

WHAT IS SEASONALITY?

- PATTERN WITHIN A YEAR
- OBSERVABLE OVER MORE YEARS
- VARIABILITY ACROSS SEASONS
- SIMILAR INTENSITY
- USUAL PATTERN
- SOME REFERENCE PERIOD REQUIRED → SUFFICIENT
- CYCLES → START → END
→ FREQUENT

SEASONAL OR NOT?

	G1	G2	G3	G4	G5
1	✓	✓	✓	✓	✓
2	✓	✓	✓	✓	✓
3	X	X	X	X	X
4	✓	✓	✓	X	X
5	X	X	X	X	X
6	✓	✓	✓	✓	✓
7	5	5	5	6	6

TIEBREAKERS

	G1	G2	G3	G4	G5
Computation time	6mch	2d	5min	1w	2w
Associated costs	10k	100	1000	100	5-10k

$$\frac{\text{STABLE}}{S_t - S_{t-12} = 0}$$

UR

$$S_t - S_{t-12} = \varepsilon_t; E(\varepsilon_t) = 0$$

$$(1 - B^{12}) S_t = \varepsilon_t$$

Dynamic

$$(1 - \phi B^R) = \varepsilon_t$$

$$|\phi| < 1$$

PRETREATMENT

$$DATA = DET. VAR. + ST. VAR.$$

↓
OTL
ST. CALVAR

↓
TC
SEAS
BR

$$Y_t = \sum_{k=1}^p \beta_k X_{t-k} + \epsilon_t$$

non-par:

REGARIMA

param:

TRAMO

↓
SA

X-11113
SEATS

All principle

$$\varepsilon_t = \boxed{t_t} + s_t + i_t$$

①

↓ LF?

