Spatial Disparities in Healthcare Provision and Mortality: The Effects of Debt Rescheduling Plans in Italy

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Since 2007, the Italian Government has implemented Debt Rescheduling Plans (DRPs) to reduce healthcare deficits in regions with financial imbalances and deficiencies in the provision of Essential Levels of Care. This measure, however, has raised significant concerns regarding potential indirect and unintended effects on the future availability of healthcare resources and the quality of services provided to citizens.

This study identifies a negative and persistent impact of these rescheduling policies on the health conditions of the affected populations. Specifically, municipal-level mortality increases by approximately 2% within 2-3 years of the DRP's initiation, stabilizing around 3% from the fourth year onwards. Various studies have found overall negative effects. Notably, an estimated 3% increase in mortality aligns with the findings of Arcà et al. (2020). Negative outcomes in terms of mortality levels and hospitalization rates are also reported by Depalo (2020). A distinctive feature of this paper is its comprehensive description of the temporal evolution of the phenomenon.

One aspect addressed is that the use and availability of services did not seem to decrease in regions subjected to DRPs (Bordignon et al., 2020). However, Arcà et al. (2020) found that spending cuts were primarily translated into reductions in medical capacity in DRP regions. This discrepancy could be attributed to the use of different data sources and the lack of exploitation of the granularity of municipal mortality data. By leveraging this information, it becomes possible to evaluate whether and to what extent the spatial distribution of available services for citizens has changed. This is the strategy employed by Guccio et al. (2024), who assess the policy's spatial heterogeneity, accounting for the distance of municipalities from the nearest hospital.

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Building on this approach, we examine the evolution of the number of beds and doctors available within various travel distances. We exploit a comprehensive dataset from the Ministry of Health, reporting the availability of doctors, nurses, and beds in each public Italian hospital. By georeferencing these hospitals and considering a matrix of kilometer distances between all Italian municipalities (just under 8000), we can track over time (from 2002 to 2018) the evolution of the intensive margin of healthcare services (quantity of human and organizational resources available in the territory) within a certain distance for Italian municipalities, not just the extensive margin (number of hospitals in the territory). The latter tends to be less variable over time, as hospitals are rarely closed but rather reorganized and downsized.

We first analyze the causal effect of DRPs on municipal mortality using an event-study Difference-in-Differences (DID) approach, employing the Sun and Abraham (2021) estimator, which addresses heterogeneous treatment effects over time and captures the full dynamics of the treatment effects. While no differential trend is found prior to the adoption of the DRP, a significant and persistent increase in mortality is observed in the subsequent years, exceeding 3% in some years.

Thanks to our data on hospital service provision and their georeferencing, we find that the evolution of service availability was mainly at the expense of less central areas. In this case, the event study design is applied to the number of doctors/nurses/beds available within a radius that can vary from 15 to 30 minutes by car. To the best of our knowledge, this study is the first to identify the disproportionate reduction in nearby hospital beds and doctors (within 15 minutes) as one of the key mechanisms driving the effect. Specifically, in regions affected by DRPs, the number of doctors in public hospitals decreased by 40% over a decade compared to other regions. Regarding hospital beds, the reduction within 15 minutes is nearly 30%, compared to an overall reduction of about 6.5%.

By contrast, the effect on mortality shows relatively small spatial variation, with significant increases even in core areas maintaining a relatively higher level of services. This suggests that even areas relatively less affected by service reduction were impacted by the policy, likely due to the increased flow of patients from peripheral areas.

Overall, this study highlights the disproportionate reduction in nearby hospital beds and doctors as a key mechanism driving the worsening of health conditions in Italian regions that experienced the DRP policies, suggesting that severe trade-offs between efficiency and prompt access to healthcare may occur when budget cuts entail a strong centralization of services.