

WPL: **Task 4** – Smart traffic

Subtask 4.1 – Use of Traffic loops for economic estimates (FI, UK)

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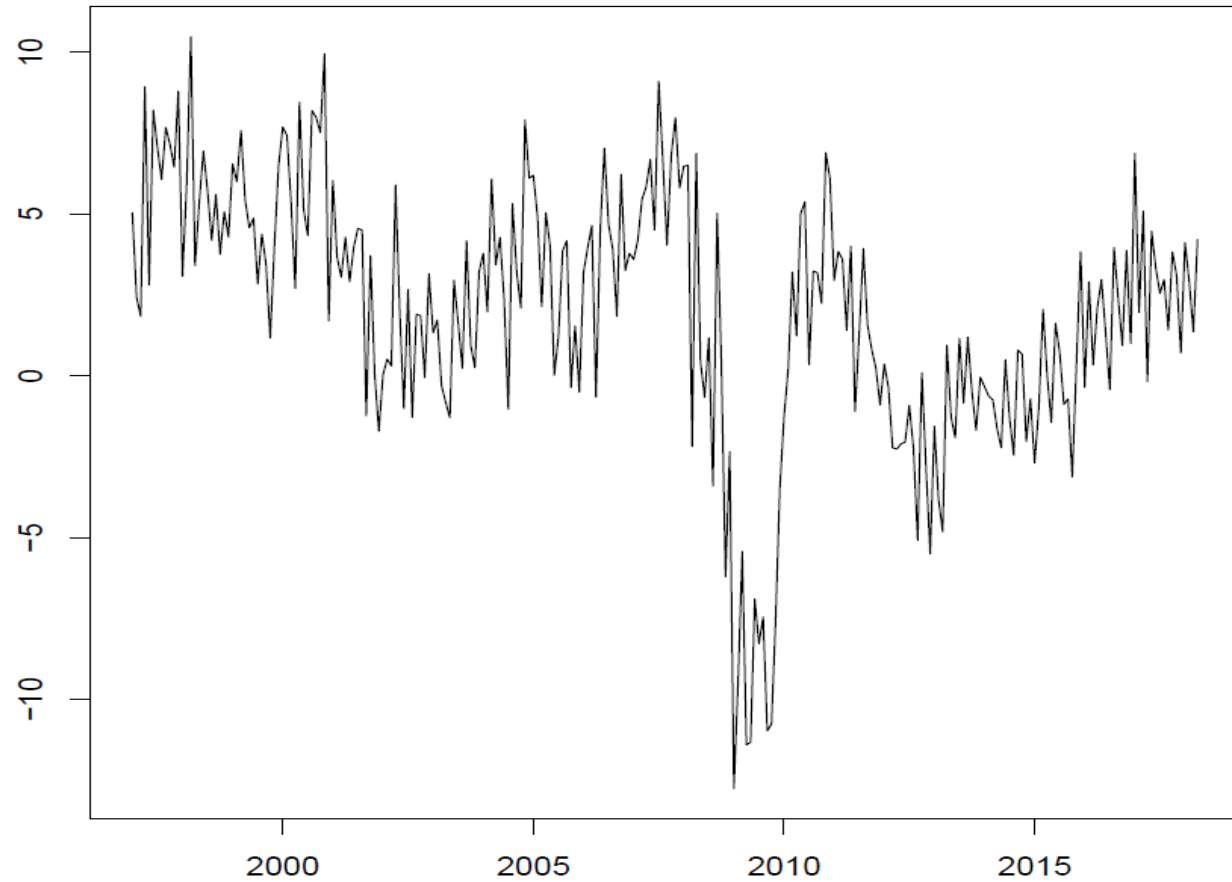
Use of Traffic loops for economic estimates Statistics Finland (jointly with the Research Institute of the Finnish Economy)

- In ESSNet 1, a limited testing period was used to produce nowcasts of economic activity, using traffic loops. The data spanned 2014-2018
- We obtain more data from the transport agency. 1995->
- Need to build a system that extracts this data, and carries out some validation on it.
- We expect to spend 10 person days out of 30 in this phase.

