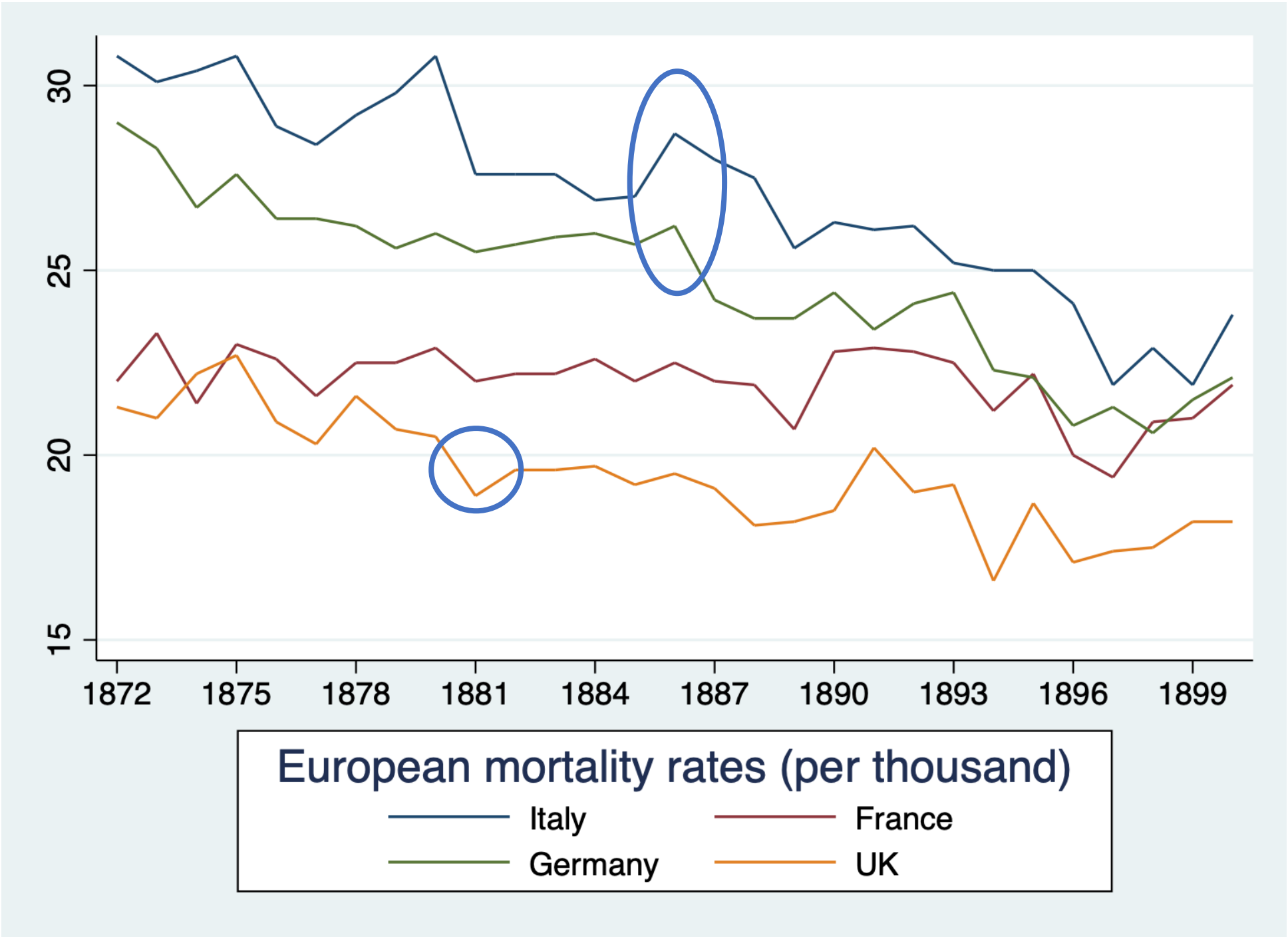
Better safe than sorry! The impact of public health policies on Italy in the 1880s

