

A timely estimation of local investment trends using administrative data

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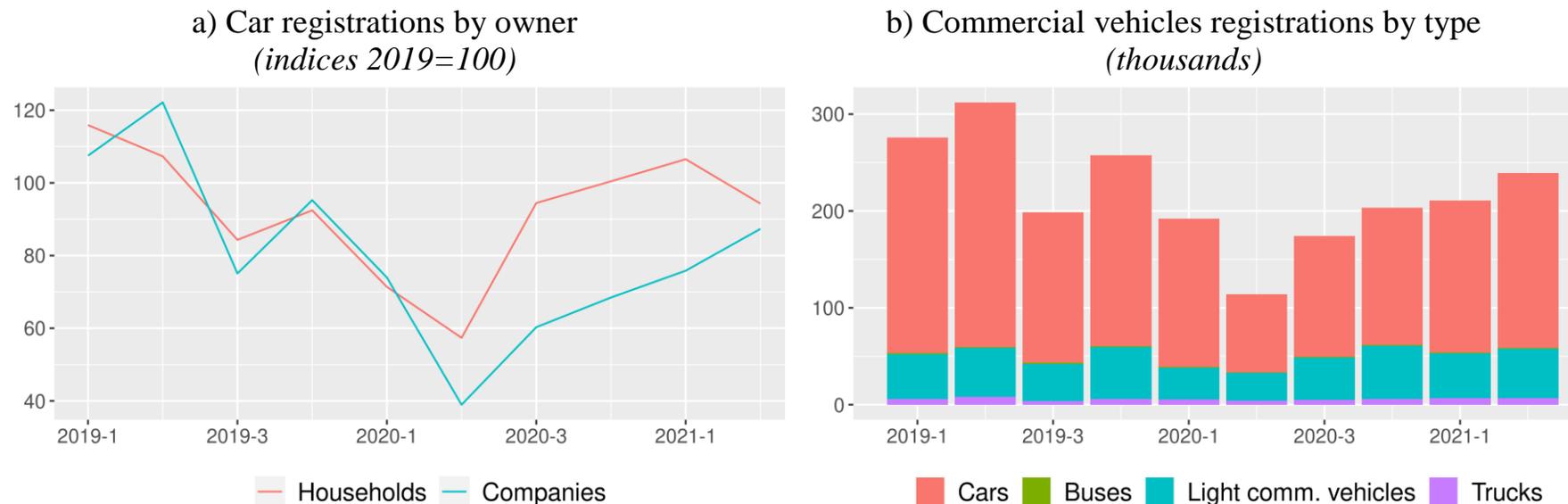
Introduction

- Investments in transport equipment are very volatile and they are highly correlated with overall business investments in capital goods.
- This paper:
 - Nowcasting business investments in transport equipment in Italy
 - Building timely quarterly indicators of business investments at the NUTS-3 level
- We exploit timely granular administrative data on motor vehicles
- We find that:
 - By aggregating selected components of motor vehicle registrations, we can approximate trends in investments in transport equipment very well
 - There is significant heterogeneity in investment trends across NUTS-3 regions
 - The evolution of investments has been weaker in the provinces most affected by the Covid-19 pandemic

Data

- Monthly number of registrations by vehicle type and owner at the municipal level, from January 2019 to June 2021, provided by the Ministry of Sustainable Infrastructures and Mobility
- We exploit the information about the owner to filter out car registrations from natural persons
- Cars account for the largest and most volatile share of commercial vehicles

Figure 1. Car registrations and total commercial vehicles registrations



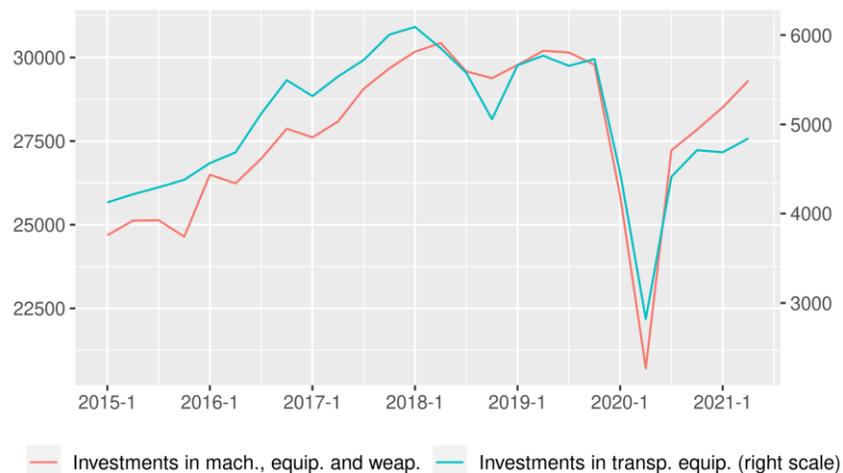
Source: Ministry of Sustainable Infrastructures and Mobility.