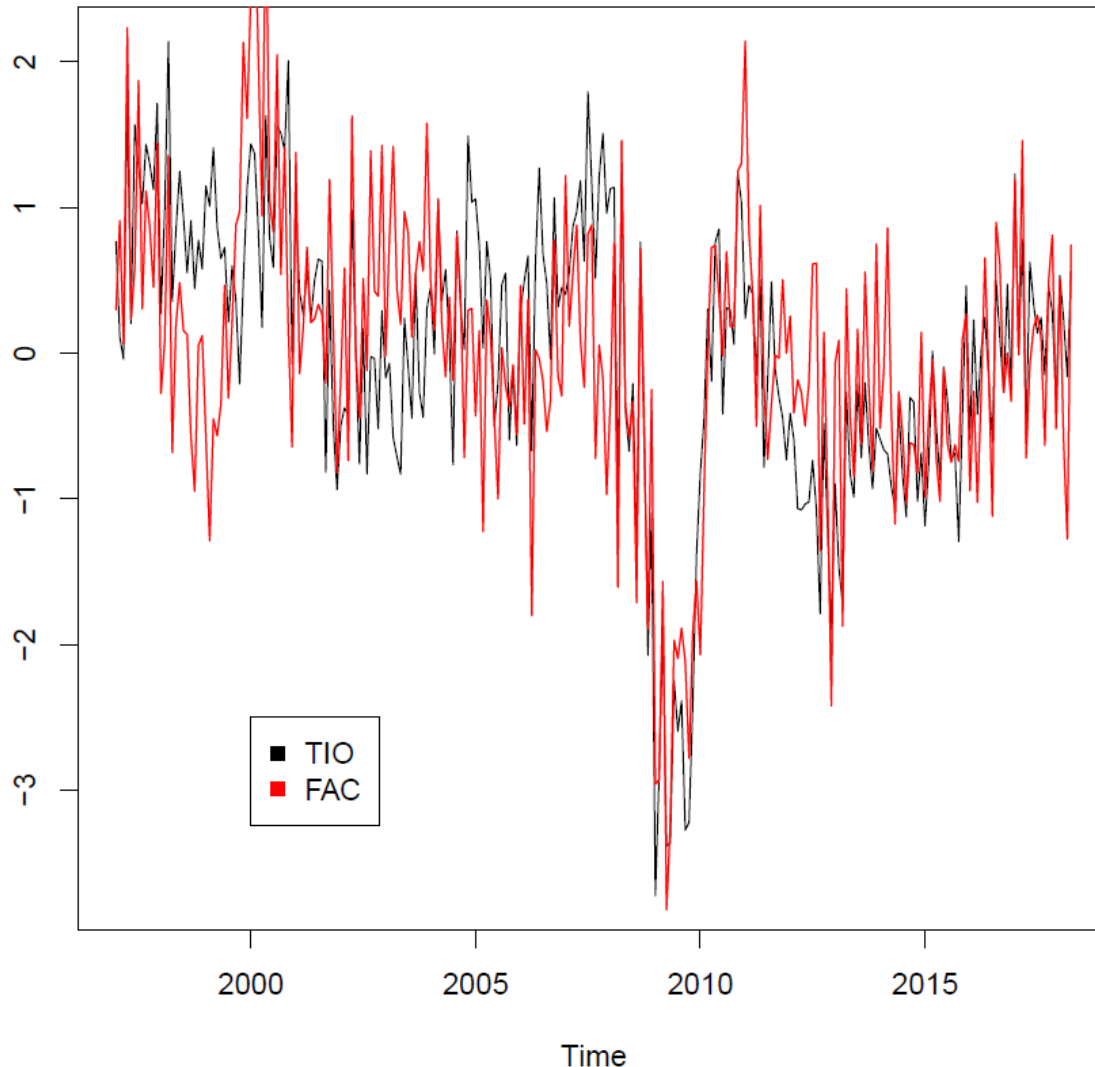
What to do with this data? 20 person days

- We want to try to nowcast in high frequency, e.g daily.
- We also want to explore the potential of this data source in estimating the 2008-2009 economic collapse.
- We explore a large set of ML-algorithms and large dimensional models to do this.
- In addition, alternative (more timely) indicators.
- Trade is an interesting possibility
- Another possibility is to produce more granular indicators, for instance related to economic activity of a region.

