Shared Socio-Economic Pathways: Potential implications for global income distribution

Dominique van der Mensbrugghe
Center for Global Trade Analysis

Israel Osorio Rodarte
The World Bank

World Bank Workshop
February 9-10, 2015
World Bank Headquarters, Washington DC
ENVISAGE-GIDD Simulation Framework

• **Top-down structural model**
  - Interaction between the 4 channels of Climate Change Framework:
    - (1) Prices
    - (2) Productivity
    - (3) Assets
    - (4) Opportunity

• **Macro Structural Model (ENVISAGE)**
  - Environmental Impact & Sustainability Applied General Equilibrium Model

• **Micro: Global Income Distribution Dynamics (GIDD)**
  - Based on International Income Distribution Database (I2D2)
    - 130 surveys, 3.67 million households, 12.5 million observations
Two-axes: adaptation & mitigation challenges

SSP5
Conventional development
(Mitigation challenges dominate)

SSP3
Fragmentation
(High challenges)

SSP2
Middle of the road
(Intermediate challenges)

SSP1
Sustainability
(Low challenges)

SSP4
Inequality
(Adaptation challenges dominate)

Source: O'Neill et al. 2012
ENVISAGE-GIDD Simulation Framework

• Scenarios: 5 Shared Socio Economic Pathways
  • (SSP1 to SSP5)

• Target year is 2050 (in 5-year intervals)

• Distributional changes are caused by:
  • $\Delta$ Working-age Population
  • $\Delta$ Wage premia between skilled and unskilled labor
  • GDP growth
By 2050, 1.3 billion net increase in global working-age population

Source: Global Income Distribution Dynamics
1 in every 3 new entrants are from Sub-Saharan Africa

Source: Global Income Distribution Dynamics
Global Income Distribution

Source: Global Income Distribution Dynamics
Global Income Distribution

Source: Global Income Distribution Dynamics
Global Income Distribution

Source: Global Income Distribution Dynamics
Poverty Headcounts (People living with less than PPP$1.25/day)

SSP1: 2.0%  SSP2: 3.1%  SSP3: 5.5%  SSP4: 5.9%  SSP5: 1.7%
3% - poverty target is ambitious

Source: Global Income Distribution Dynamics
Global Inequality to decline …

- Reduction in Income Inequality by 2050 (Gini, p.p):
  - SSP1: 13.4
  - SSP2: 10.9
  - SSP3: 7.8
  - SSP4: 6.5
  - SSP5: 13.6

Source: Global Income Distribution Dynamics
...with increasing within-region inequality

High-Income Countries

Source: Global Income Distribution Dynamics
Conclusion

• SSPs project radically different futures
  • What policies would encourage turnaround in population trends?
  • What policy mix would encourage more environmentally sustainable and equitable economic growth?

• Poverty, as currently defined will most likely be eliminated in the next few decades

• However, relative poverty could persist and a worsening of within-country income distribution is possible
Moving forward

• Incorporate layers to structural models
  • Making use of additional SSP quantifications, e.g. education and urbanization projections, consumption prices

• Incorporate the climate signal into the system

• Data
  • initial differences in poverty and inequality