
Waiting for the transition: A model of stranded assets drivers

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Résumé

Climate change and the low-carbon transition to come will involve a complete revamp of the energy basis of our societies. It is estimated that 60-80% of oil, gas and coal reserves will have to remain unexploited to respect the 2°C threshold agreed upon at the COP21 (McGlade and Ekins, 2015). The ‘stranding’ of fossil fuel reserves will affect the utilisation capacity of productive capital, the valuation of the companies whose capital have been affected and the financial wealth of investors, with potential systemic repercussions (Battiston et al., 2017; Leaton et al., 2013; Weyzig et al., 2014).

These disruptions are linked to the alignment of expectations and investment decisions with future decarbonisation pathways. These expectations will determine the amount and type of physical and financial investments today; the relevance of asset stranding in the future; and the speed and shape of the transition itself. Yet an in-depth analysis of the phenomenon at a macroeconomic scale is still missing. The neoclassical approach based on agents optimizing their intertemporal utility with perfect foresight do not easily allow for endogenous transition-related financial disruptions. The post-Keynesian approaches based on adaptive expectations prevent the formation and update of expectations structurally different from past experience (Godley and Lavoie, 2012).

We contribute to filling this gap by developing a model where both non-financial firms and financial investors make investment decisions in physical and financial assets on the basis of their forward-looking expectations on future decarbonisation pathways. However, they might not develop an informed, forward-looking understanding of future transition paths. First, information regarding climate change, climate policies and technological innovation might be limited or not available in a comprehensible form. Second, information might be reinterpreted by individuals in accordance with their pre-existing beliefs and dominant opinions (Kahneman and Tversky, 1979). Third, firms might incorporate it in their investment decisions only to a certain extent, depending on planning horizons.

The structure of the modelling framework is based on the representation of the physical and financial stocks/flows of heterogeneous macroeconomic sectors (i.e. a stock-flow consistent model). These include households, non-financial firms (low- and a high-carbon), commercial banks, non-bank financial institutions, central bank and government. Each sector is modelled using double entry bookkeeping, focusing on the evolving size and composition of their assets and liabilities.

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Battiston, S. et al 2017. A climate stress-test of the financial system. *Nat. Clim. Change* 7, 283–288.

Godley, W., Lavoie, M., 2012. *Monetary economics: An integrated approach to credit, money, income, production and wealth*, 2nd ed. Palgrave Macmillan

Kahneman, D., Tversky, A., 1979. Prospect Theory: An Analysis of Decision under Risk. *Econometrica* 47, 263–291.

Leaton, J. et al 2013. *Unburnable Carbon 2013: Wasted Capital and Stranded Assets*. Carbon Tracker Initiative and Grantham Research Institute on Climate Change and the Environment

McGlade, C., Ekins, P., 2015. The geographical distribution of fossil fuels unused when limiting global warming to 2 °C. *Nature* 517, 187–190.

Weyzig, F. et al 2014. *The price of doing too little too late. The impact of the carbon bubble on the EU financial system*. Green European Foundation.

Mots-Clés: energy transition, stranded assets, stock flow consistent model, forward looking expectations, ecological macroeconomics