Predicting The Incidence Rate And Case Fatality Rate Of The Coronavirus COVID-19

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A thesis submitted in partial fulfillment of the requirements for the degree of Master in Econometrics and Mathematical Economics.

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Date:
March 30, 2020

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We will use open source data on Italian regions. Adda uses the following model:

$$\begin{aligned} Inc_{r,t} = & \, Inc_{r,t-lag} S_{r,t-lag} \sum_{k=1}^{K} a^k_{within} W^k_{r,t-lag} \\ & + \sum_{c \neq r} Inc_{c,t-lag} S_{r,t-lag} \sum_{k=1}^{\tilde{K}} a^k_{between} \widetilde{W}^k_{r,c,t-lag} \\ & + X_{r,t}\delta + \eta_{r,t} \end{aligned} \tag{1}$$

For us, we will use the following specifications for the data:

- $W_{r,t-lag}$ contains K region-specific variables that potentially influence the transmission rate of COVID-19 within a region r:
  - The number of passengers travelling by plane from and to the region (not available interregionally).
  - The number of passengers travelling by ship from and to the region (not available interregionally).
  - Length of railroads, motorways, navigable rivers, etcetera.
  - The number of hospital beds.
  - The median age.
  - The population number (per gender and total).
  - The amount of enrolled students.
  - The percentage of people with internet.
  - The percentage of people who used internet to contact the authorities in the last year.
  - The GDP at current market prices.
  - The amount of nights spent at tourist accommodations.
  - The percentage of people at risk of poverty or social exclusion.
- $\widetilde{W}_{r,t-lag}$ contains $\tilde{K}$ variables that potentially influence the transmission rate of COVID-19 across regions:

  - Amount of passengers that travelled from region c to region r via railroad.
  - A binary indicator indicating whether the regions border each other.
  - The distance between the largest (most populous) cities in the regions.
  - The population ratios.
  - The log regional GDP ratios.
- $X_{r,t}$ contains certain fixed effects to control for, such as a binary indicator whether the day was on a weekend.

5 Materials

6 Results

7 Conclusion

References

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