Title: Projecting the Spread of COVID19 for Germany

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Abstract:
We model the evolution of the number of individuals that are reported to be sick with COVID-19 in Germany. Our theoretical framework builds on a continuous time Markov chain with four states: healthy without infection, sick, healthy after recovery or after infection but without symptoms and dead. Our quantitative solution matches the number of sick individuals up to the most recent observation and ends with a share of sick individuals following from infection rates and sickness probabilities. We employ this framework to study inter alia the expected peak of the number of sick individuals in a scenario without public regulation of social contacts. We also study the effects of public regulations. For all scenarios we report the expected end of the CoV-2 epidemic.

Data description: The data used in this paper is taken from two sources: (i) the World Health Organisation’s Situation reports on the progress of COVID-19, and (ii) the dataset put together by the nCoV- 2019 Data Working Group (Dong et al. (2020)). In particular, wherever available the data from the nCoV-2019 Group is used instead of the data from the WHO, in an effort to remain as consistent as possible by using only one source at a time. Data from the nCoV-2019 Group is used as it provides a centralised and standardised repository of multiple official sources.

JEL Codes: I18, E17, C63

Keywords: Corona, COVID-19, SARS-CoV-2, spread of infection, Markov model, Germany, projection

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