Irving Fisher Committee on
Central Bank Statistics

IFC-Bank of Italy Workshop on "Data science in central banking"

18-20 February 2025

Project Neo: gaining economic insights with AI and novel data[1]

Rachel Arulraj-Cordonier, Marko Nanut Petric
and Flurina Strasser,
BIS Innovation Hub

[1] This contribution was prepared for the workshop. The views expressed in this publication are those of the authors and do not necessarily represent the official views of the Committee, its members, or the BIS.

Innovation Hub | BIS

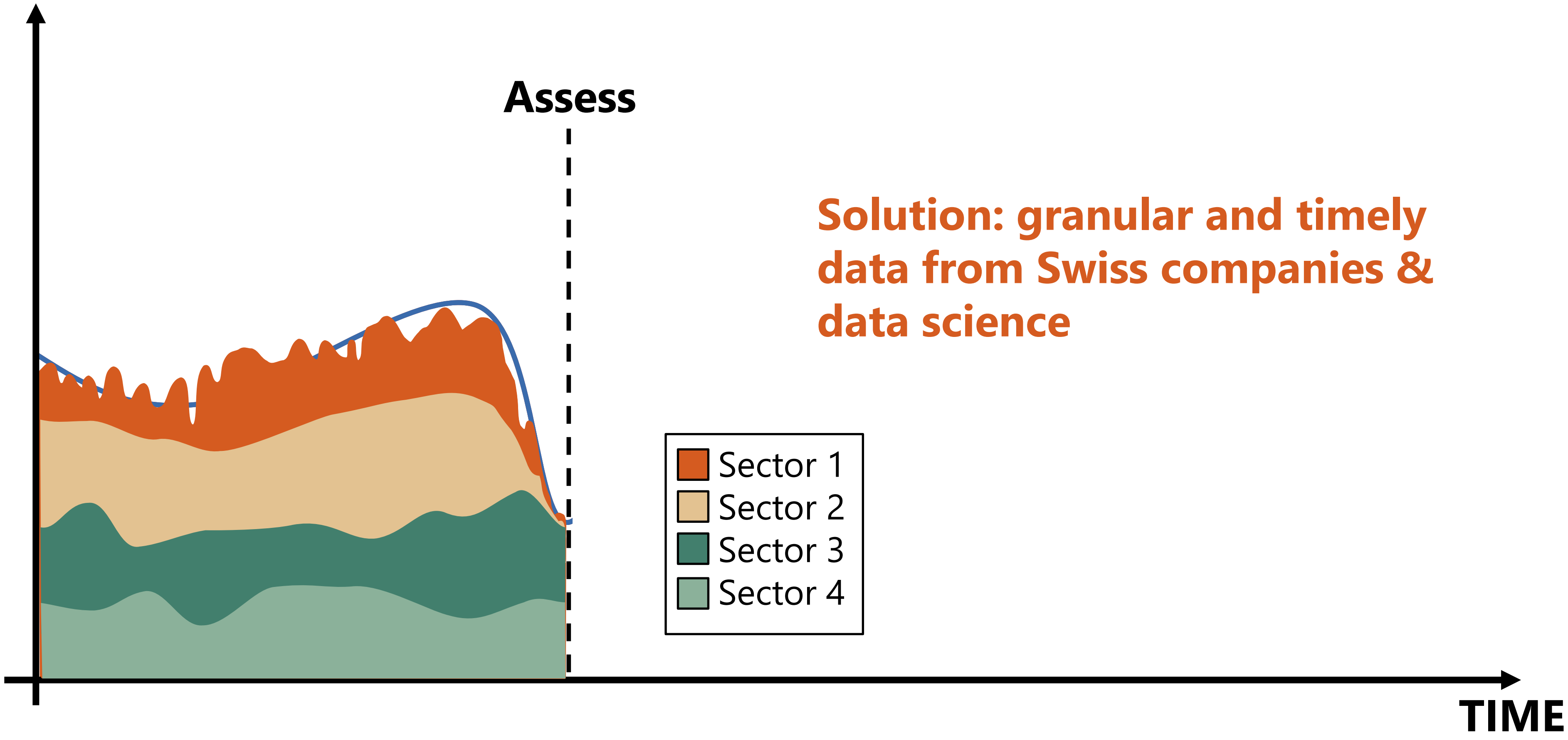
Project Neo

4th IFC-BoI workshop on "Data science in central banking", 18-20 Feb 2025

Rachel Arulraj-Cordonier

DISCLAIMER: The views are those of the presenter and not necessarily those of the BIS nor those of the SNB.

