Economic Assessment of Policy Interventions in the Water Sector
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Motivation

- Water, a limiting factor for the economic development of Mexico.

- Decisions of water use and allocation have micro and macro effects

- Agriculture is the major water consumer in Mexico:
  - 81% of surface water
  - 71% of ground water
The study assesses implications of water reductions and policy interventions on Mexican farmers, agricultural regions, and on the whole economy of Mexico.
The models

Two economic modeling approaches built separately but linked through their results

- Microeconomic for farmers in the Rio Bravo Basin (RBB).
- Macro computable general equilibrium model (CGE), for the whole of Mexico (5 Ag. Regions)
Agricultural regions of Mexico
Micro and macro effects of water availability and policy shocks arising from:

- Drops in superficial water supply for irrigation
- Higher water costs
- Investment projects
- NAFTA ...combined with water shocks and other Agricultural policies
- ...
Water related shocks

CGE effects of reductions in water supply for irrigation

Rural/ Agriculture

Urban/ Manufactures

Water shadow Value

Pushes resources out of irrigated Ag.

Factor demand varies according to Crop & region

WUA savings

Investment for efficient Use of water

Food processing

↑ Other manufactures

Wages

Small ↓ in
• Real GDP
• Household incomes (rural rich, the biggest losers)

↑ Exports & Imports

Wages & Land rents
Water related shocks

- Bigger effects of reductions in water supply for irrigation on farmers, and Mexican agriculture

- than changes in water costs to users

... because of,

- Total surface water costs are low,
- Water is not fully valued
- Low opportunity cost

- The North and RBB the Ag. regions suffer the most
Economy-wide effects of
AG TRADE LIBERALIZATION
(NAFTA)

Rural

Δ domestic prices
↓ non competitive
↑ competitive

Pushes resources
Out of non-competitive
In of competitive

Small negative effects

↑ Water shadow prices
↑ WUA savings

↑ Factor prices
  Wages
  Land rents

↑ Factor prices
  Wages
  Land and capital rents

↑ Household income
Agriculture Trade liberalization (NAFTA) plus water supply drop

- Positive consequences of an agricultural freer trade with no water restrictions diminish.
- However, the GE impacts of restricting water availability for irrigation are low in a NAFTA context.
Policy implications

In the current environment of low costs of water leading to over-exploitation

- Policy option. Reductions in water supply for irrigation
- To control water supply more plausible than rising energy-related water costs for irrigation.
- Projects for a more efficient water use in agriculture
CURRENT LIMITATIONS

- The National Water Commission has to allow farmers (WUA) to trade their water allocations.
- Property rights on water have to be clearly established.
Different impacts of water and policy shocks on:

- Farmers (size and crop)
- Agricultural regions
- Rural households

... rich Mexican farmers of North and RBB suffer the most

Focalized policies are required
Conclusion

- De-centralization efforts in the appropriate direction …
  but…
- in the short run, some economic actors will be negatively affected by policy changes and water restrictions

So, implementing them requires a strong political will