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 sort/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