EUROPEAN DEPARTMENT

Europe's Exit from Lockdowns: Early Lessons from the First Wave
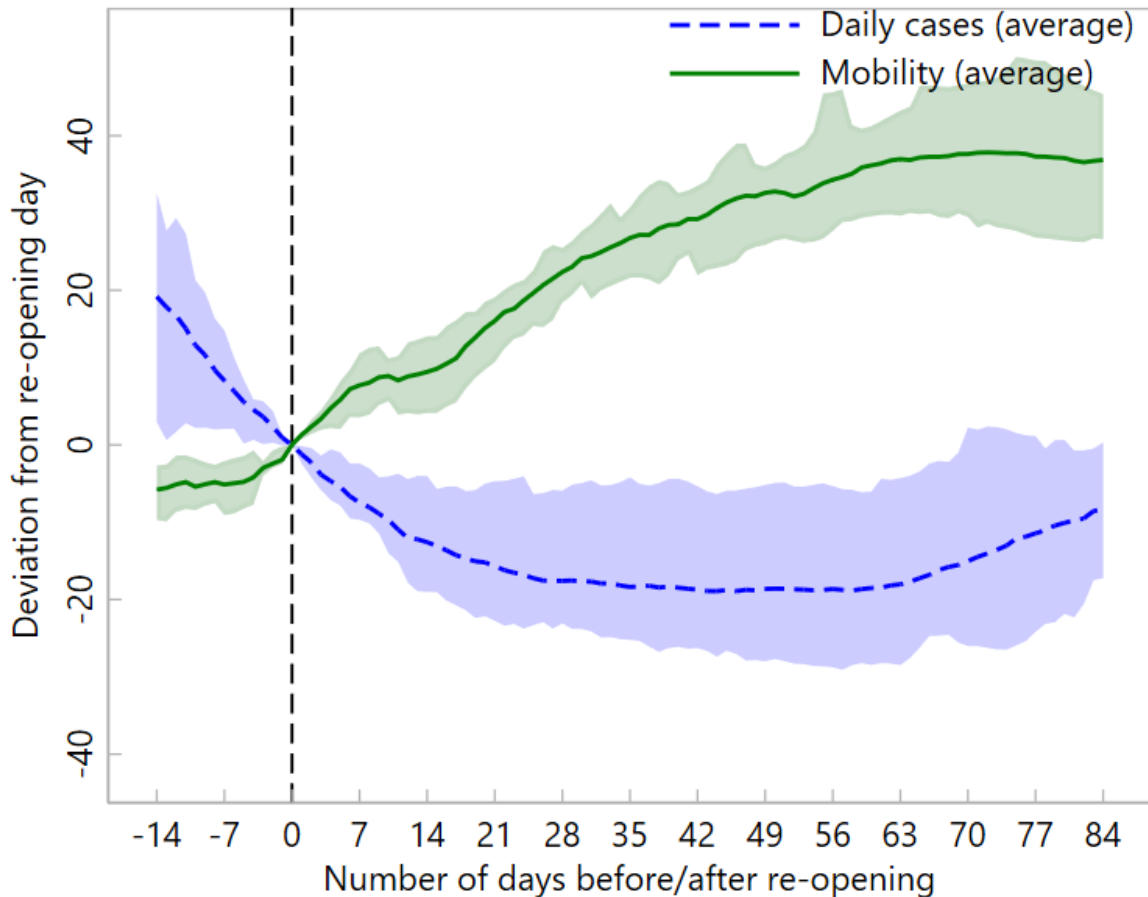
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Motivation

Mobility and Daily COVID-19 Cases since Reopening
(Daily cases per million and percent deviation from normal)

- When first Covid wave hit Europe, most countries took rapid, generalized and quasi-identical lockdown measures.

- But once the first wave of infection curves flattened, countries followed very different reopening strategies

- Economic activity (mobility –green line-) picked up rapidly after reopenings…

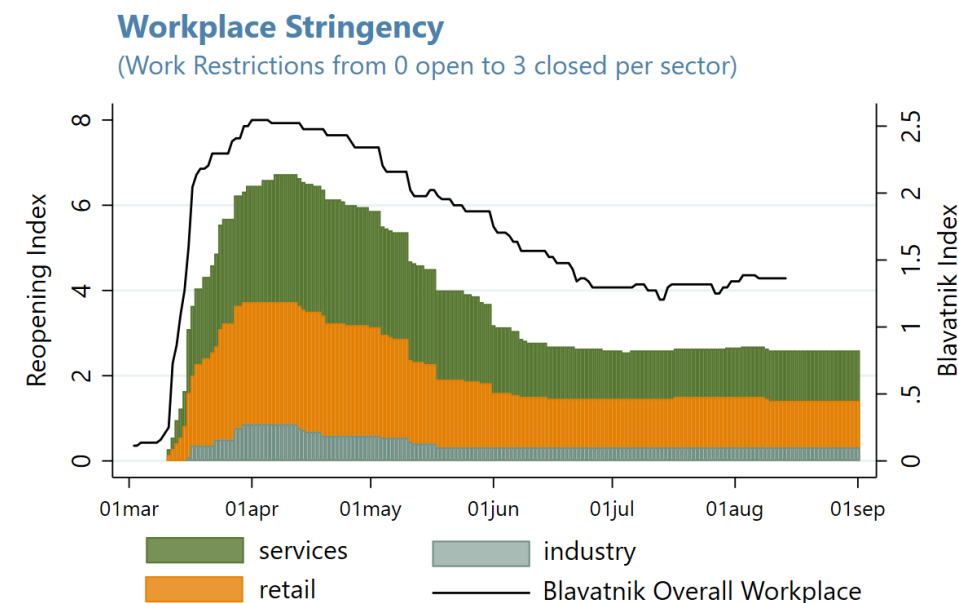- … followed by an uptick in infection curves (blue line), albeit with important differences across countries.

