

Impact of green growth policies on GDP and employment

some evaluations on French data

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The overall effect of green growth policies on net employment is probably not massive

- **Special issue of The Energy Journal (2010):**
 - Different general equilibrium models, with a production function encapsulating energy as a third input, assessing the macroeconomic effects of policies aiming at the 450ppm objective (Knopf et al., 2010): MERGE, REMIND-R...
 - Results: 450ppm target technologically feasible + entails a (limited) loss of GDP (-2,5% on average in 2050, thus -0,06% per annum). *Intuition*: higher energy prices weigh on growth *ceteris paribus*, at least in the short/medium run.
 - In France, would involve a loss of employment of -10k per year on average.
- **French IMACLIM model** (national center for scientific research) (GE, “hybrid model”): aggregate positive impact (however, assuming most current green policies display discounted negative costs): +0,09% GDP/y; employment +8,7k per y.

The effect of green growth on employment can be influenced by tax policy

- **GE model with overlapping generations and energy sector** (University of Paris-Dauphine):
 - Models the impact of numerous variables in the energy sector (incl. public targets for REs, carbon tax...) on GDP growth, savings, L supply, K per unit of efficient labour, aggregate substitution between physical K and energy...
 - Intergenerational redistribution; dynamic equilibrium
 - Public spending ; social contributions, carbon tax, income tax
- **Recycling a carbon tax of 1% GDP through lower social contributions on working cohorts rather than higher lump-sum spending for all...**
 - ... may add 0,25% to the level of GDP in the long-run on French data (0,5% on German data, older working population). Around +40k on level of French employment.
 - This is a significant order of magnitude for a fully recycled tax (*i.e.*, that is neutral for the budget deficit). Purely non-Keynesian impact.

The effects of green growth policies on households' behaviors may depend on age / demographics

(Results in the GE-OLG model)

- A carbon tax fully recycled through lower social contributions...:
 - ... fosters the intertemporal wellbeing of young working cohorts and future generations (-> impact on their labor supply)
 - ... weighs on the intertemporal welfare of aged working cohorts.
 - *(intuition: distortive effect vs permanent income effect + capital yield effect).*
 - Higher public targets for renewables display different intergenerational redistributive features:
 - It weighs on the intertemporal welfare of young cohorts, which face higher prices for many years. *(intuition: permanent income effect vs consumption effect)(welfare assumed to depend on consumption and leisure only).*
- > policy implication: a fully recycled carbon tax may offset the detrimental effects of increasing targets for REs on the welfare of the youngs.

1. *The effect of green growth policies on employment is probably subdued*
2. *This effect can be influenced by tax policy*
3. *This effect can be influenced by demographics through intergenerational redistributive effects*

Thank you