Problem statement



Solution: granular and timely data from Swiss companies & data science

Objectives

Extract value from granular data

Comparable to official statistics

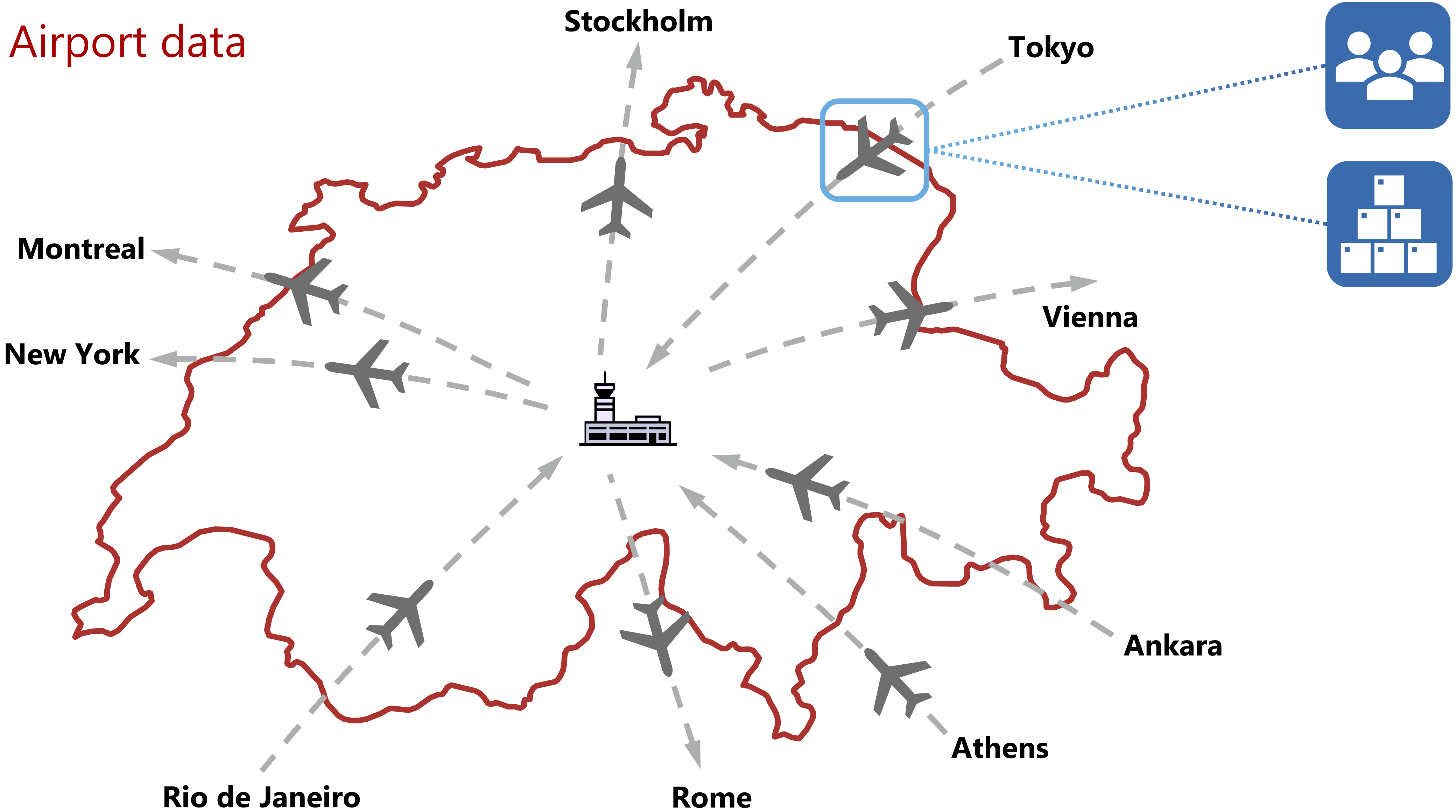
To monitor individually and use in models

Economic monitoring

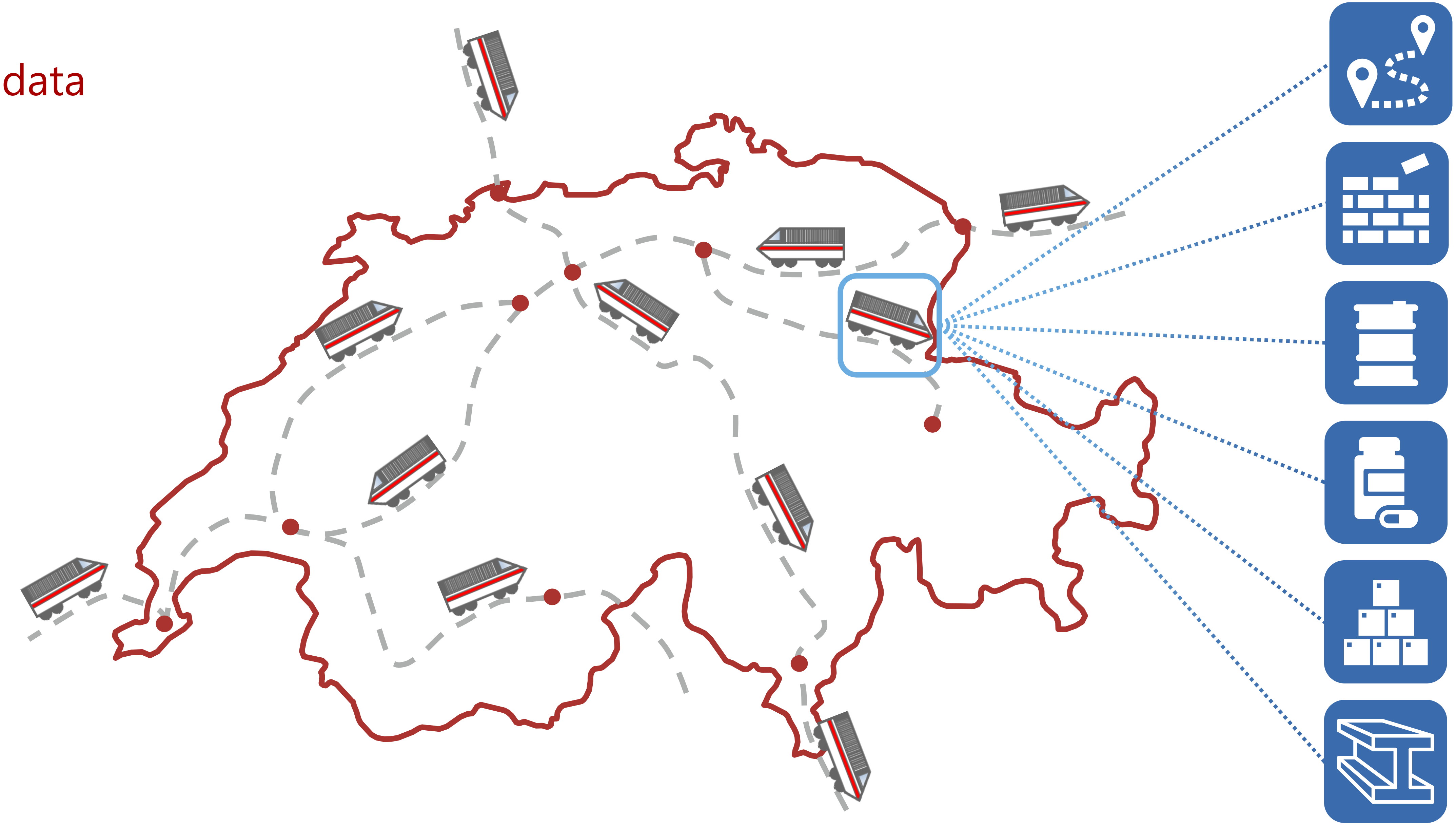
Can we create indicators directly interpretable?

