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Widespread swabs testing and the fight against the Covid-19 outbreak

Massimiliano Ferraresi ^a, Giuseppe Migali ^b, Leonzio Rizzo ^c and Riccardo Secomandi ^d

ABSTRACT

To control the reproduction rate, R , and therefore to fight against the Covid-19 pandemic, countries have announced several measures. We rely on a quasi-natural experimental approach and provide graphical evidence of the effectiveness of the widespread use of swabs testing in reducing the Covid infection rate among Italian provinces.

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Covid-19; swabs test; infection rate

The Covid-19 pandemic, which began in December 2019 in the city of Wuhan in China, continues to spread around the world. According to the latest data from the World Health Organization (WHO) (5 September 2020), more than 26.5 million cases have been reported, including more than 870,000 deaths. Nearly all countries to date have reported Covid-19-infected cases, but they have also followed different trajectories, as both their exposure to the virus and level of preparedness have differed.

To control the reproduction rate, R (a key measure corresponding to the average number of people who become infected by an infectious person) and tame it below one ($R < 1$), countries have announced measures that restrict the movement of individuals and impose social distancing. The literature has begun to investigate the effectiveness of the lockdown measure (Bharati & Fakir, 2020; Ferraresi et al., 2020), with a particular focus on understanding whether and to what extent the intensity of the lockdown measures reduces the spread of the virus (Askitas et al., 2020; Bonardi et al., 2020; Zhai et al., 2020). Yet, the role played by swabs in shaping the spread of the virus has not been specifically investigated, although it has been considered one of the most effective strategies to tackle the virus and consequently lift the confinement restrictions (Bedford et al., 2020; Organisation for Economic Co-operation and Development (OECD), 2020).

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Here we rely on daily data on Covid-19 cases registered in two neighbouring provinces (NUTS-3) in Italy during the period 24 February–24 June 2020, and we adopt an event-study approach, a statistical technique which allows one to follow the evolution of the spread of the virus in the two provinces. Brescia and Verona are two neighbouring provinces located in northern Italy that are similar in their demographic, geographical and socioeconomic characteristics – including local gross domestic product (GDP), population, share of elderly and young, employment rate – with one of the main differences being that the province of Brescia belongs to the Lombardy NUTS-2 region, while the province of Verona belongs to the Veneto NUTS-2 region.

On 8 March the governor of the Veneto region announced plans to carry out widespread testing for Covid-19 by means of swabs, complemented with the activation of a ‘bio-surveillance’ platform to analyse in real time the data from testing. On the contrary, the same policy has not been adopted by the neighbouring region of Lombardy. Therefore, we compare the evolution of the spread of the pandemic in the provinces of Brescia and Verona before and after the policy announcement. In particular, we apply the traditional study-event approach, and the day-by-day change in the number of Covid-19 cases compared with 7 March – the day before the announcement – between the provinces of Brescia (control) and Verona (treated) is illustrated in Figure 1.

This led to two novel findings. First, the swabs testing policy seems to be associated with a significant reduction on Covid-19-related infections of around 50 cases per 10,000 inhabitants.

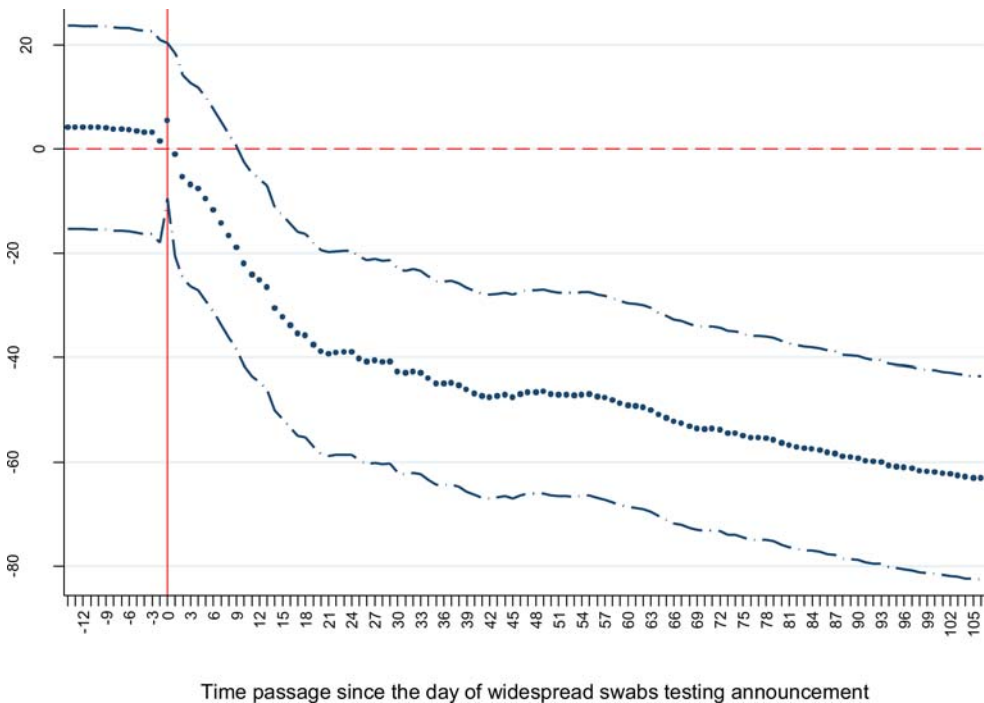


Figure 1. Differential impact of widespread swabs testing policy on the number of total Covid-19 cases between the provinces of Brescia (control) and Verona (treated).

Note: The red vertical line indicates the day of the announcement. This graph is based on the estimates of a model where we use the total number of Covid-19 cases per 10,000 inhabitants as the dependent variable and the dummies for each day interacted with the treated province, controlling for province and day fixed effects. Dots represent point estimates taking the day before the announcement as the baseline; dashed lines denote 95% confidence intervals. Estimations are available from the authors upon request.

Second, such a policy takes time to materialize its effects, as significant differences are detected starting from the 10th days.

Strikingly, what emerges, therefore, is that the widespread swabs testing appeared to be a useful tool, which contributed significantly to the fight against the pandemic.

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