

In the OLG model the only way for people to survive in their old age is to save in the form of physical capital. Suppose, hypothetically, that the marginal product of capital declines very swiftly as capital intensity increases and, in contravention to our normal assumptions, actually becomes negative when capital is in great abundance: more capital leads to reduced output. For example, having and using a second or third smart phone is probably useless for most people but may cost time keeping track of them and keeping them all charged.

1. Could it ever be socially optimal (a good use of society's scarce resources) for young people to save so much and accumulate so much capital that the $MPK < 0$?
2. Could it ever be privately optimal (useful or necessary) in the Diamond model for an individual young person to continue to save and accumulate more capital if the $MPK < 0$?