1

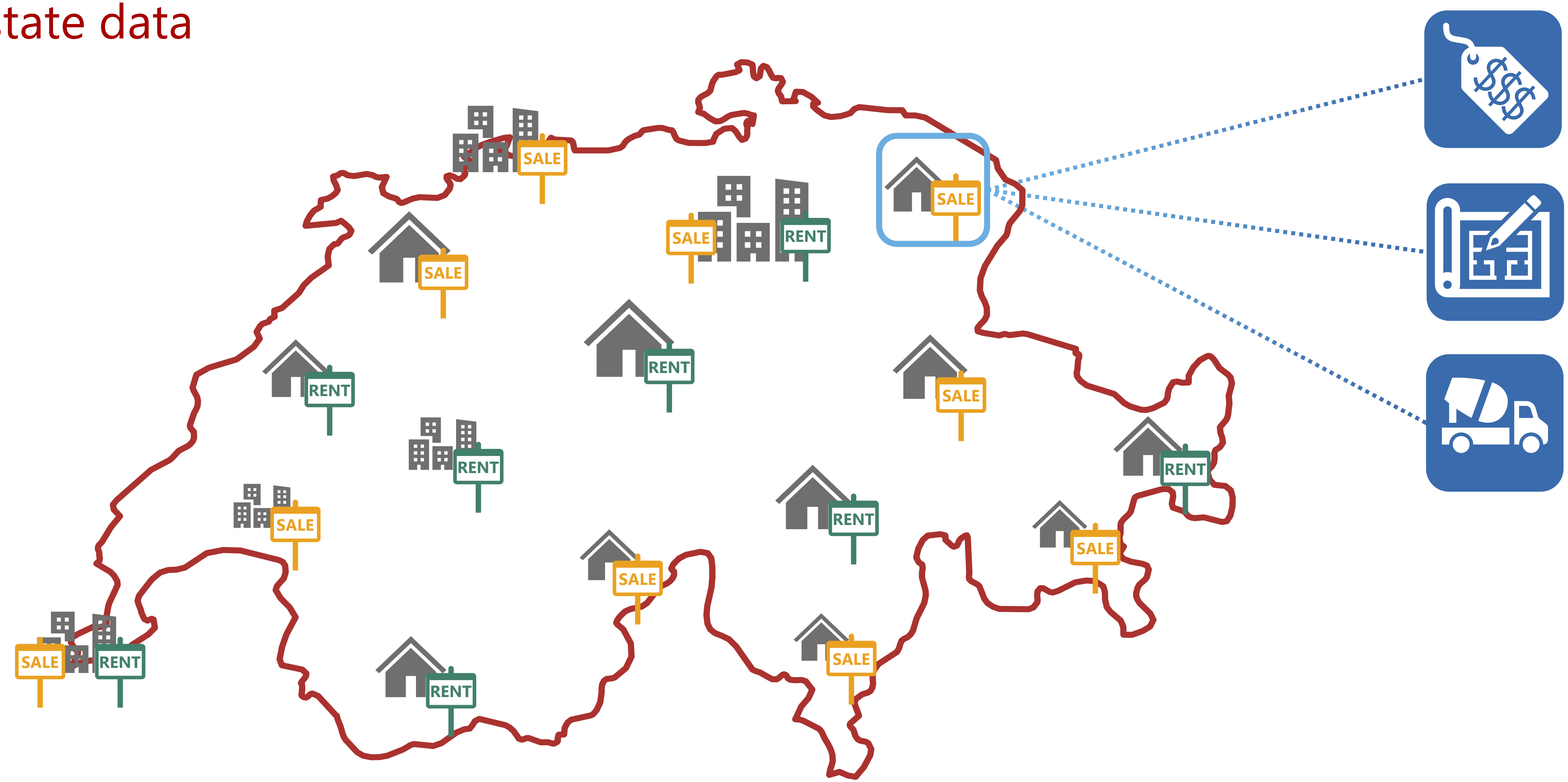
Zürich Airport data



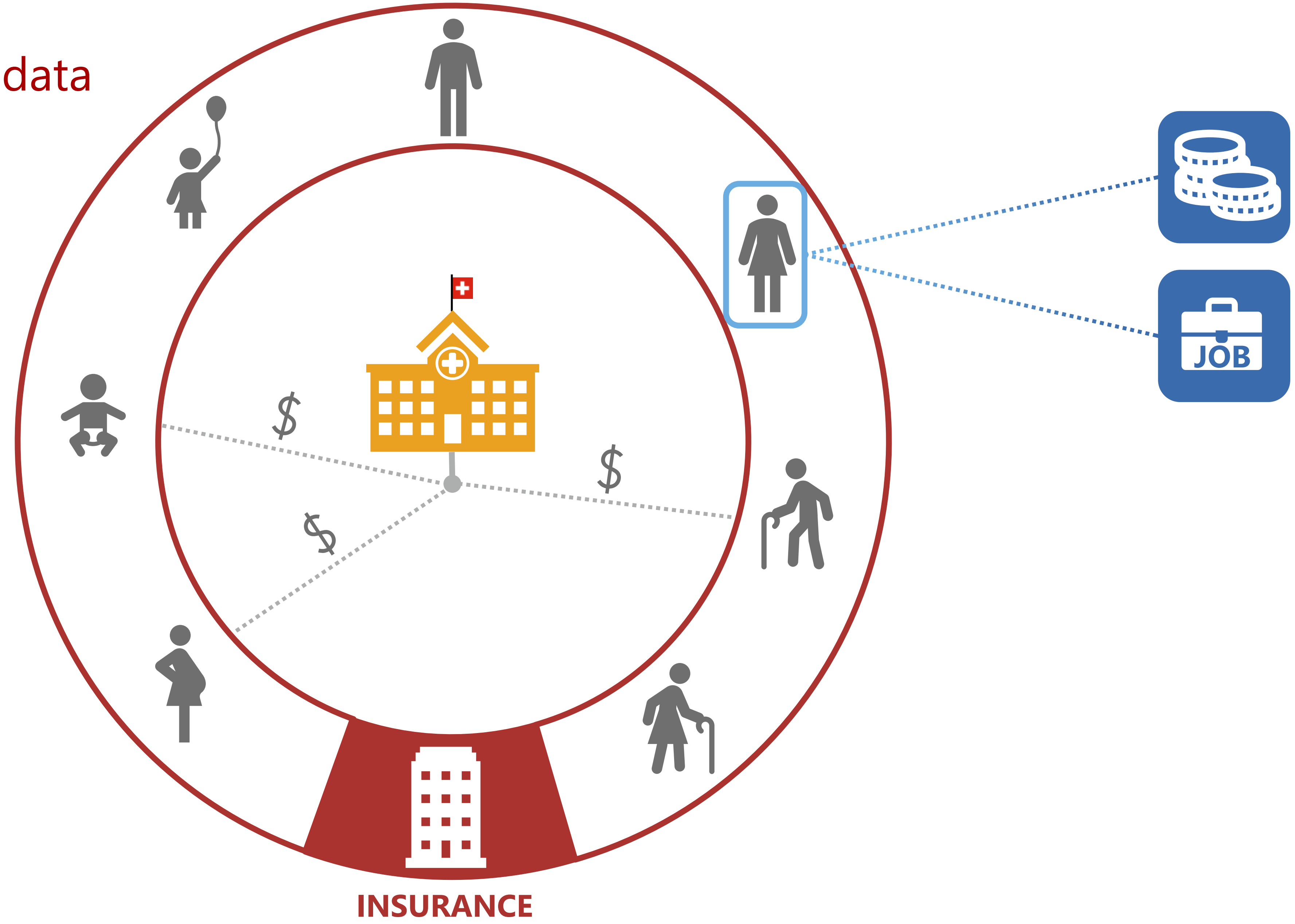
Rail data