Main Questions

I. How do reopening strategies compare across countries in their timing, pace, and sectoral sequencing?

II. How do *de jure* reopening measures translate into *de facto* improvements in activity? How do they influence the subsequent evolution of COVID-19 infections?

III. Were some strategies associated with lower reinfection risks than others? If so, at what cost in reduced activity?

Reopening Database

- **Database of reopening measures for 22 major European countries:**

  - **Sector**: schools, industry, retail, services (e.g., hotels, restaurants, hairdressers etc.), events/public-places, and international travel (including intra-European)

  - **Timing** of sectoral containment measures daily frequency

  - **Intensity of reopening**: open; open with restrictions/guidelines; partially open with only a subset of the sector allowed to function; closed

  - **Phase** in which sector started to be reopened

- **Daily reopening index at the country level**

  - Differs from other stringency indices (e.g. Oxford Blavatnik) in that it is more granular and detailed on sector-specific plans.

- **Characterization of overall reopening plans (timing, pace, sequencing)**

[Time frame for the sample: Policy actions & mobility: April 10 - July 15; Infections: data up to the end of August (lags)]

Workplace Stringency
(Work Restrictions from 0 open to 3 closed per sector)

Legend: services, industry, retail, Blavatnik Overall Workplace

The overall reopening index across three sectors ranges from 0 (open) to 9(closed);
The blavatnik overall work index ranges from 0 (open) to 3(closed);
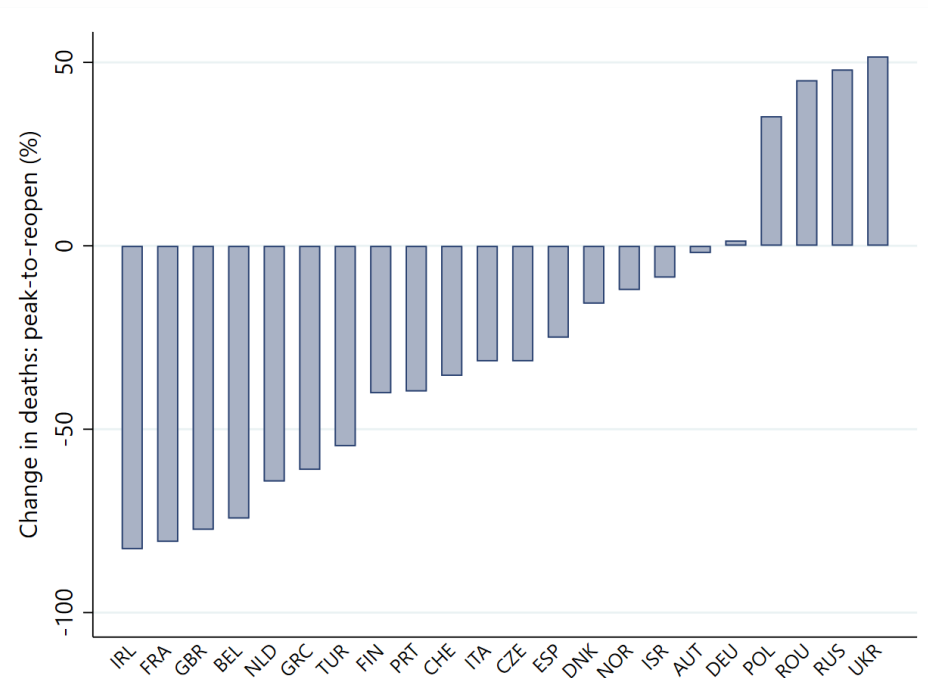
I. Reopening strategies: timing and speed

Large variation in the timing of the first reopening measures in relation the country's epidemiological situation...

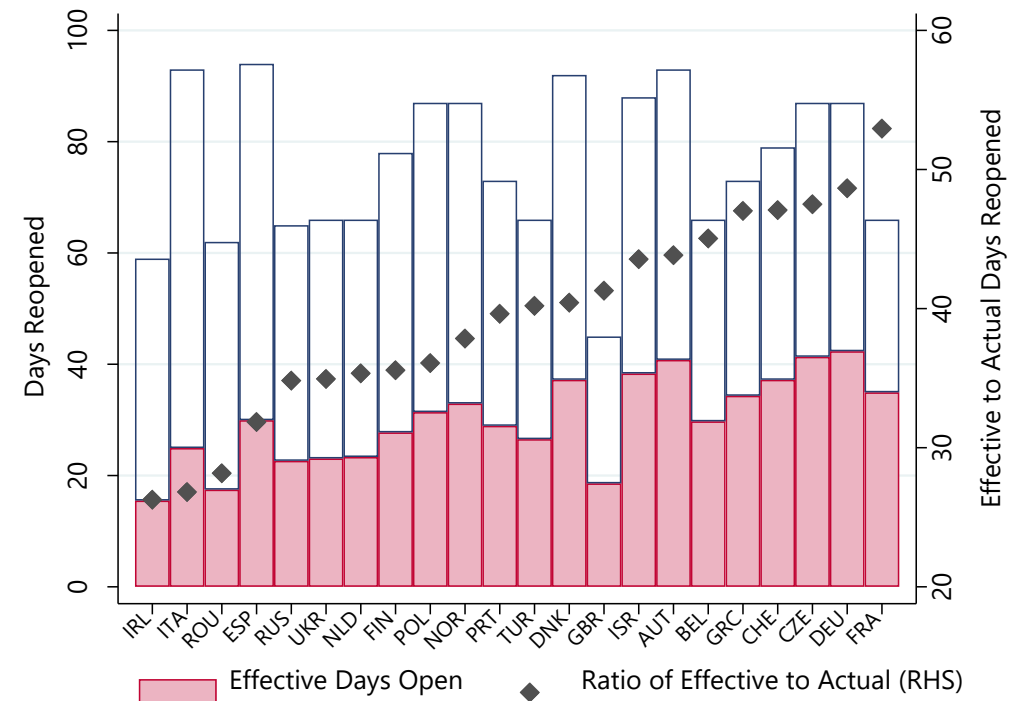**... and the speed of sectoral reopening actions once the country started reopening**

