

Integrated Impact Assessments - IAMs panel



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Outline

- Modeling Impacts and adaptation @ FEEM & BU
- Policy making input
- What have the organizers missed?
- Modeling team's strategies for future

Model type	OGM	Multi-sector, Multi-region recursive CGE	Multi-sector, Multi-region recursive CGE with AEZs and irrigation
Model name	AD-WITCH (Bosello, De Cian, Carraro 2010)	ICES (Bosello , Eboli, Pierfederici 2012)	De Cian and Sue Wing (2013)
Category of impacts covered	Multiple impacts Aggregate regional damage functions (DICE/RICE)	Multiple impacts Peseta approach	Single impact Impact of T and P on cereal productivity
Valuation techniques	Literature review on damage and protection costs	From bottom-up models + literature	Statistically-estimated yield response function to T and P (global panel data, SR vs. LR)
Regional and intertemporal coverage	2005-2100, 5 years, Optimization, Global	2004-2050, 1 year, Recursive, Global	2007-2052, 5 years, Recursive, Global
Treatment of adaptation	Planned, reactive, adaptive capacity	Autonomous adaptation	Autonomous adaptation Shocks are net of historical adaptation
Treatment of uncertainty	Catastrophic risk (Bosello, De Cian,	NA	Confidence intervals

Policy making input

Tradeoff between mitigation and adaptation

Usefulness for policy makers?

- Do we need really needs IAMs to think about “right” levels of adaptation and mitigation?
- Depends on which policy-maker we have in mind
- Can we think of other tools?
- Adaptation as a practical, not theoretical issue

Which cost indicators?

- Investment allocation over time, across regions (Masseti et al. 2010, Bosello et al. 2013)
- Show numbers for different years, especially over the SR



What have the organizers missed?

Model dynamics

- Equilibrium dynamics matter (Hallegatte et al. 2007)
- Productive vs. reconstruction capital
- Financial constraints to reconstruction resources
- Capital mobility (Lanzi & Sue Wing 2013)

Past vs. future, Implicit vs. explicit adaptation

- Implicit past adaptation and risk of double counting
- Future adaptation is implicit in substitution elasticity values and in factor mobility

Translation techniques

- Translation techniques at least equally important to Valuation techniques

Modeling team's strategy for future

- (1) Risk and exposure GIS analyses of direct impacts + CGE analysis to quantify indirect effects of extreme events (Farinosi et al. 2012). Focus on specific events and specific regions.
- (2) Analysis of catastrophic risk with AD-WITCH
- (3) Combine statistically-estimated response functions of endpoints, exposure analysis, and CGE analysis (De Cian and Sue Wing 2013 for cereals and next energy demand, paper on EMF website)

Modeling team's strategy for future

Example of translation questions (De Cian and Sue Wing 2013)

- Land productivity or total factor productivity?
- Static vs. dynamic? If the latter is followed, how should the time profile be specified?
- How do we aggregate responses of different countries into macro-region shocks?
- To what extent the effect of precipitation on crop yields capture the effect of water resources? Should specific shocks for water resources be added? Double-counting?

Final considerations

- Can we identify which impacts are more appropriate to be studied with either approach?
- The macroeconomic modeling of adaptation remains challenging, but there is demand for this type of work

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