Student Presentation

Toward a Theory of the Evolution of the Global Political Economy

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My paper addresses two of the most important global problems that my generation will have to solve over the next 50 years: Inequality and the Climate Crisis, models of which have been called 'The Holy Grail' of Political Economy research (Acemoglu et al., 2005). My research demonstrates that the solutions to both problems have much in common at a system level.

Political economists from Smith (1776) to Marx (1859) have long explored how wealth is created and distributed within nations. More recently, Acemoglu (2012) and Piketty (2013) have focused on the role of institutions and capital growth rates respectively to explain this. I integrate these into my exploration of how different forms of advanced political economy function, create performance differentials and co-evolve with the environment (Piepenbrock, 2009). To explore how capital and labour function in different forms of political economy, I use Hall and Soskice's (2001) typology of liberal and coordinated market economies – LMEs and CMEs. To explore the evolution of the political-economic-ecological interactions, I use The Limits to Growth (Meadows et al., 1972) and bounded rationality (Simon, 1957).

My model comprises four submodels: the core capital-labour subsystem (Marx 1867; Kalecki, 1934; Goodwin, 1967), the investment-transfer behavioural decision rule subsystems (Simon, 1957, 1969, 1979, 1982, 1984), the carrying capacity subsystem (Forrester, 1971; Meadows et al., 1972, 1994 and 2004), and the global trade subsystem (Ricardo, 1817). I numerically simulate the nonlinear dynamic behaviour of constrained competition between LMEs and CMEs via coupled differential equations of multi-predator-prey interactions (Lotka, 1925; Volterra, 1926) which are demonstrated to generate overshoot (Forrester, 1971), limit cycles (Goodwin, 1967) and chaos (Sterman, 1989).

These results demonstrate the symbiotic nature of 'interspecies' competition between complementary forms of capitalism (Goodwin, 1967; Hall and Soskice, 2000; Piepenbrock, 2009; Acemoglu, Robinson and Verdier, 2017). The 'species' of economic actors emerge from the mathematical dynamics of the ecosystems. Evolutionary strategies of 'r-strategists' and 'K-strategists' (MacArthur and Wilson, 1967) are derived from the ecological differential equations: 'r' is the fractional growth rate, and 'K' is the carrying capacity.

The 'Holy Grail' quest for formal models capturing how political economies can solve Inequality and the Climate Crisis is indeed challenging. I hope that the use of System Dynamics can begin to shed some light on the nonlinear dynamic interactions between: 1) capital and labour within a political economy, 2) LMEs and CMEs in competitive international trade more broadly, and finally, 3) the global political economy and the supporting ecological ecosystem. The symbiotic interaction between capital and labour have been demonstrated to enable and constrain growth of wealth endogenously, while the environment enables and constrains growth of wealth exogenously. The simulations demonstrate that while LMEs outperform CMEs in the shorter term, the converse is

true in the longer term, with LMEs maximising capital wealth and efficiency and CMEs maximising labour wealth and equity. CME's greater equity and lower degradation of the carrying capacity sheds light on the solutions to Inequality and the Climate Crisis.