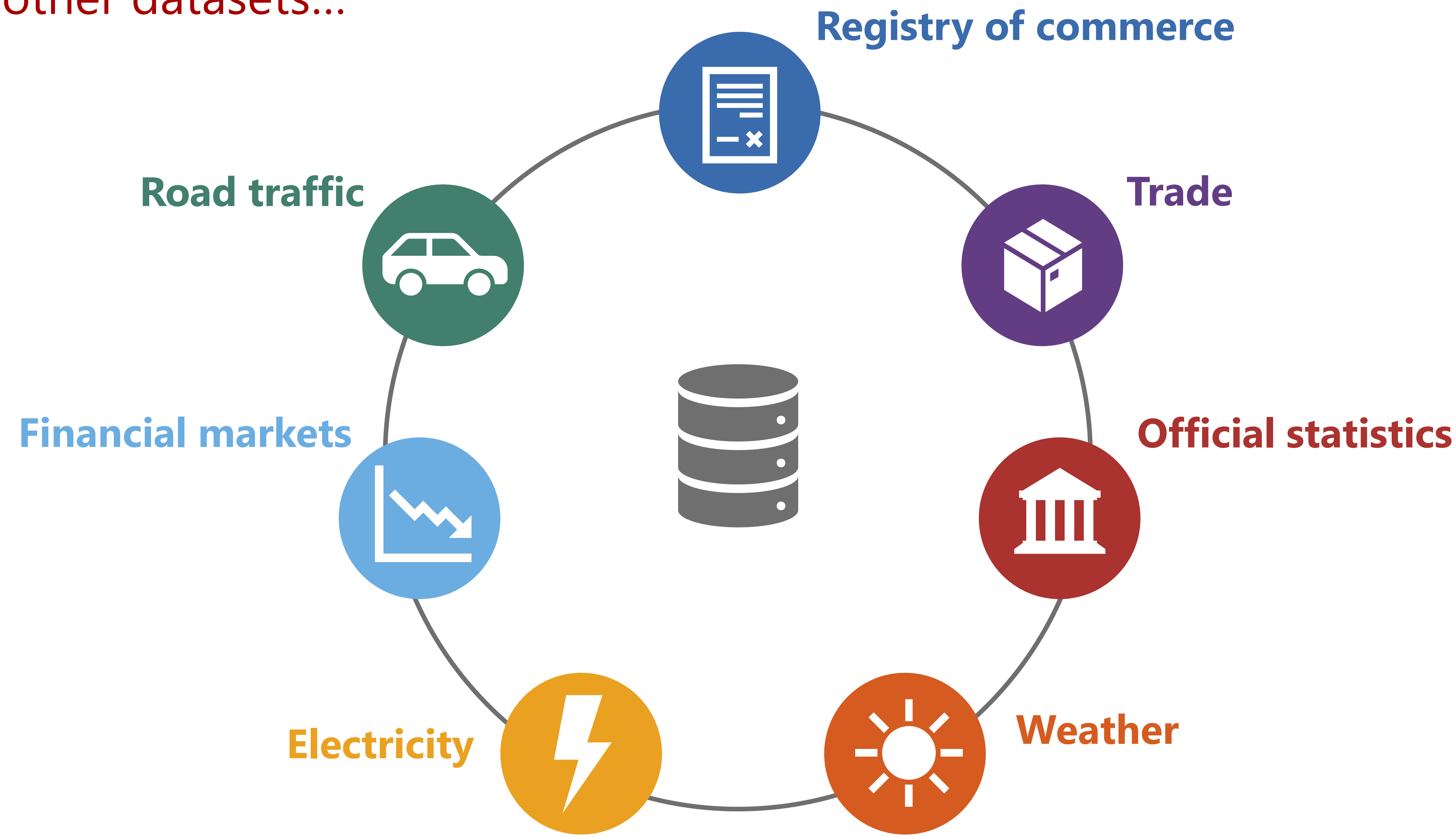
Real estate data



Health insurance data



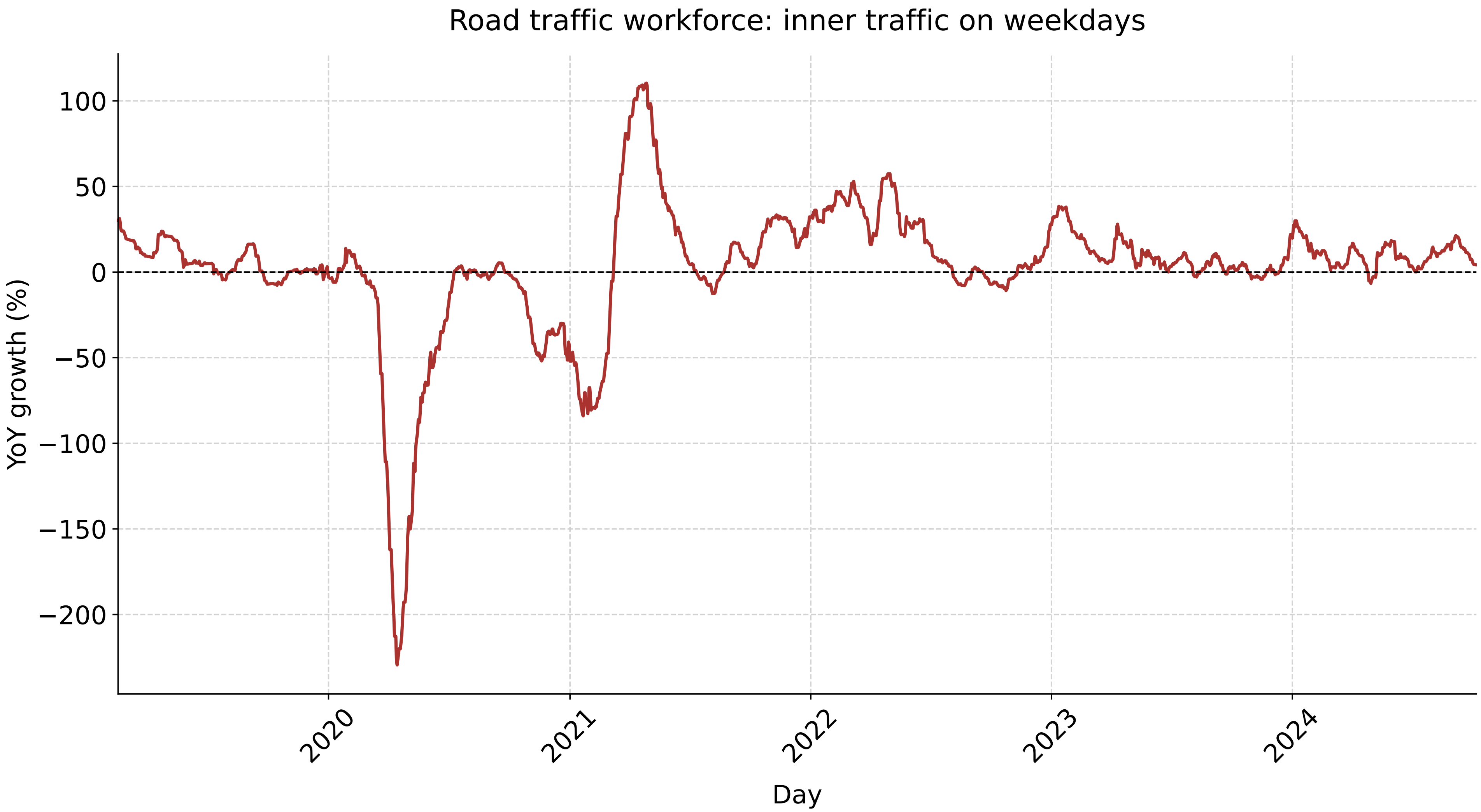