Time of Reopening
(Percent change in daily deaths from peak to first reopening)
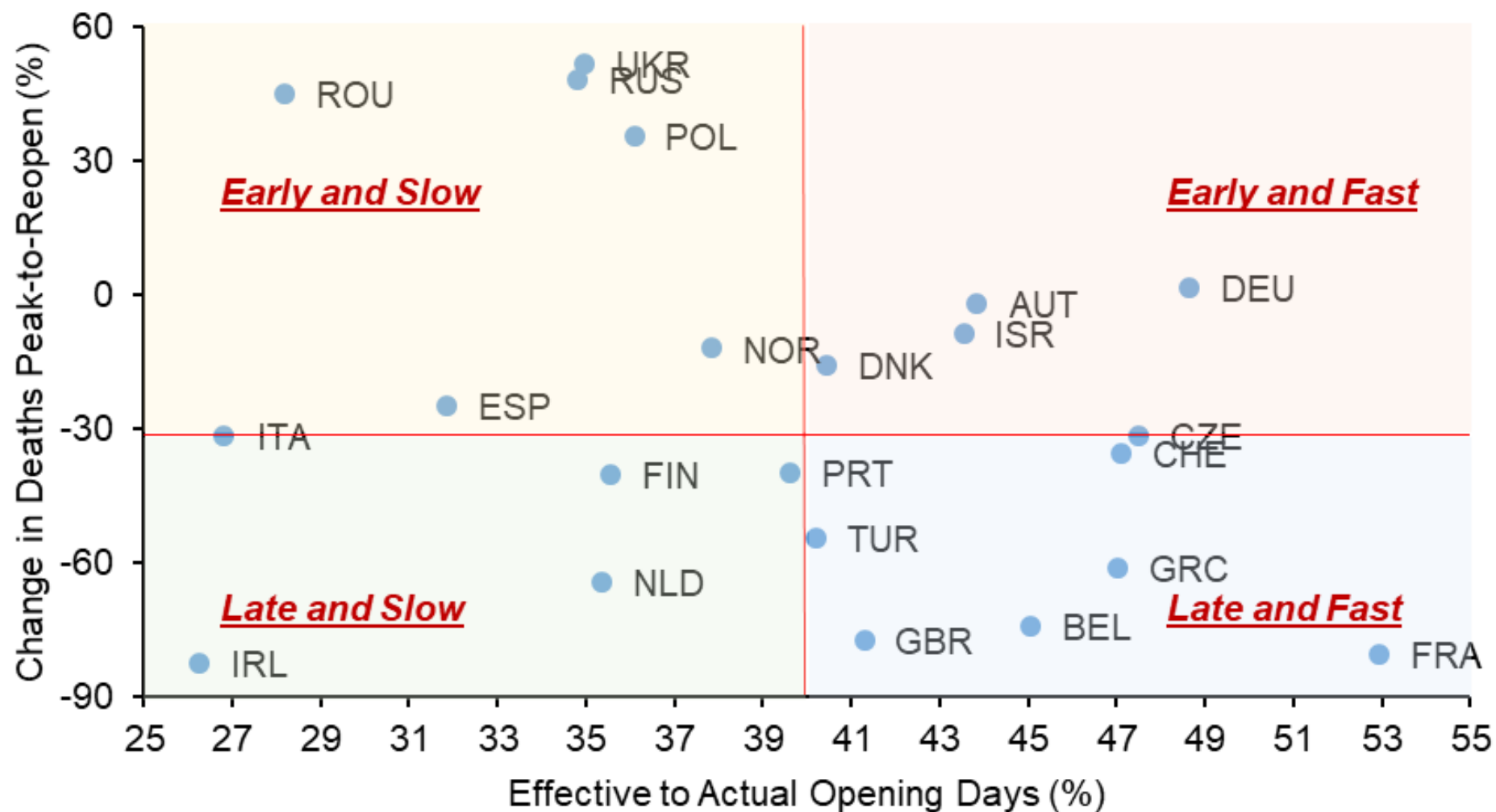
Speed of Reopening
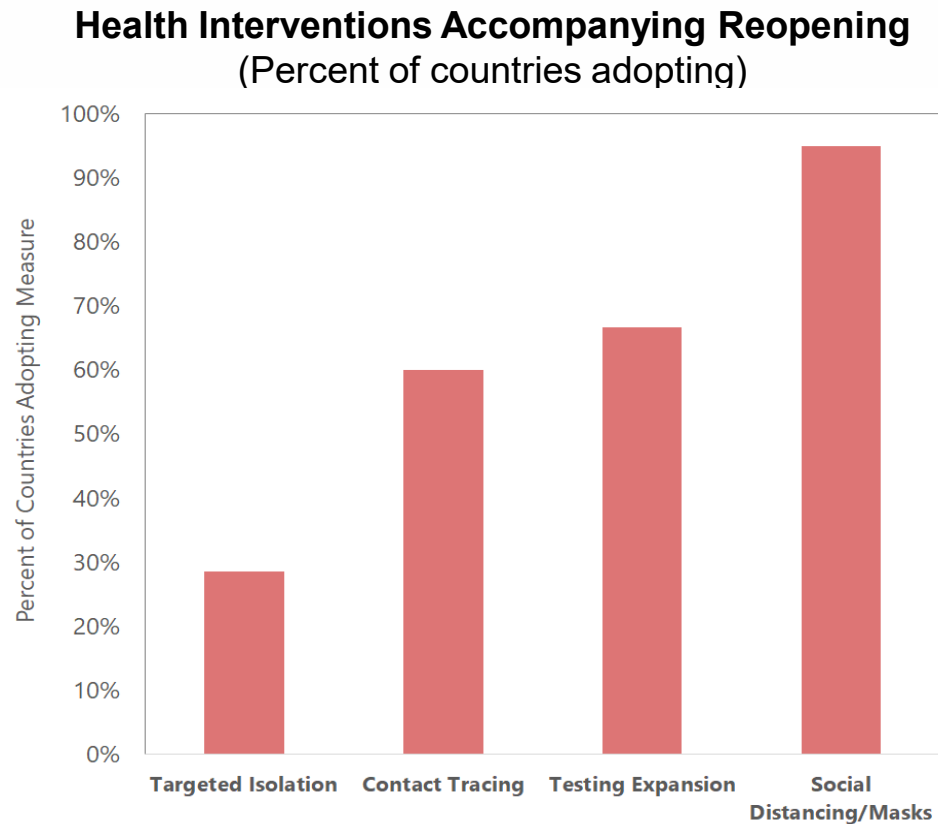(Actual and effective days open as of July 15, 2020)