F. Fiore Melacrinis and M. Rota

XIII Giornata della Ricerca- Dipartimento MEMOTEF

27-28 Giugno 2023


30
25
20
15
1872
1875
1878
1881
1884
1887
1890
1893
1896
1899
European mortality rates (per thousand)
Italy
France
Germany
UK

Sources of mortality decline

- Traditional view: improving nutrition among the population (McKeown, 1976); economic growth (Fogel, 1997)

- New perspective: state interventions, diffusion of knowledge, and public health reforms (Costa 2015)

- some countries required explicit and tailored health-oriented interventions to achieve enhanced health outcomes. Evidence is controversial for waterborne diseases. Airborne diseases or external vectors induced diseases are seldom studied

Implications of mortality decline

- increase in life expectancy. Keeping Labor inputs alive and efficient
- Reinforced demand for human capital (investments in education become more profitable)
- Possible effects on fertility decisions (unclear)

Public health reforms in Italy from 1887 to 1888

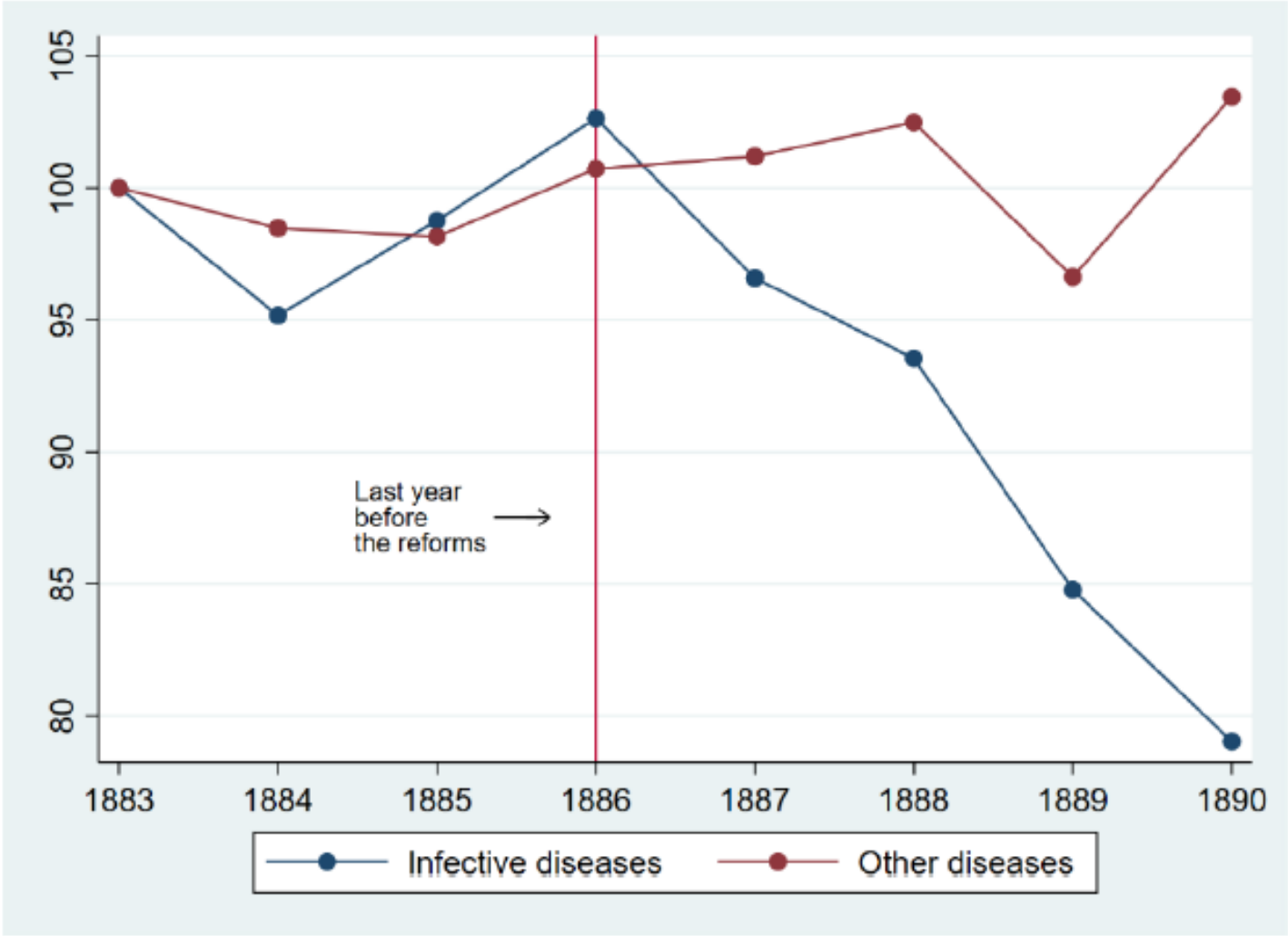
- Target: infectious epidemic diseases

- Tools: non-pharmaceuticals interventions (NPIs) :
  - The strengthening of physicians and medical staff of municipalities,
  - Disease surveillance
  - Periodical inspections by medical engineers

- Inability to prevent or treat systemic or chronic disease because of limited medical knowledge

Infections	Agent	Transmission	Discovery of agent (year)
Tuberculosis	*Mycobacterium tuberculosis*	Airborne	1882
Cholera	*Vibrio cholerae*	waterborne	1883
Measles	*Paramyxovirus*	Airborne	1954
Epidemic Typhus	*Rickettsia prowazekii*	External vector	1910
Syphilis	*Treponema pallidum*	Human contact	1905
Diphtheria	*Corynebacterium diphtheriae*	Human contact	1884
Scarlet fever	*Streptococcus*	Airborne or human contact	1883
Typhoid fever	*Eberthella typhi*	waterborne	1880
Malaria fever	*Plasmodium*	External vector	1880
Smallpox	*Variola virus*	Airborne or human contact	1798

Figure 1. Per capita deaths of infective and other diseases in the years around the reforms (index number 1883=100)