Vehicle registrations and business investments

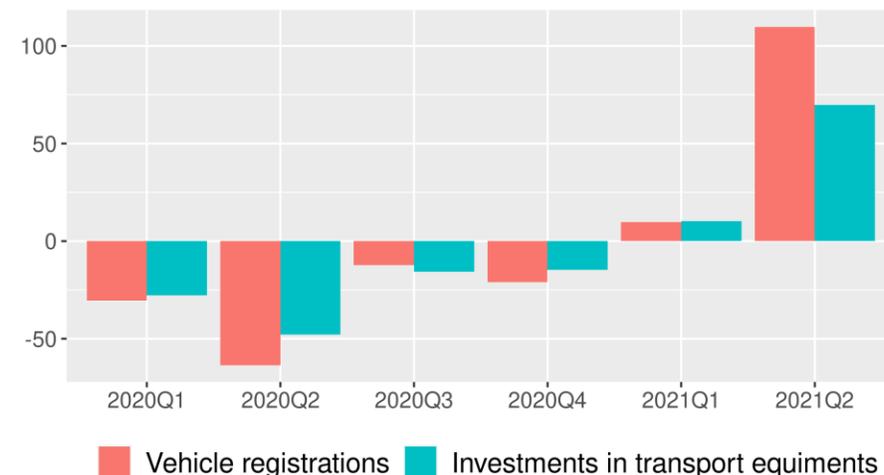
- We define our indicator of commercial vehicle registrations as the sum of registrations of buses, light commercial vehicles, trucks and cars owned by companies
- We validate our indicator against gross fixed investments in transport equipment in the National Accounts

Figure 2. Commercial vehicles registrations and investments

a) Investments in machinery, equipment and weapons and in transport equipment
(millions of euro; chain linked seasonally adjusted)



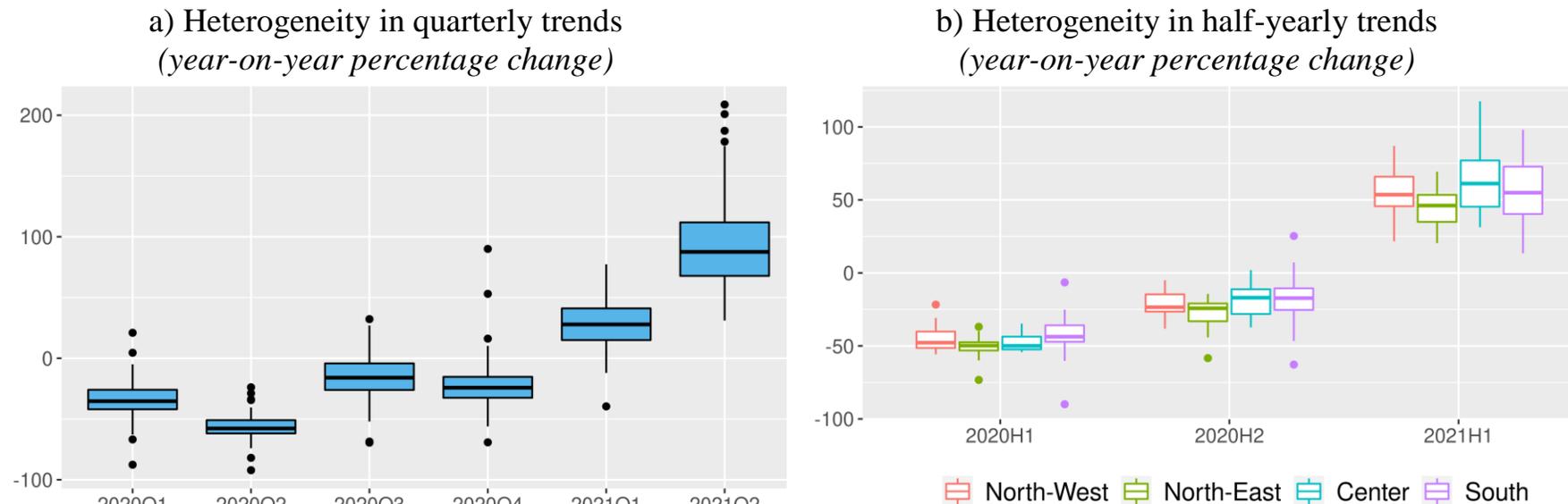
b) Investments in transport equipment and commercial vehicles registrations
(year-on-year percentage change)



Estimating regional trends in investments

- We compute NUTS-3-level indicators of commercial vehicle registrations to proxy investments
- We find large heterogeneity in quarterly year-on-year growth rates across provinces
- The dispersion increased in the first half of 2021. The median year-on-year percentage change was similar across NUTS-1 regions.