Opening Strategies
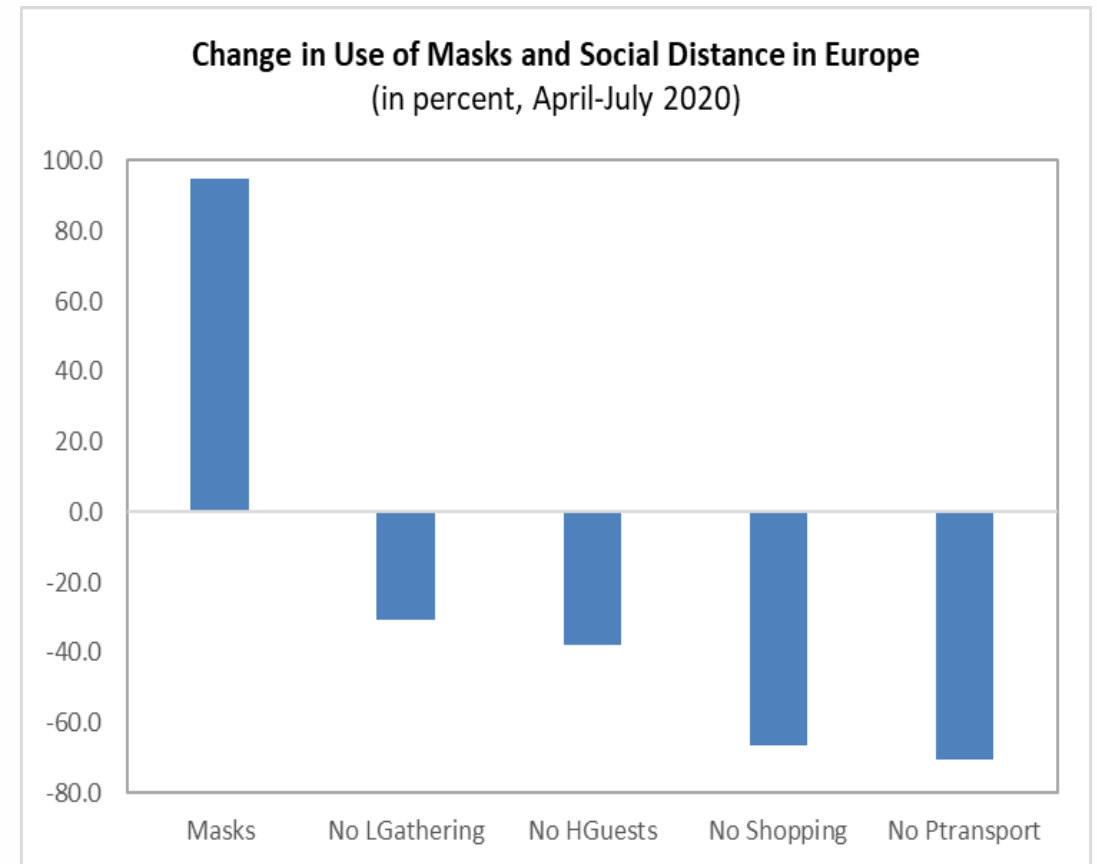## (Extent of opening vis-a-vis infection curve)

Reopening strategies: health-related measures and behavior

**Reopening steps were often accompanied by additional health-related measures**

Mask wearing led to relaxed social-distancing

Health Interventions Accompanying Reopening
(Percent of countries adopting)