② $\varepsilon_t - t_t \rightarrow$

③ $= \boxed{s_t + i_t} = (s_i)_t$

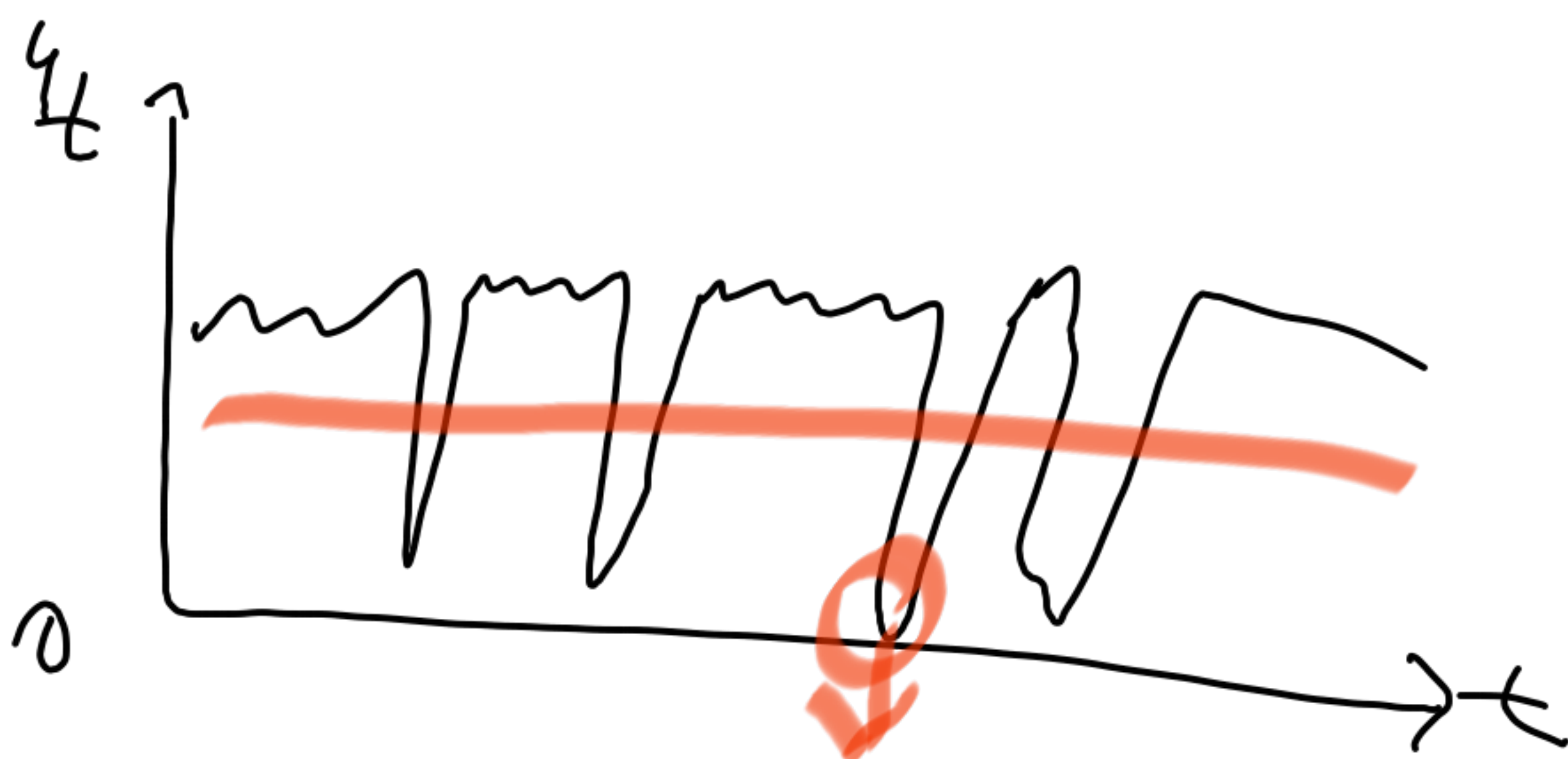
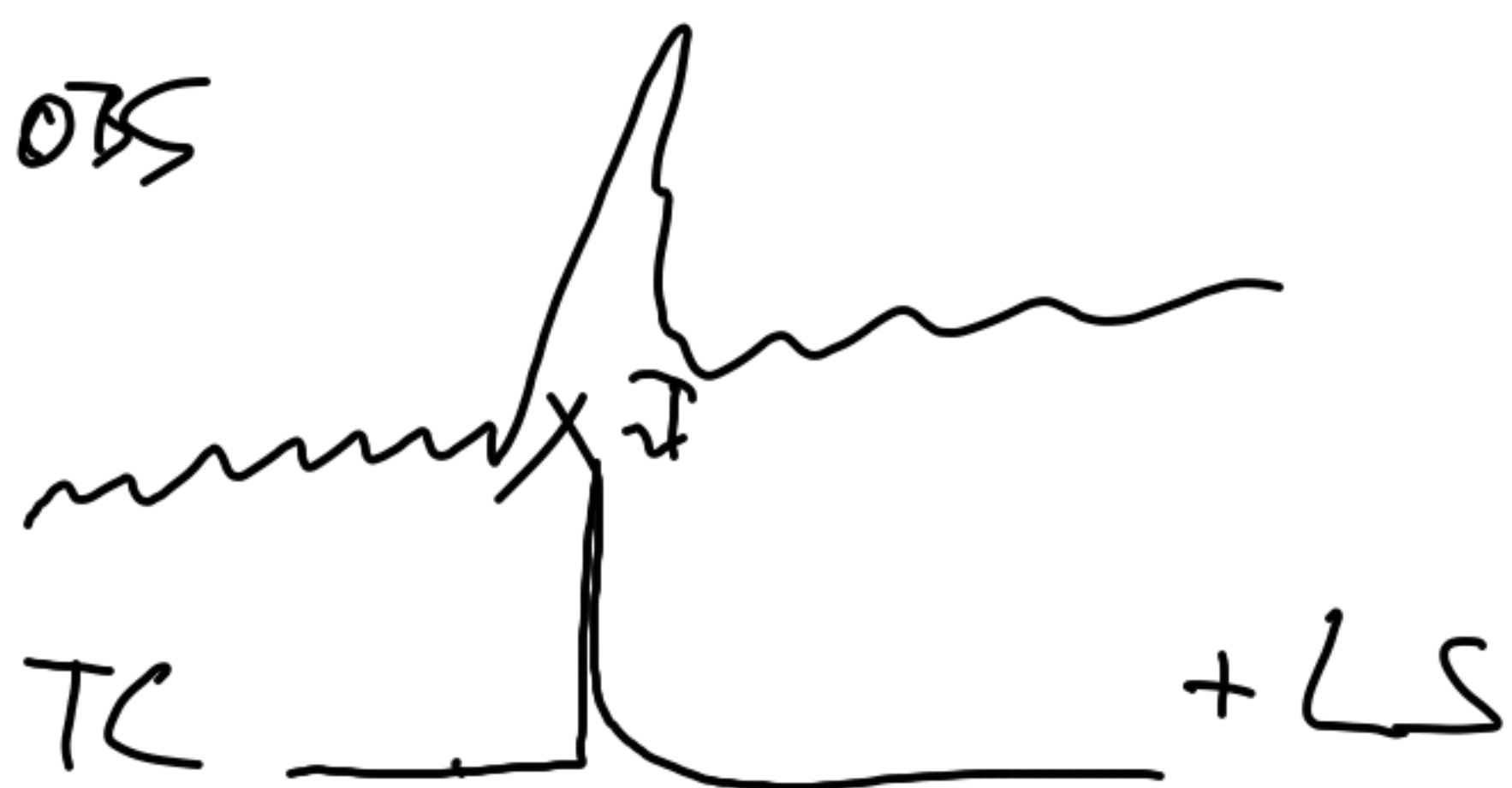
↓ LF?