TIO – trend indicator of output, a monthly GDP measure

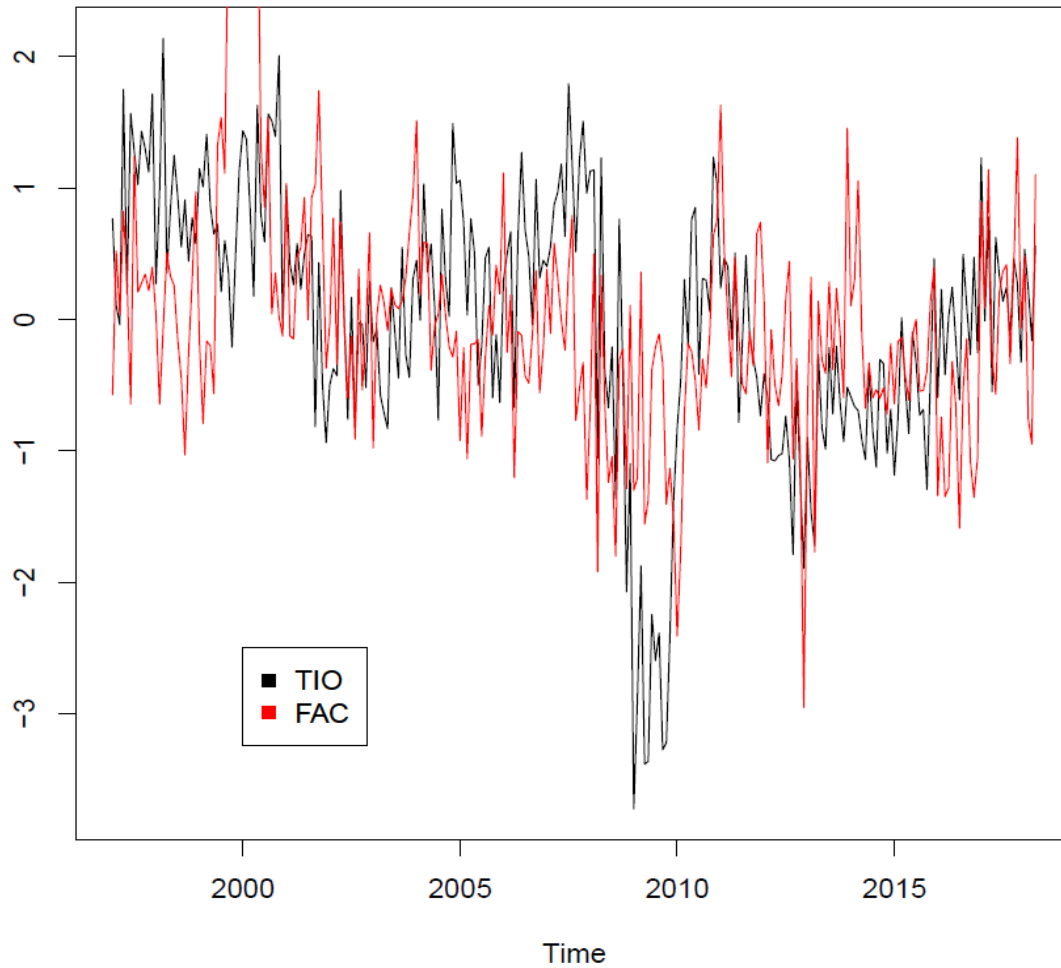


Does traffic data contain information?



