A Multi-Currency Systems to Address Polycrisis

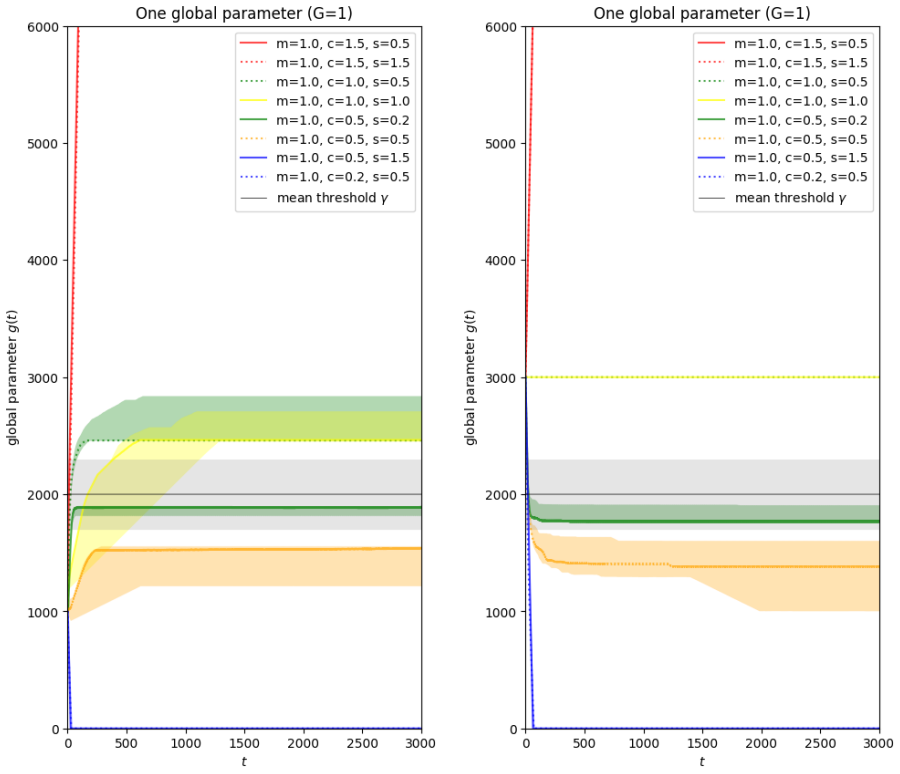
Supplementary Material

April 2025

1 Relaxing some assumptions of the model

1.1 Varying the global parameter thresholds among agents

In the main article, we set the thresholds of the needs of all agents equal to each other for each global parameter and currency. Here, we study how the qualitative behavior over time for systems with one global parameter changes, when the thresholds γ_a are normally distributed among the agents.
Figure 1 shows the same analysis for the time evolution of systems with one global parameter as Figure 3a in the main article. The differences to the main article is that here, γ_a is sampled from the normal distribution $N(2000, 300)$ for all agents a and τ_a is sampled from the normal distribution $N(10, 5)$. Furthermore, 1b also shows the case where the initial value of the global parameter is higher than the mean threshold γ. The vertical black line shows the mean of γ_a and the grey shaded region corresponds to the interval $[mean(\gamma_a) - var(\gamma_a), mean(\gamma_a) + var(\gamma_a)]$. For each parameter configuration, the line of the corresponding color shows the time evolution of one realization of the model and the shaded region shows the distance between the minimal and maximal global parameter value over 10 realizations. In subfigure 1a, $g(0) = 1000$ and in subfigure 1b, $g(0) = 3000$.



(a) (b)

Figure 1: Time evolutions for a system with one global parameter ($G = 1$) for different values of m, c and s where the thresholds γ_a and τ_a are normally distributed among the agents a. The black line shows the average of γ_a on the agents and the grey region shows the area between the mean of γ +− its variance. **(a):** $g(0) = 1000$, **(b):** $g(0) = 3000$.