④ $\varepsilon_t - s_t \rightarrow$

$(s_x)_t$

X-11 modes

- add : $\Sigma_t = \underline{t}_t + \underline{S}_t + i_t$
- mult : $\Sigma_t = \underline{t}_t \times \underline{S}_t \times i_t$
- log-add : $\log(\Sigma_t) = \underline{t}_t + \underline{S}_t + i_t$
- ps.-add : for zero abs
- ↓
- add. on non-zeroes
 - mult. on zeros



SEATS (Airline)

$$(1-B)(1-B^4) = (1-B) \dots$$

$$(1-B)(1-B)(1+B+B^2+B^3)$$

$$(1-B)^2 (1+B+B^2+B^3)$$

$$\downarrow$$

$$B \rightarrow 1$$

$$\downarrow$$

$$TC$$

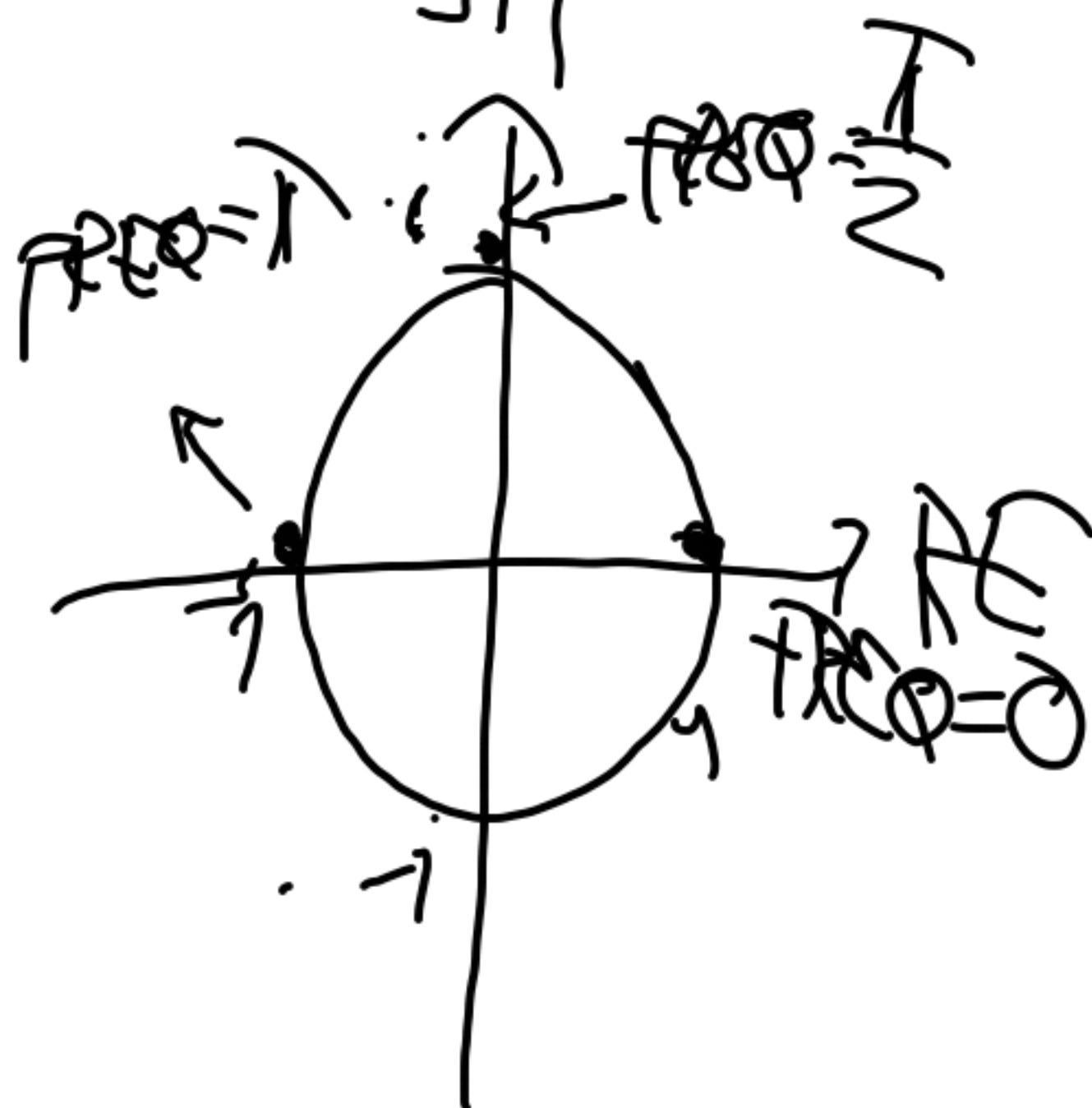
$$\downarrow$$

$$-1, i, -i$$

$$JM$$

$$\downarrow$$

$$FIF$$



Revisions

New Data updated

New Base Index

Method asadj