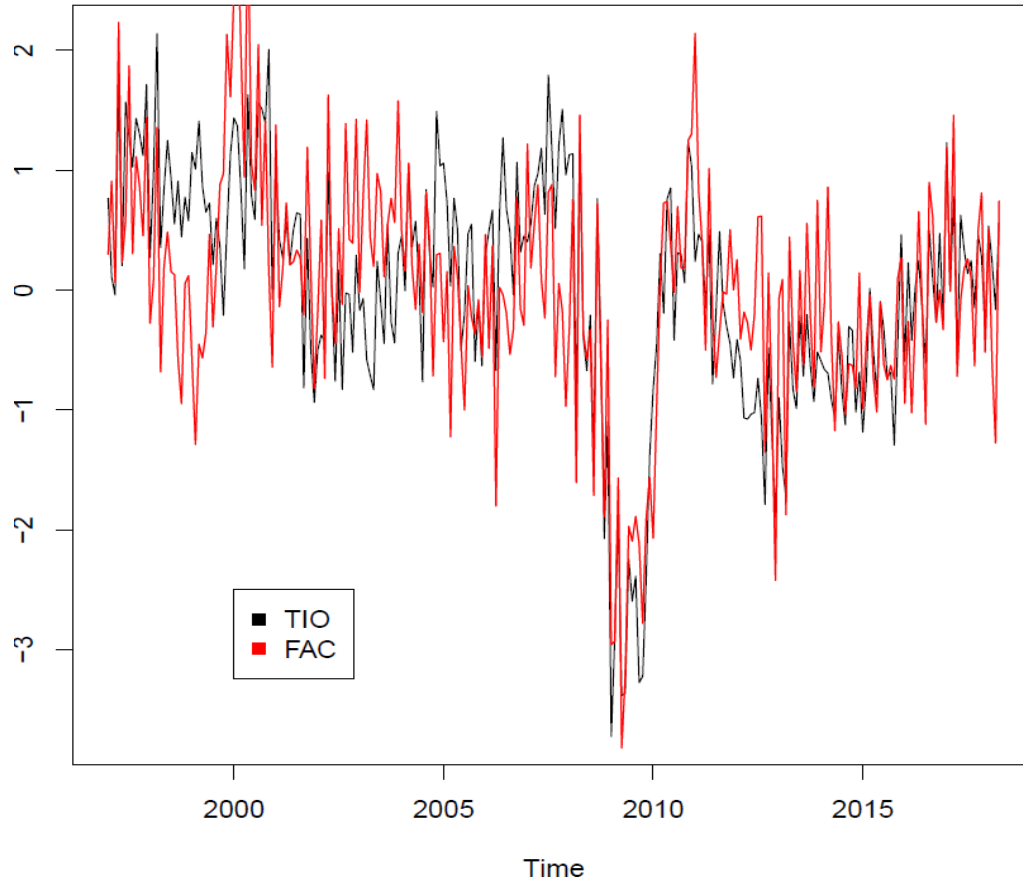
Trend indicator of output
and the first factor
extracted from the trucks'
traffic panel ($\text{cor}=0,76$)

Does traffic data contain information?



Trend indicator of output and
the first factor extracted from
car traffic (cor=0.56)

Does traffic data contain information?



Tio and the first factor extracted
from car and truck traffic
(cor=0.73)

Models

- Factor models – common components are included in the set of predictors
- Shrinkage regressions (LASSO, RIDGE, Elastic-Net...) – can use all the predictors. They outperform factor models (with the Finnish data)
- Non linear ML algorithms (trees, boosting, neural nets..)
- Time series methods for comparison (AR, ARIMA ..)

- We have a nowcasting system in place based on model combinations from the above algorithms.

Trusted Smart Statistics

- Data is maintained by the Finnish Transport Agency (it can be trusted)
- This data can be automatically extracted almost in real time from an online data repositories, and modeling can be automated. (it is a relatively smart system)
- The only question is: is this relevant statistics for NSIs to produce?
- This depends on the results...
- We start by trying to improve existing statistics, and then explore possibilities of other alternative statistical products.

Possible other uses (if we have time)

- What does it matter if we observe traffic data?
- Do a simple inspection: does traffic jam affect plant productivity?
- Match local plant location with traffic measurement point.
- Is it feasible or useful to have a real-time indicator of trade flows?