**Social Distancing and Supply Disruptions in a Pandemic**

Authors expand standard SIR model with a homogeneous population to a setting with multiple groups and combine it with a two-sector growth model to provide a map from the intensity of social distancing into the disease spread, the number of people able to work, and via this channel, into economic activity.

The disease in this model affects economic activity directly and indirectly: directly, through its negative impact on the labor force, and indirectly, as contractions in the output of the core sector has nonlinear effects on aggregate activity. The question the authors address using this model is how much output can potentially be lost by letting the disease spread to its natural intensity, as opposed to trying to slow it down via social distancing.

SIR model: Four-group SIR model. Members of the first two groups are in the labor force. Individuals of group j work in sector j. The members of group 3 and 4 are not in the labor force and represent the young, who attend school, and retired people. The rate at which infective and susceptible individuals meet is proportional to their spatial density. Social distancing and other non-pharmaceutical public health measures are modelled as a reduction in the effective contact rates.

Economic model: Two intermediate sectors, which produce inputs for final goods. In Sector 1, labor inputs are subject to a minimum scale requirement. In Sector 2, labor inputs are more readily substitutable for capital services. Households supply two types of labor inelastically, invest, and, also rent capital services to firms in sector 2.