And other datasets…



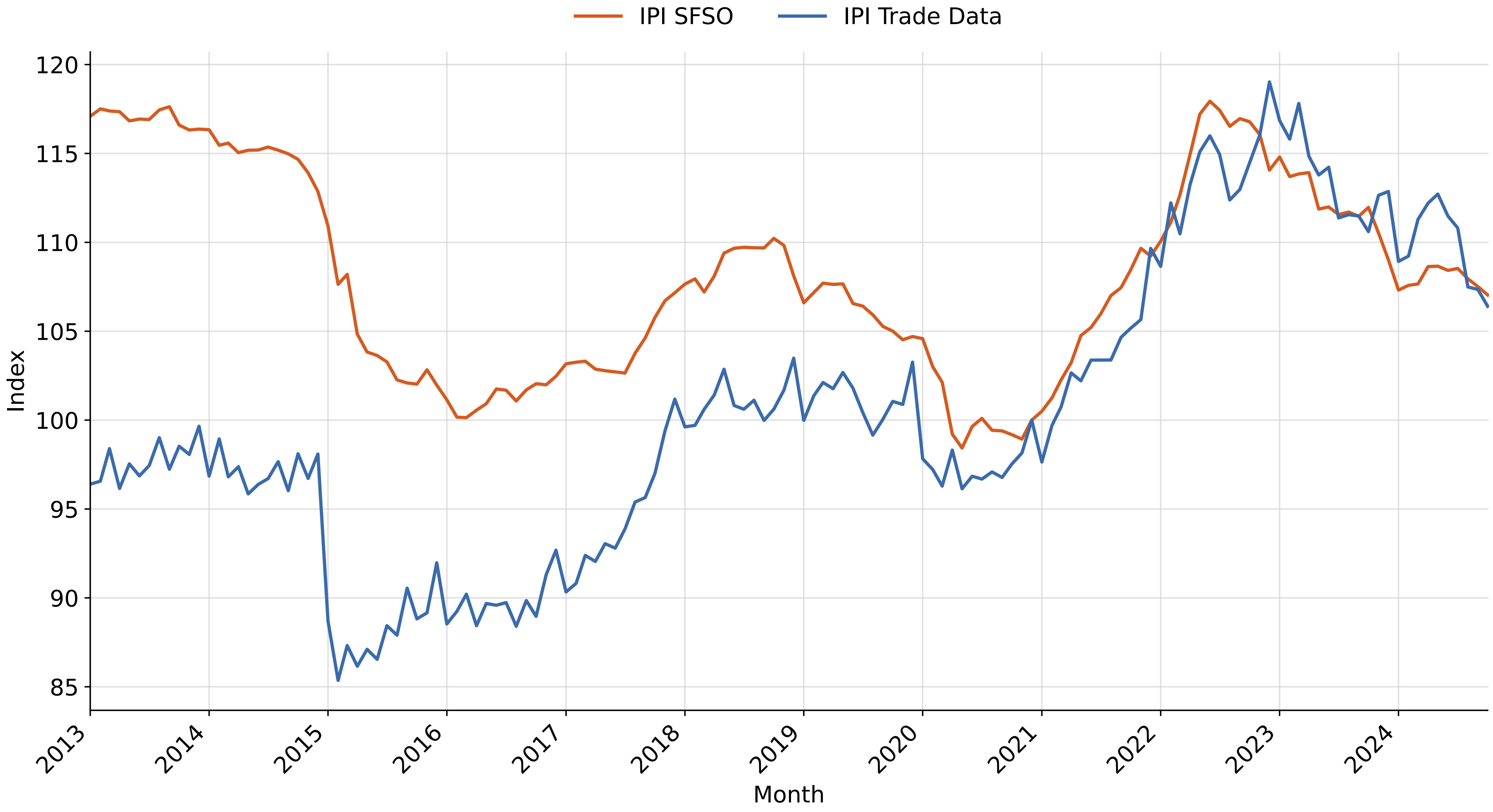
Demo

Appendix

Example of features engineering not suitable for