Change in Use of Masks and Social Distance in Europe
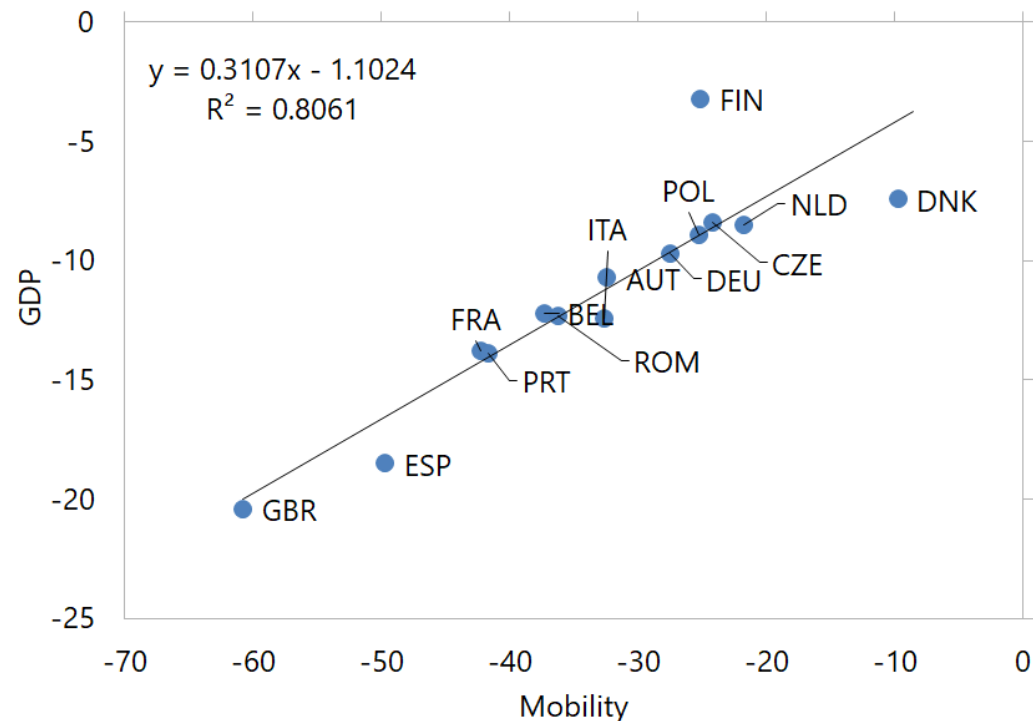(in percent, April-July 2020)

II. Reopening and activity: Mobility data

Europe: Mobility around Retail Shops
(Pattern around reopening)
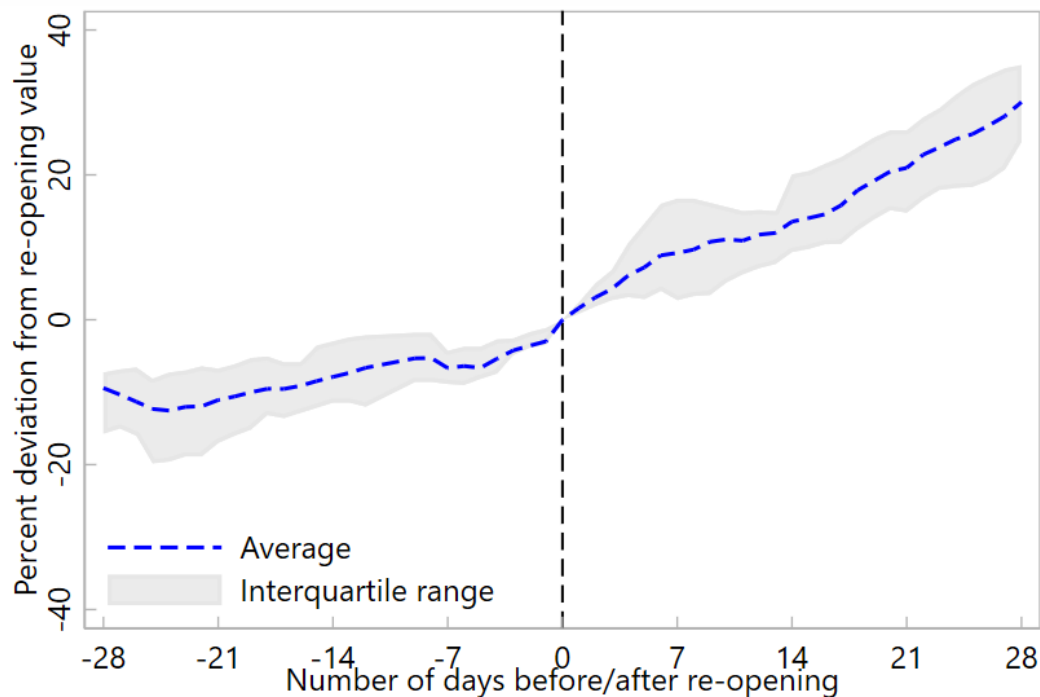
Note: 7-day moving average excluding Easter holiday.

Mobility in Retail and GDP Growth, 2020Q2
(Percent deviation from normal and percent change)

$y = 0.3107x - 1.1024$
$R^2 = 0.8061$

- Google mobility indicators, which compare mobility to pre-COVID-19 baseline (normal), used to proxy economic activity
- Aggregate mobility is computed as the average of indicators around retail stores, workplaces, and transportation hubs