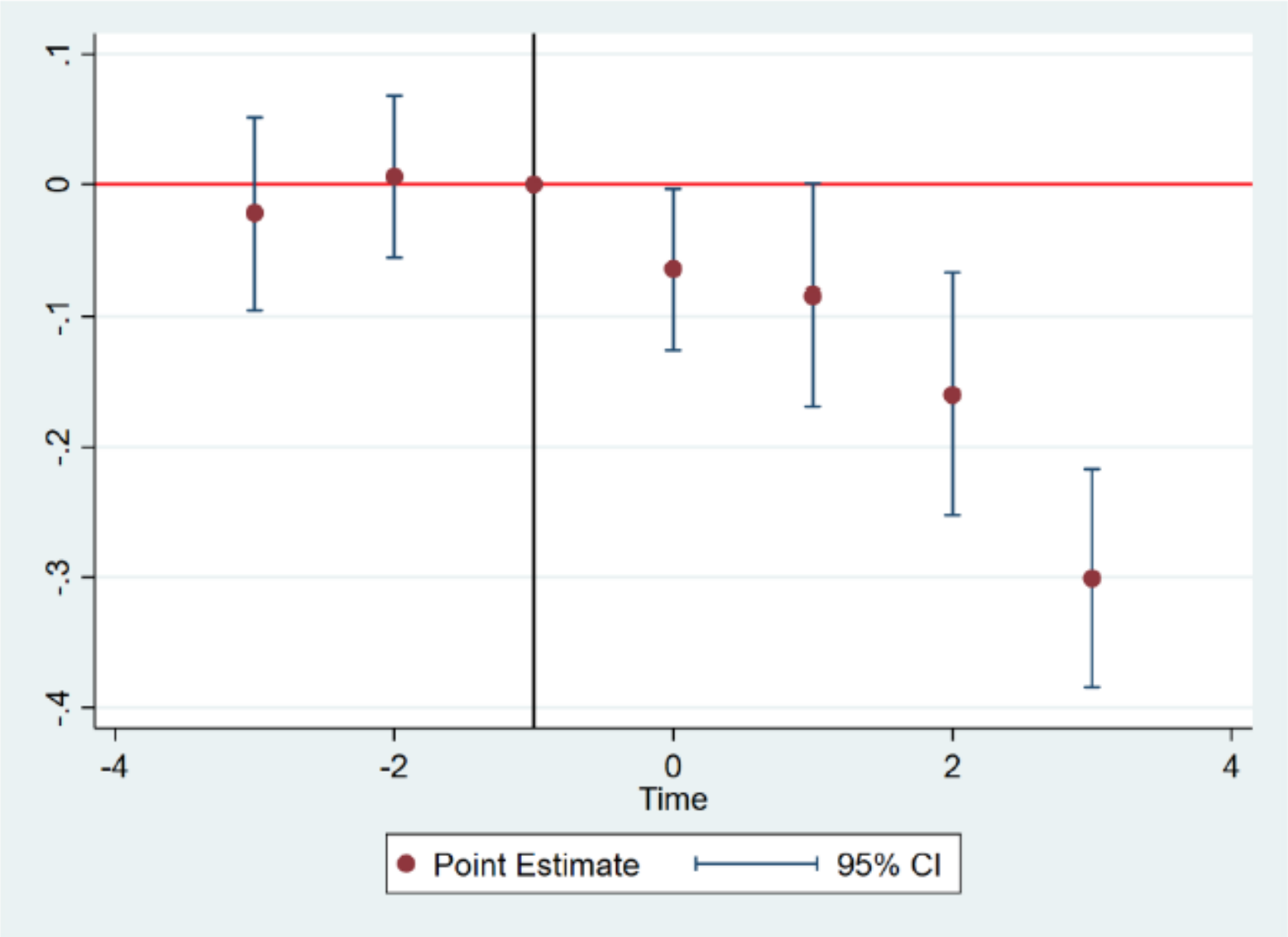
Did public health reforms reduce mortality?

- Estimating differential effects using data before and after the reforms
- Targeted infectious diseases vs Untreatable diseases
- Sample 284 cities grouped by 69 provinces observed from 1883 to 1890

Effects of the public health reforms of 1887 (Diff in diff estimator). Outcome variable is the log of deaths per capita in the treated group (infective diseases) and in the non treated group (other diseases).

	(1) Year of the reform (1887)	(2) 1 year after the reform (1888)	(3) 2 years after the reform (1889)	(4) 3 years after the reform (1890)
ATT	-0.065**	-0.084*	-0.160***	-0.301***
	(0.031)	(0.042)	(0.046)	(0.042)
Observations	276	276	276	276
R-squared	0.051	0.045	0.222	0.374

Coefficients from event study with three lags before and three leads ahead of the treatment



Conclusions

- Deaths for infectious diseases, both airborne and waterborne, fell dramatically compared to deaths for chronic diseases that the medical science could not control or treat at that time

- Public health measures reduced deaths for the major infectious diseases by 6.3% in the first year of the reform (1887) compared to chronic diseases.

- The effectiveness of the reform broadened in the following years and mortality of infectious diseases fell on average by an astonishing 35% by 1890

- Implications for human capital accumulation, efficiency of labor force, and (likely) fertility for the following years

Background

- Western European mortality rates embarked on a steady decline during the late 18th century

- Disappearance of devastating epidemics that had plagued the region for centuries (Omran 2005)

- Widespread drop in mortality rates across Western Europe did not occur until the latter part of the nineteenth century