Prospective modeling for Degrowth: Investigating macroeconomic scenarios for France

- **Narrative step: visions and strategies for transformations**
- Thematic thread: Building a social and ecological economy
- Topic: Scenarios and models of a post-growth economy

Long Abstract

• Motivations:

Throughout the last decade, significant theoretical work has been done to progressively identify the key features of what is now consolidating as a *complex and multifaceted political project.* For the "wealthiest" countries, where the ecological footprint per capita is greater than the sustainable global level, Degrowth may be envisioned as a voluntary, socially sustainable, equitable, smooth **downscaling of production and consumption, and thus throughput**, to an environmentally sustainable level, "that increases human well-being and enhances ecological conditions at the local and global level, in the short and long-term'' [Kallis and Schneider, 2008].

Yet, the possible socioeconomic outcomes of such a project still remain uncertain. For instance, while GDP degrowth is *not per se* an objective of Degrowth, a project of Degrowth, as one can reasonably presume, is very likely to entail a decrease in GDP as a *consequence* of the downscaling of production and consumption [Kallis, 2011, Martinez-Alier et al., 2010, Schneider et al., 2010]. However, in the current capitalist system, economic growth may not be an option, but rather a structural imperative stemming from fundamental institutions such as "the use of private property as a collateral [van Griethuysen, 2010], debt, interest rate and credit [Löhr, 2010, Douthwaite, 2010], and the grow-or-die competition of private enterprises for profit and market share" [Douthwaite, 2012, Farley et al., 2013, van Griethuysen, 2012, Kallis, 2011] . In this context, an inversion or a slight slowdown in economic growth quickly translates into dramatic social tensions, rising unemployment rates, poverty, and increasing government debt in the short term, as well as potential environmental harm in the medium or long term due to lower investments in environmental protection or industrial maintenance [Bayon, 2010].

Therefore several issues remain unresolved, in particular: what structural or institutional obstacles must be overcome and how? What concrete proposals could initiate a successful transition? Can a welfare state be sustained in a degrown economy? How to tackle poverty? Etc.

Such critical questions are particularly complex and require careful prospective approaches. In this perspective, applied macro-models could constitute useful tools [BarcelonaWG, 2010]. We will here

be using a dynamic simulation macro-model of the French (formal) economy[1] to explore different Degrowth scenarios based on combinations of various proposals and strategies issued from the Degrowth movement.

• Methodology:

-Model description

The model we are using, developed with STELLA, has been inspired by P.A.Victor's work on the Canadian economy (see for instance [Victor and Rosenbluth, 2007][2], [Victor, 2008]). However, our model has been adapted to the structural and institutional context of the French economy. In particular, our model features a sectorial disaggregation of the economy into 19 branches and a detailed representation of the French fiscal apparatus and public administration budget. It has been built using data from the French national accounts, and from INSEE, mainly from the period 1978-2012. The model allows us to run medium to long term simulations (starting in 2010 and up to 2040 and after).