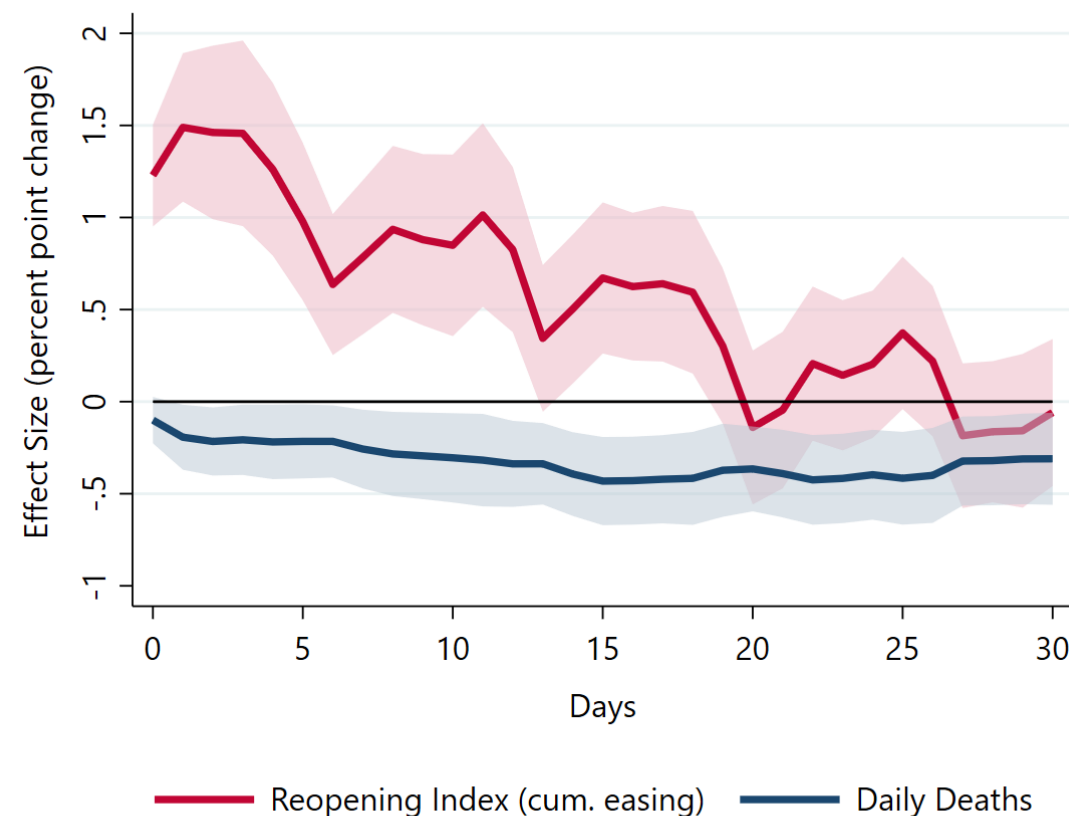# Reopening and activity: policy and social distancing

We analyze the effects on mobility of the cumulative easing of restrictions ($Reopening_{i,t}$) and past infections ($Infections_{i,t-1}$):

$$Mobility_{i,t+h}$$
$$= \bar{\alpha}_i^h + \bar{\eta}_t^h + \bar{\beta}^h . Reopening_{i,t} + \bar{\lambda}^h . Infections_{i,t-1}$$
$$+ \bar{\mu}^h . Mobility_{i,t-1} + \bar{\theta}^h . X_{i,t} + \varepsilon_{i,t}$$

$\mathbf{X_{i,t}}$: country and time fixed effects, lagged mobility, lagged infection incidence, time elapsed since first reopening, and country-specific infection time trends.

- One-unit change in reopening is associated with an increase in mobility of 1-1.5 percentage points.

- One-unit increase in per capita daily deaths is associated with a decline in mobility of close to 0.5 percentage point.

- Reopening and lagged infections account for 40 and 14 percent of the explained variation in mobility, respectively.

- Results are robust to using sectoral data to difference out time-varying country unobservables.

Effect of Reopening Measures and Voluntary Social Distancing on Mobility (Percent change)

III. Effects of Reopening on Subsequent Infections

We analyze the effects of the cumulative easing of restrictions ($Reopening_{i,t}$) on infections:

$$Infections_{i,t+h} = \alpha_i^h + \eta_t^h + \beta^h . Reopening_{i,t} + \lambda^h . Infections_{i,t-1} + \mu^h Mobility_{i,t-1} + \theta^h . X_{i,t} + u_{i,t}$$

Infections$_{i,t}$: log of the 7-day moving average of daily deaths/cases per million

X$_{i,t}$: country and time fixed effects, lagged mobility, lagged infection incidence, time elapsed since first reopening, and country-specific infection time trends.

- One-unit change in reopening is associated with an increase of about 8% in daily cases and 2% in daily deaths after one month

- Reopening and lagged infections accounts for 24 and 70 percent of the explained variation in daily cases, respectively (20 and 55 percent in the case of deaths)