economic indicators



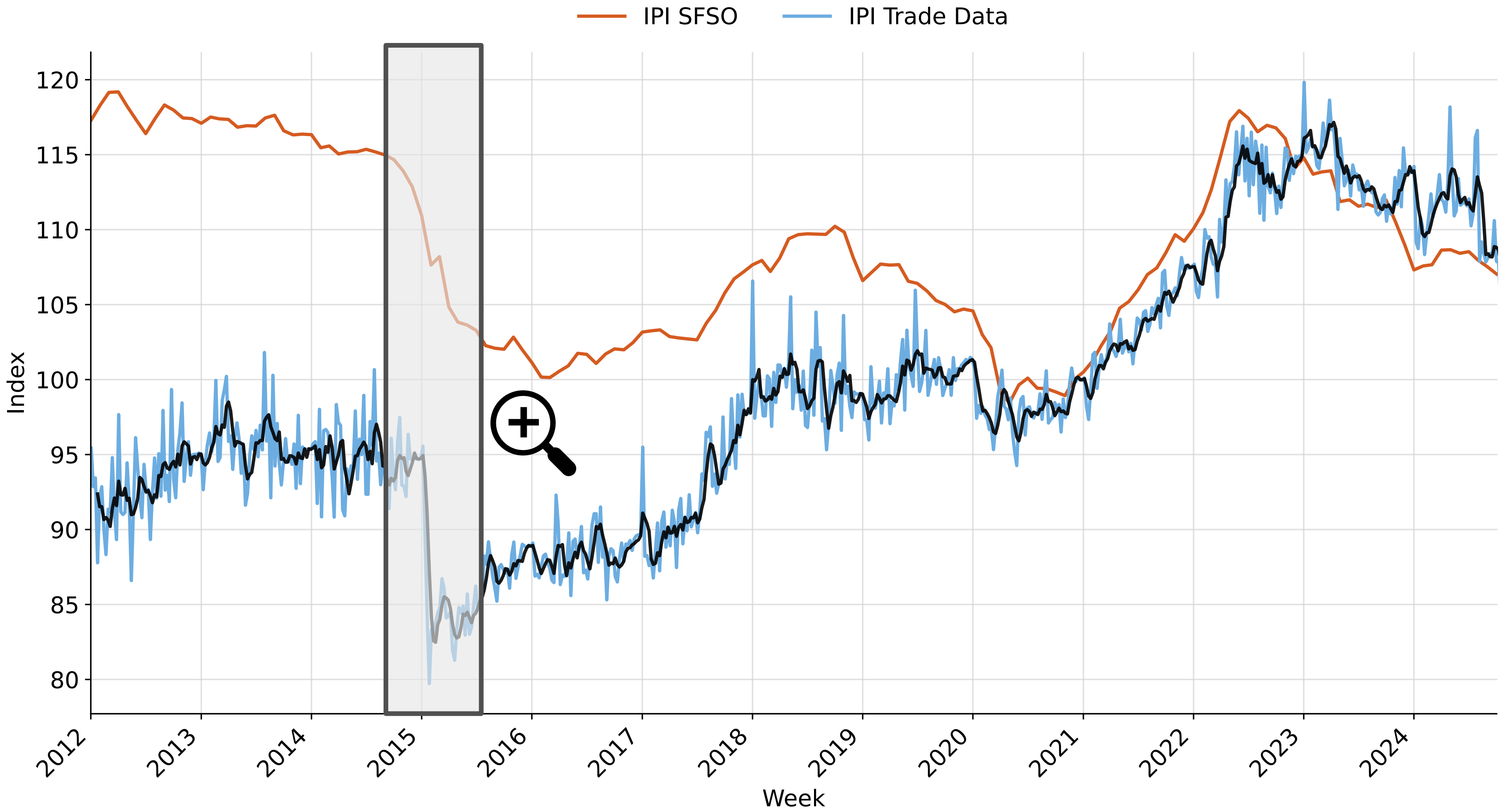
Economic indicator: Import Price Index (IPI) using trade data