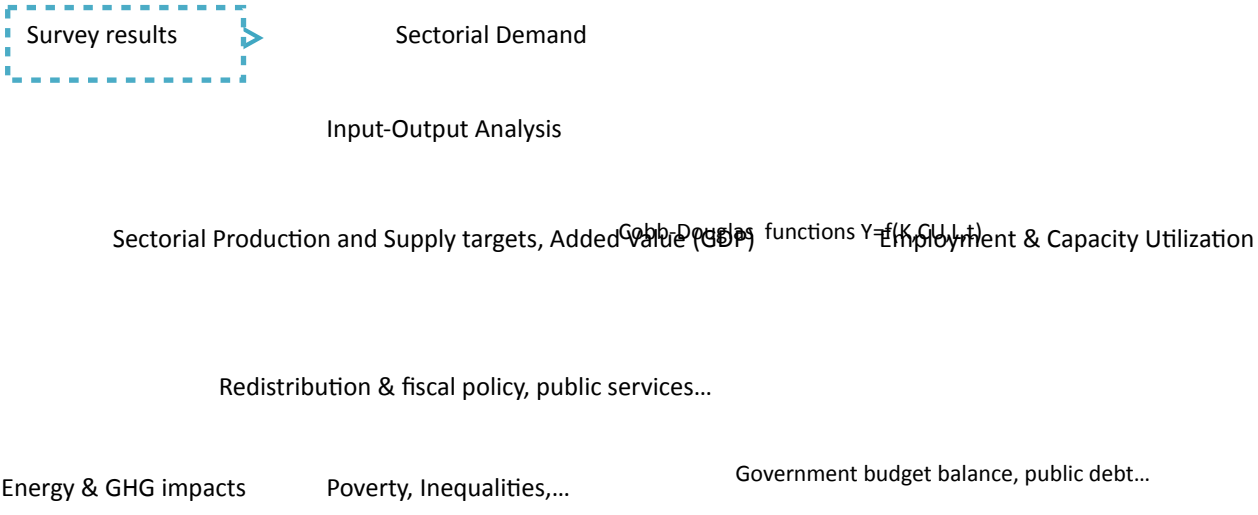

Figure 1: simplified structure of our modeling approach

Figure 1 shows the simplified structure of our modeling approach. In a nutshell, the level of production for each branch derives from the final consumption demand, *via* an input-output analysis. Using sectorial Cobb-Douglas functions allows us to define the labor required to reach a given level of

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1 One may question the relevance of choosing of a national perimeter for such macroeconomic studies. Our choice here is largely constrained by data availability issues.

2 P. Victor's LowGrow 2.0 model of the Canadian economy can be viewed and downloaded at : http://www.pvictor.com/MWG/Computer_Models.html

production with a certain stock of capital, and thus to deduce the level of employment. The fiscal policy operates a redistribution of the wealth produced within society, and impacts on the public budget balance. For the sake of simplicity, there is no explicit monetary sector in our model[3].

Given the complexity of the system considered in this research and the uncertainty surrounding hypotheses, we prefer putting priority on results intelligibility and model transparency here. In this perspective, various parameters related to agent behaviors likely to evolve during a Degrowth transition, or involving uncertain mechanisms for which causality is not well established, too complex to be accurately modeled, or for which data is missing, as well as parameters deriving directly from political choices, are kept exogenous and are subject to sensitivity analyses. Hypotheses relative to the evolution of final consumption demand for the different sectors are derived from surveys carried among different social groups.

-Scenarios:

We investigate different scenarios based on combinations and sets of various proposals and strategies issued from the Degrowth movement (cf [BarcelonaWG, 2010]). These include in particular:

- Taxes or caps proposals on energy or GHG emissions
- Measures against obsolescence: increase in repairing, reusing, recycling activities
- Consumption sobriety
-"Commoning"; house-, car-, bike-, equipment-,(…)- sharing /pooling
- Reduced working time in the paid sector, work-sharing
- Basic Income or Unconditional Autonomy Allowance and Income ceiling
- Switching from agriculture's production-based industrial model to small-scale and organic farming
- Development of not-for-profit organizations, cooperatives and social enterprises
- Economy (re-)localization
- Etc.

These proposals are more or less developed, precise and concrete and differ in nature and scale. Consequently, implementing them into our modeling framework sometimes requires indirect methods or artefacts.

Carrying sensitivity analyses on the different parameters affected by Degrowth proposals allows us to explore possible socioeconomic (poverty, inequalities, unemployment, public budget and public debt) and environmental (energy consumption and GHG emissions) impacts, and to identify leverages that could play a key role in the transition, and that will merit special attention.

Besides, combining different proposals into various scenarios makes it possible to study possible interactions or synergies, and to identify Degrowth strategies that may have an interesting potential. In particular, attention is given to the articulation between grassroots initiatives and top-down institutional changes.

This work is part of a broader research framework, that will, in the future, combine and complement our macroeconomic modeling approach with a technical analysis of the energy sector and with a

[3] This does not allow for exploring in detail alternative monetary creation and financial systems, although these are generally expected to play a critical role in a Degrowth transition.

reflection on the articulation between the formal and the informal and non-monetary part of the economy, which may play a key role in a Degrowth transition that is often envisioned as a *de-commodification* process [Norgard, 2013].

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