Effect of Reopening Measures on Infections
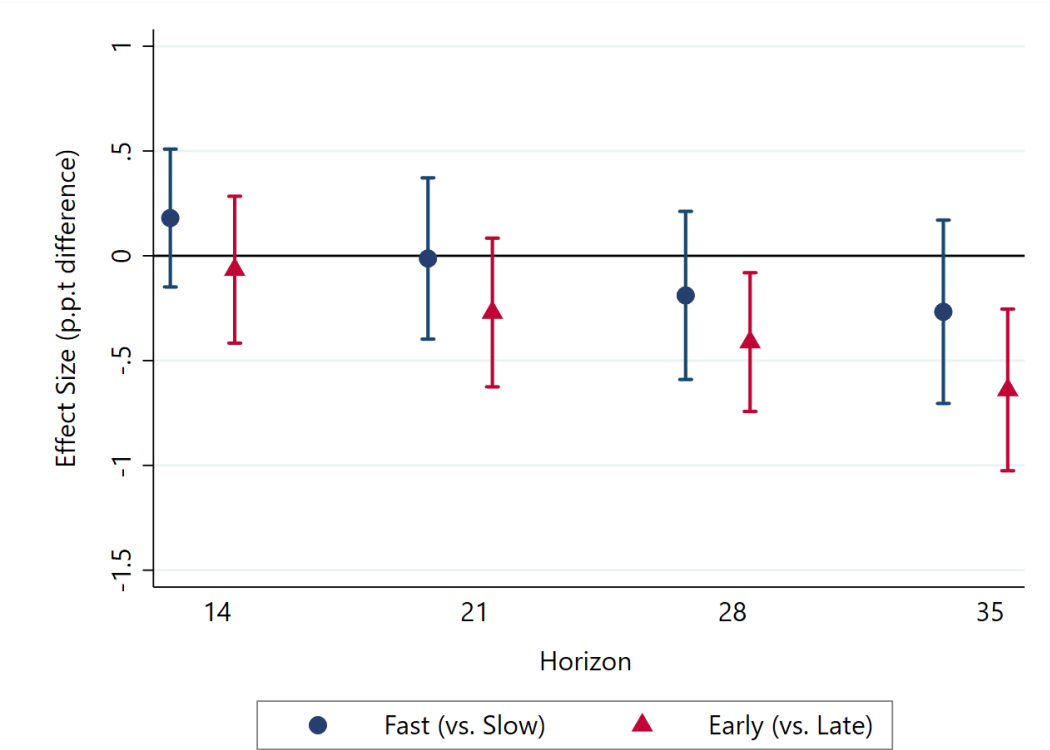(Percent change)
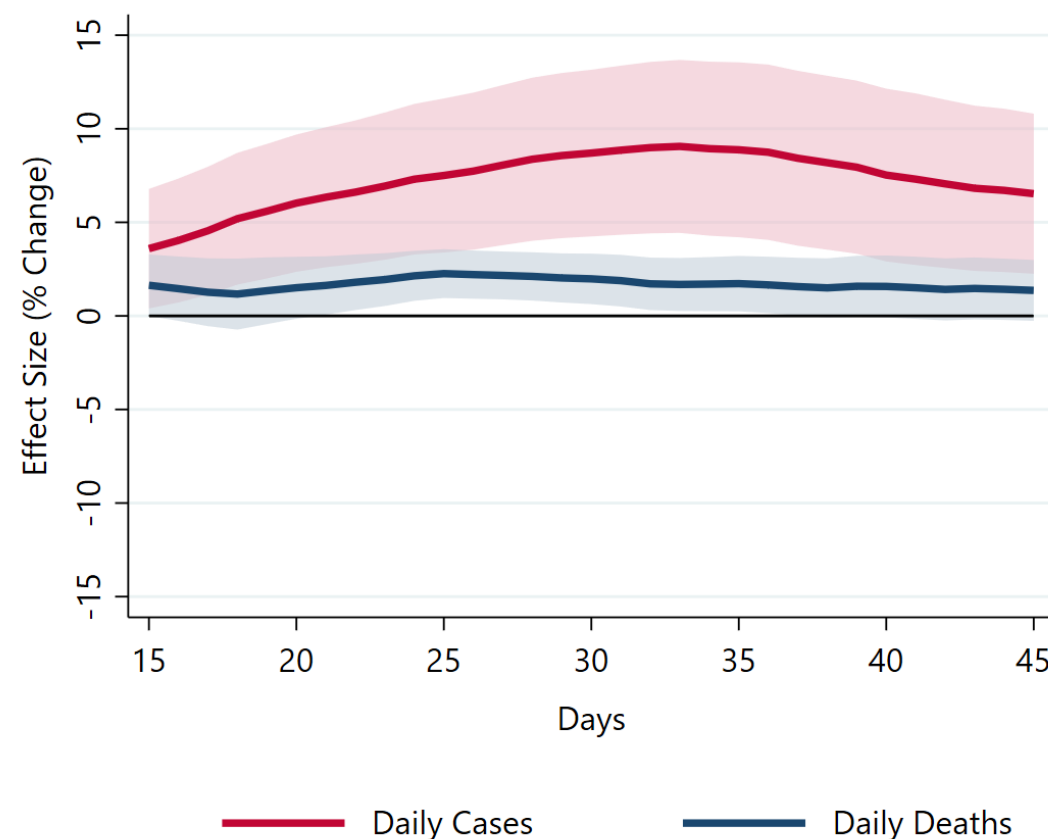
IV. Heterogeneous effects: Reopening Strategies & Infections

Differential Effect of Fast versus Slow and Early versus Late Reopening Strategies on Daily Cases
(Percent difference)
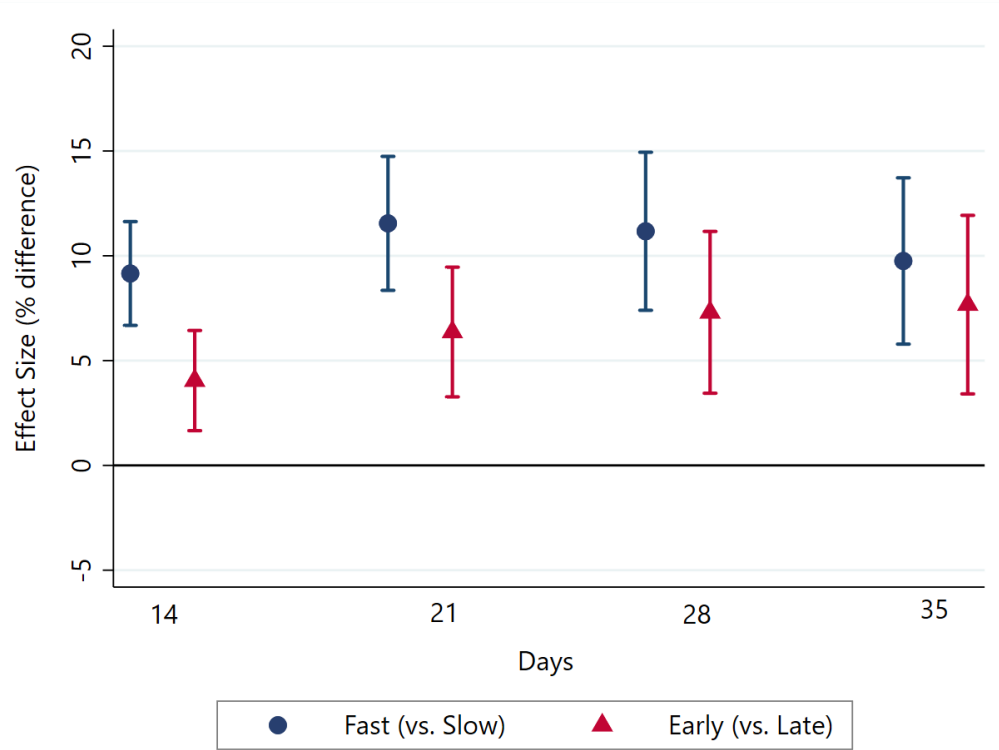
Differential Effect of Fast versus Slow and Early versus Late Reopening Strategies on Mobility
(Percent difference)

- **Fast reopeners are associated with 12% higher infections vs. slow reopeners per unit of easing**
- **Early reopeners are associated with 7% higher infections vs. late reopeners per unit of easing**
- **No significant mobility differential per unit of easing between groups**

# Heterogeneous effects: Reopening Strategies & Infections

Easing restrictions by one unit delivers similar effects on mobility regardless of how and when a country exits...

