

## Summary of Tim Jackson and Peter Victor's plenary presentation *Towards an Ecological Macroeconomics*

Presenting research submitted to the Metcalf Foundation, Tim Jackson and Peter Victor discuss the imperative of using both microeconomic and macroeconomic responses to ecological issues. That is, thinking at the micro level informs thinking at the macro level, and vice versa. A green economy delivers shared and lasting prosperity. This presentation of "ecological macroeconomics" uses data to demonstrate what this means in practice.

The research begins with the real economy. The structure of the real economy is composed of factors such as income, spending, investment, taxation, demography, and the structure industry. Jackson and Victor seek to capture elements on which the real economy functions and investigate the relationship among these factors. The analysis is then applied to a 'green economy model', a Green Economy Macroeconomics Model and Accounts (GEMMA) framework. Major research questions include: How to maintain full employment? How much investment is needed and how to finance green investment? What reforms to the financial system are needed? What does this mean for stability? Where does money come from? They argue that we need to understand the interactions between three major components of a green economy model: Enterprise as service, stable money, and green investment.

A green economy differs from the current economic structure in a few ways. Regarding enterprise as service, the quality of service should be recognized as a function of time. Additionally, green investment should be acknowledged as broader than simply infrastructure and tech, and encompass ecological protection and health and arts/cultural services.

The presentation went on to describe what data was used to interpret what a green economy might look like. Using data from the 37 sectors of OECD economic activity, the data was distilled to 12 sectors in a GEMMA model. Jackson and Peter developed a demographic sub-module and an input-output sub-module to analyze the data using a socio-economic environmental database to reflect the role of different sectors and their impacts. For example, the input-output model informed a Direct and Indirect Emissions Table, which describes the full emissions impact of industries. The input-output sub-model showed how a shift from manufactured goods to services would increase employment in Canada *and* reduce greenhouse gas emissions.

A major role of the FALSTAFF model is to analyze the current financial system and to understand the complex monetary system and the creation of money via credit and banks. Importantly, everyone's expenditure is another's income. In the current and internationalized monetary system, trade balance and investment are very important and complex. Each country must be analyzed as an individual case (for example, the economic policies of Germany should not and cannot be applied universally). Nevertheless, fundamental economic commonalities occur. The FALSTAFF model takes the current financial system into account, in addition to simple systems

relating households, firms, and government. The purpose of modelling the simple and the complex systems side by side is to demonstrate how the financial system dwarfs the simple system.

This complexity carries over to the green economy model. How much confidence does an investor have to invest? In Keynes' animal spirits concept, investors become excited about an investment, euphoric even, and invest more and more....leading to the classic boom and bust cycles in the economy. Can we come up with a set of assumptions in a green economy that avoid boom and bust?

Jackson and Victor predict that investment will be less volatile in the green model because it will be based on ecological services and post-Keynesian consumption preferences, rather than the speculative investments that characterize the current system.

The main lesson learned thus far is that it is possible to integrate real economy, financial economy, and ecological services. Future work will allow the FALSTAFF model to meet the GEMMA model, housing demand and demographic dependencies will be integrated, ecological and resource accounts will be enhanced, application to other countries will be investigated, and role of central bank in the behaviour of the financial sector will be examined. The continual challenge is to relate different models to current systems, within the structures that be. Jackson and Victor's research is currently in the preliminary stages, with the objective that the research will be a dialogue tool for a better society.

### Q&A:

Q: Can you expand on assumptions made for the model?

A: Animal spirits, post-Keynesian consumption preferences, progress of investments

Q: How close is current economy to a Minsky-moment?

A: Might say we are post-Minsky.

Q: Money is created as debt, most is not invested into economy but speculation.

A: This is true. Our Chicago School graph tries to work with this reality.

Q: Why should we have corporate banks control our money?

A: This is our question too! We're trying to provide a more detailed answer.

Q: What is rate of improvement of carbon-based economy/energy? Why is income distribution not part of the model?

A: Approach is to dialogue with those not necessarily in agreement and use their terms, language.

Q: How does this relate to a green society? What is the timeline of this application, can it be applied module by module or to different jurisdictions? What about restoring/financing the commons? Might the system be beyond repair?

A: We are still researching what's required to apply to model; we cannot build solely on hope (i.e. Quantifying mining sectors contribution to public sector in taxes is informative). We are not thinking of module by module, but more like lurch by lurch. A portfolio of assets must be included in green investment, with an overall interest in the commons. Looking at many different investment relationships, we are drawing a path of creative thinkers without being beholden to a rigid structure.