processes – and can help provide an 'anchor' (example of feed relationships in livestock and fisheries problems)
- In the absence of data – we have to impose more structure (a constant tension in model-building that is hard to escape from)
- Would be great to do structural estimation directly (if model is simple)

Statics vs Dynamics

- Although it's easier to solve things in a static framework we know that many of the important underlying processes are dynamic in nature
- The path towards the SS is as important as the equilibrium itself
- This is critical for livestock, resource problems, perennials, etc
- The computational methods for solving dynamic problems have improved and DP/SDP methods can be more widely applied
- Besides the static extensive & intensive margins of adjustment – there is also a 'dynamic' margin of adjustment that involves rotations
- We need to model rotations more explicitly as we know it to be important in how farmers maintain productivity/fertility over time

The role of institutions

- They may not always have to be explicitly modeled – but they do matter to behavior
- The nature of institutions can determine the distributional impacts of intensification
- Many of the resource depletion problems and adverse environmental impacts reflect failures of institutions – especially in the commons
- Need to clarify theoretical foundations to better define how to introduce institutions into models
- In the end – a simple approach can still be very useful

Indicators

- Some really important indicators are difficult to obtain – so in some cases we'll always need to consider reasonable proxies
- What's the minimum set that we should have to be able to address the implications of SI? This depends heavily on the context – and should be discussed in relation to the empirical situation at hand
- How to we build a decision-support system around these indicators? (how do we help policy makers to decide what to do based on the indicator values?) – needs us to assign relative weights & define a relevant objective criterion
- Depends on what we care about (ecosystem quality vs human health)

How do we gain confidence in our models?

- Lots of discussion on calibration issues – need to replicate the base situation to gain confidence about projecting forward
- In some cases (ABMs) we are using household-level information to calibrate – while trying to also validate the model based on observed system-level outcomes. This may be asking a lot
- Are the results of models driven by reduced-form equations any more believable than those from more complex models?
- Perhaps doing *ex ante* assessment in parallel with *ex post* evaluation could be useful (example of impacts of CCTs in Tanzania w/ DREMs)

Agenda for Today

The rest of the day we will:

- Listen to some description of gender analysis
- Hear from the perspectives of other researchers
  - Research on decision-making
  - *IntensAfrica* initiative of CIRAD
  - Nutritional dimensions of intensification
  - Aquatic-agricultural systems research
- Have discussions on the insights we have gained from these discussion and implications for our current and future work

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Look forward to more discussion!