...but generates a much smaller increase in new infections if reopening is pursued in a late and slow manner.

Predicted Mobility
(Index, pre-COVID baseline = 100, 7-day moving average)
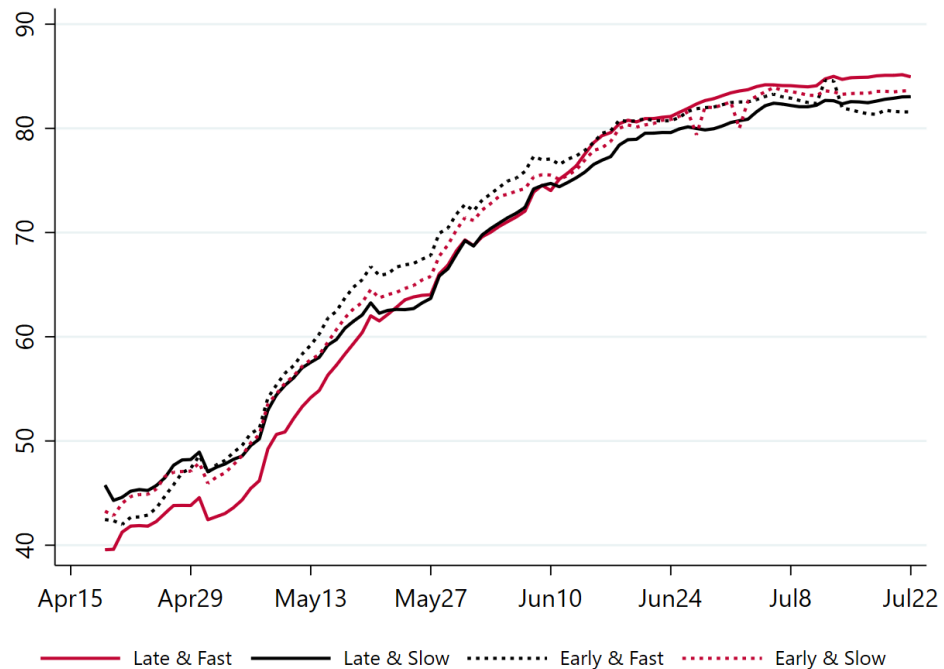
Predicted Daily Cases
(Per Million, 7-day moving average)

Late & Fast   Late & Slow   Early & Fast   Early & Slow
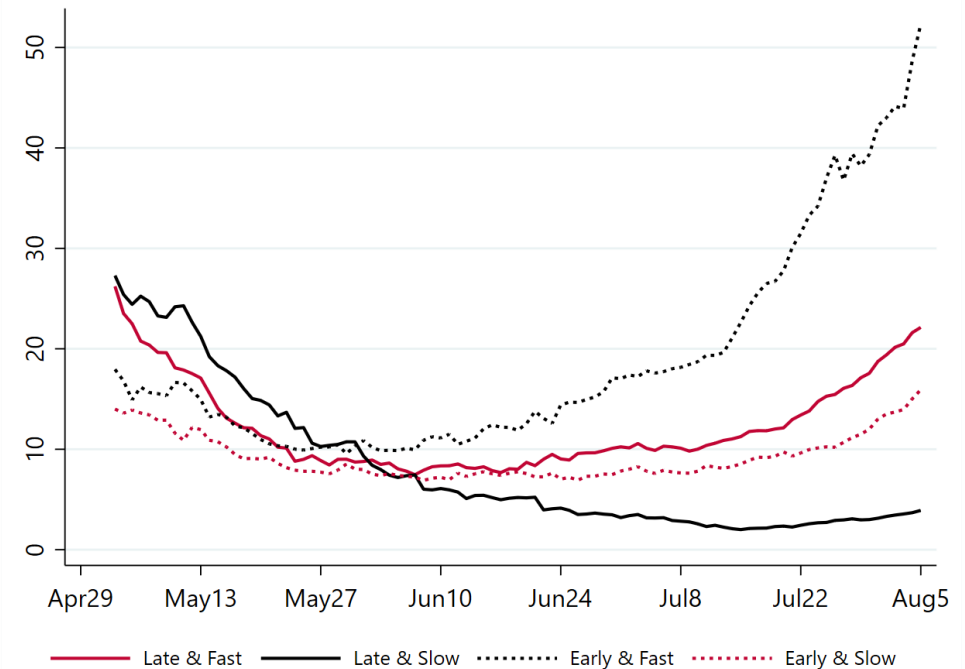
Conclusions

- Reopening plans differed significantly across countries

- Reopening led to a much-needed recovery in economic activity but at the cost of an uptick in COVID-19 cases and fatalities (to a lesser extent)

- Reinfection risk increases disproportionally under certain reopening strategies:

  - *reopening too early – i.e. when the circulation of the virus is still pervasive and infection rates are growing*

  - *reopening too fast – i.e., when reopening measures are not sufficiently gradual*

- The incremental economic cost of reopening gradually and at a late stage in the infection cycle was not disproportionally higher

THANK YOU