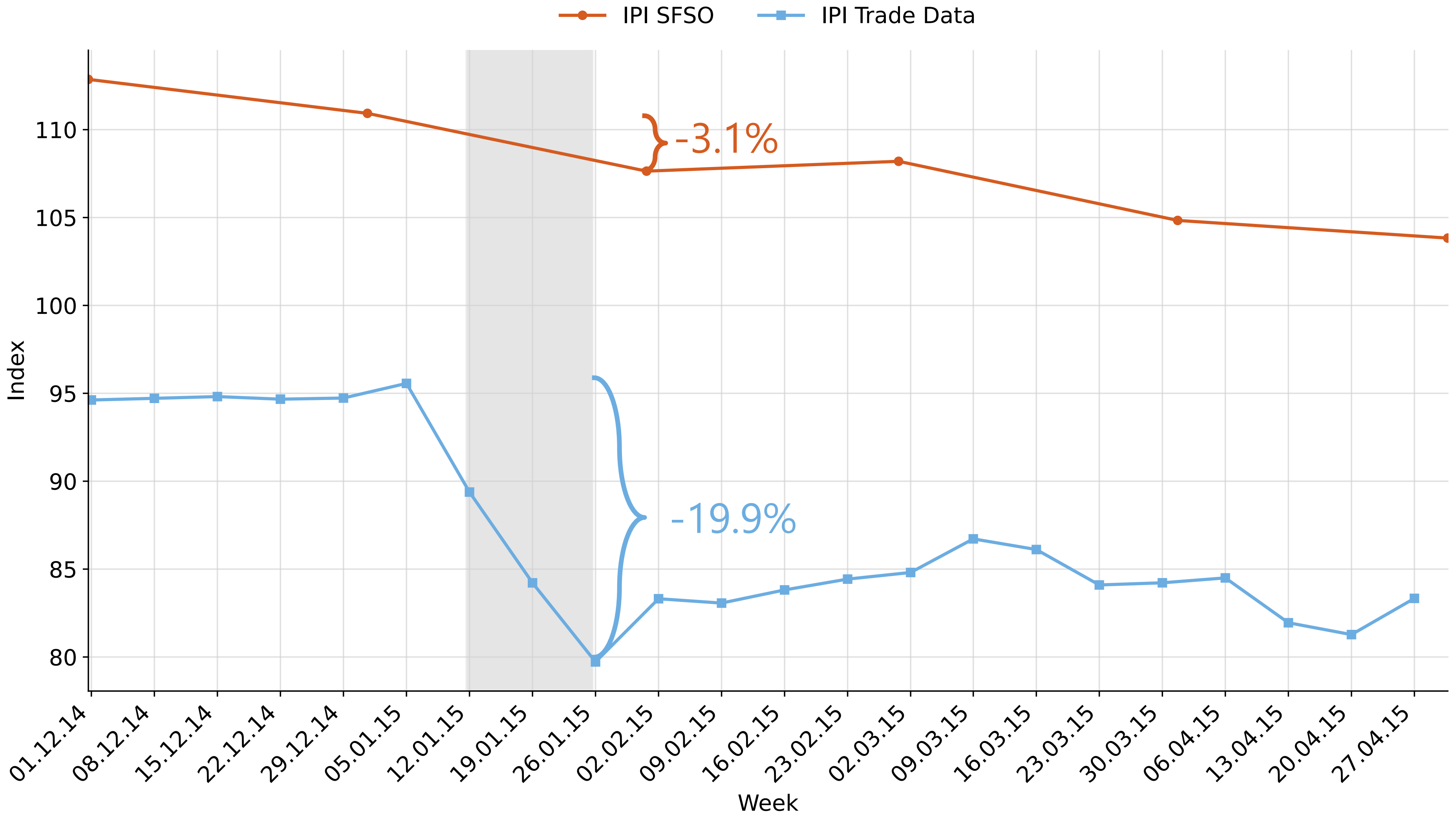
Why is trade IPI useful?

Official IPI	Trade IPI
Measure the prices of carefully chosen imported items, constant over time	Official IPI is the "truth" → **Noisy signal** of official IPI
Monthly frequency and published on the 3rd week of following month	Weekly frequency with 2-week lag → **Available** up to **5 weeks earlier**
Use surveys and other estimations to measure prices that takes time	Use directly the full population of paid imported prices → **Leading** official IPI **by ~3 months**
Some sub-indices are published and no particular link to CPI	Any granularity sub-indices or export indices can be built → related to and **leading CPI**

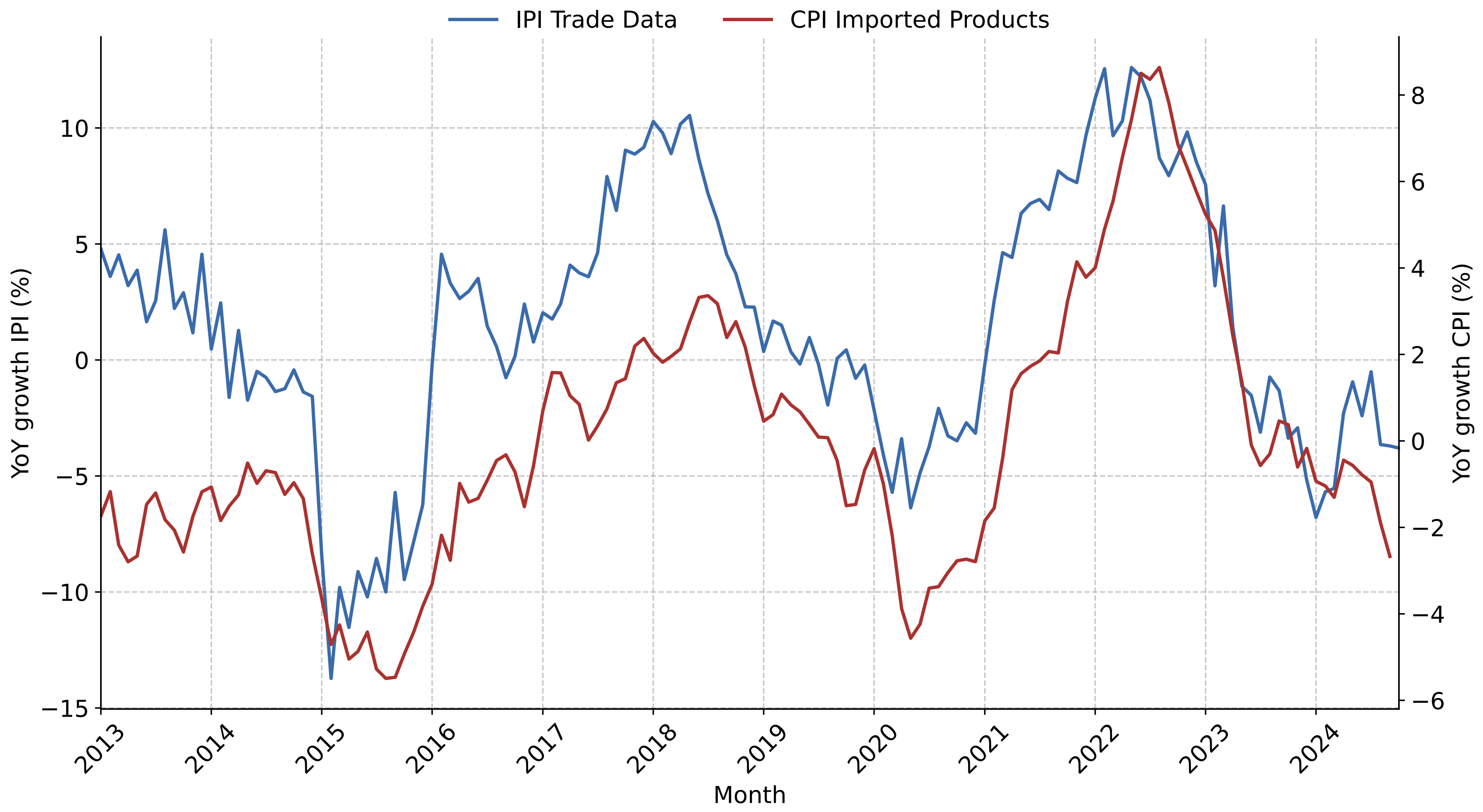
Trade IPI: early weekly noisy signal leading official IPI