Figure 4. Heterogeneity in trends across provinces

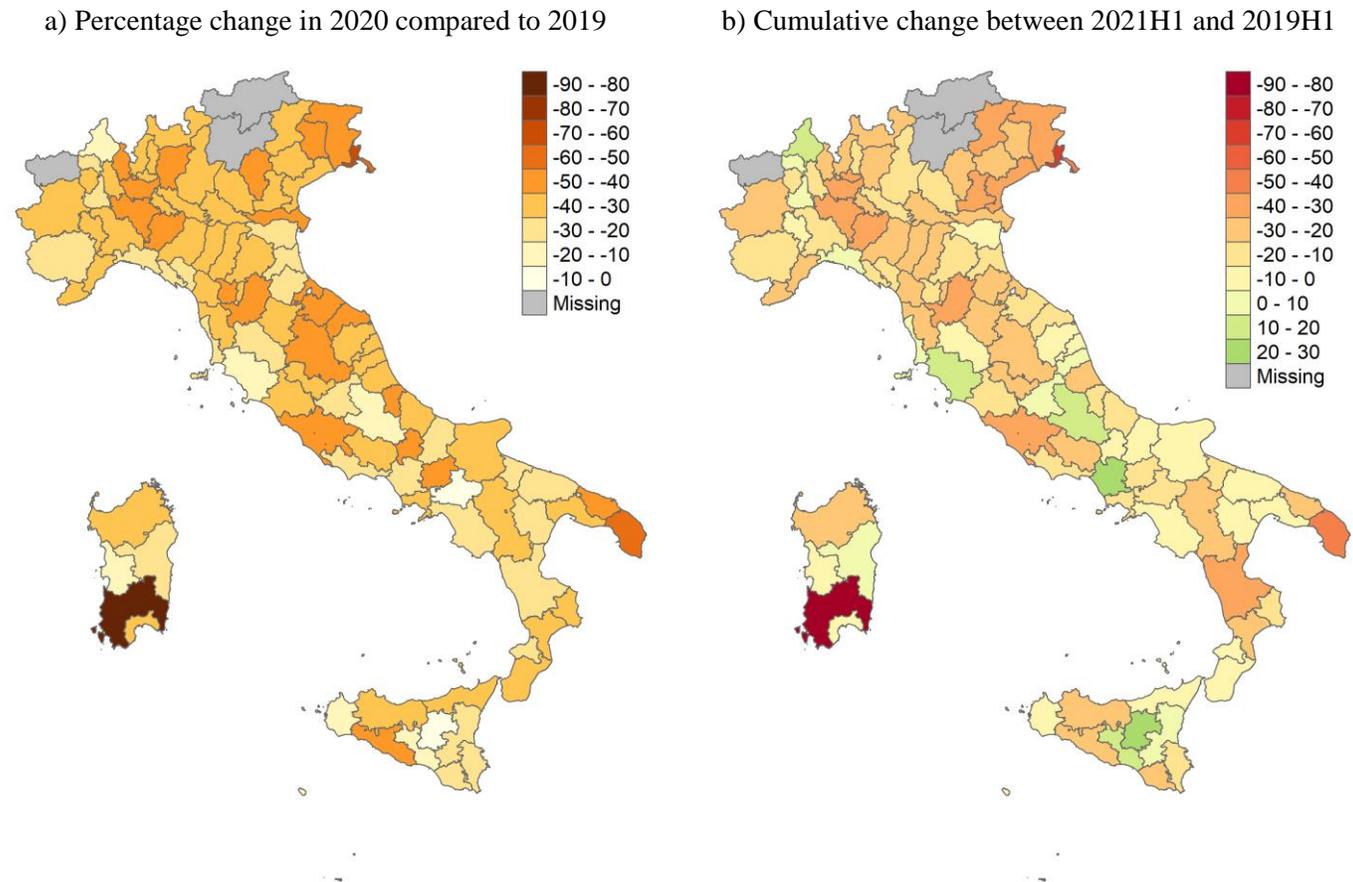


Source: Ministry of Sustainable Infrastructures and Mobility.

Heterogeneity in regional trends

- The overall evolution of registrations during the pandemic was very mixed

Figure 5. Heterogeneity of the recovery across provinces



The impact of the pandemic on vehicle registrations

- To provide an assessment of the impact of the pandemic on vehicle registrations, we estimate the following panel regression model on quarterly data between the first quarter of 2019 and the second quarter of 2021:

$$Y_{i,t} = \alpha_i + \gamma_t + \beta Hosp_{i,t} + \varepsilon_{i,t}$$

- In this regression, $Y_{i,t}$ is the logarithm of commercial vehicle registrations in province i during quarter t , and $Hosp_{i,t}$ is the logarithm of the number of Covid-19 related hospitalizations per 100,000 inhabitants.
- We find that the estimate of parameter β is both statistically and quantitatively significant: a 10 percent increase in the number of hospitalizations is associated with a 0.32 percent reduction of the number of vehicle registrations.
- Given the significant variance of the empirical distributions of the quarterly hospitalization rates across provinces, epidemiological conditions account for a significant fraction of the observed heterogeneity in commercial vehicle registrations.

Conclusions

- This paper shows that administrative data on motor vehicles allow:
 - Nowcasting business investments in transport equipment
 - Building timely quarterly indicators of business investments at the NUTS-3 level
- We find that:
 - By aggregating selected components of motor vehicle registrations, we can approximate trends in investments in transport equipment very well
 - There is significant heterogeneity in investment trends across NUTS-3 regions
 - The evolution of investments has been weaker in the provinces most affected by the Covid-19 pandemic
- Next steps:
 - analyze longer time series and apply seasonal adjustment algorithms to better interpret local patterns
 - analyze trends in vehicle registrations at a lower level of spatial granularity