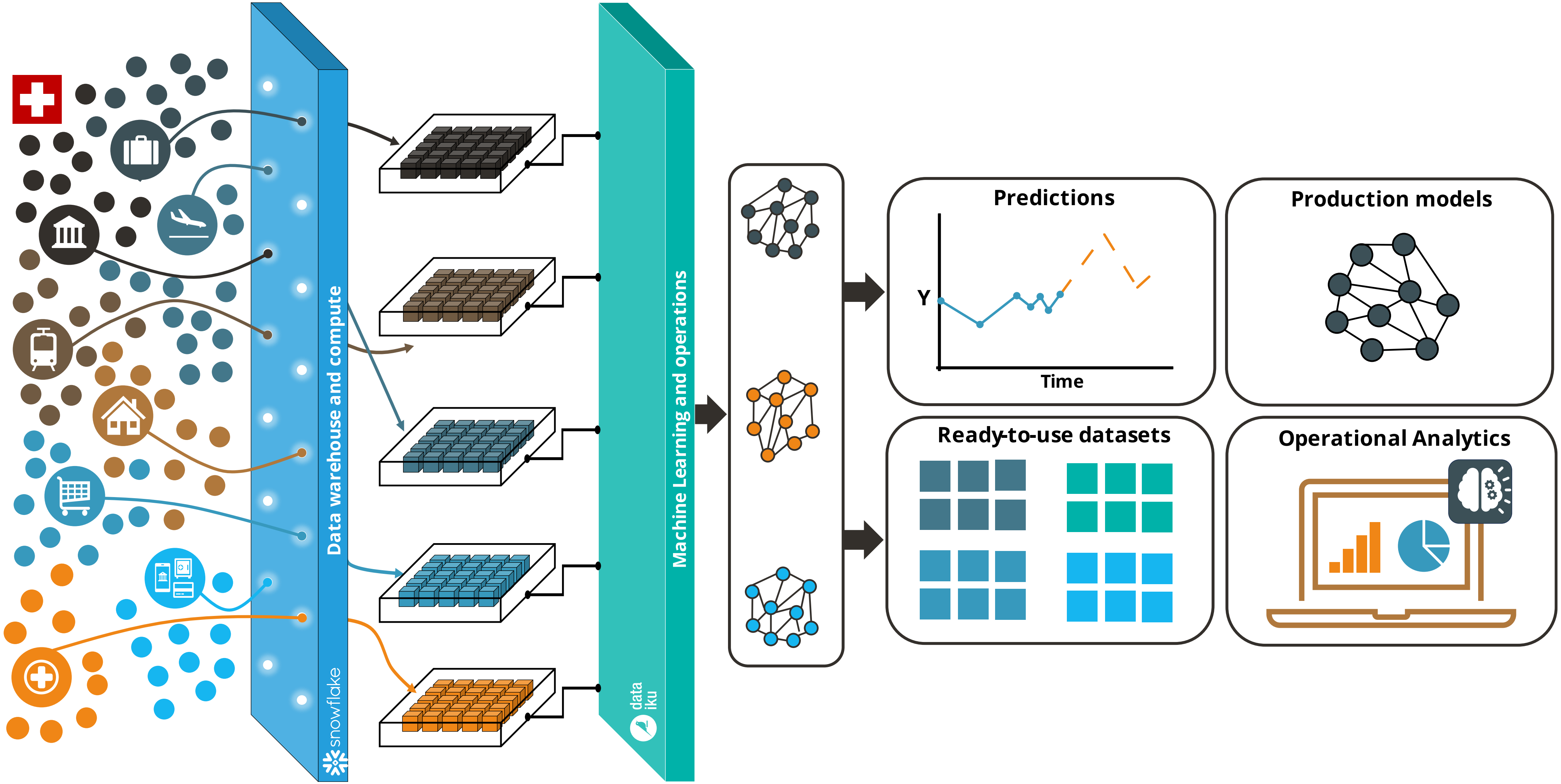
Zooming in on the discontinuation of the minimum CHF/EUR exchange rate



Leading imported goods CPI by 2 months & 0.8 correlation



Pipeline



Data warehouse and compute
snowflake
Machine Learning and operations
data iku
Predictions
Y
Time
Production models
Ready-to-use datasets
Operational Analytics