Sthlm, 2012, [illegible]

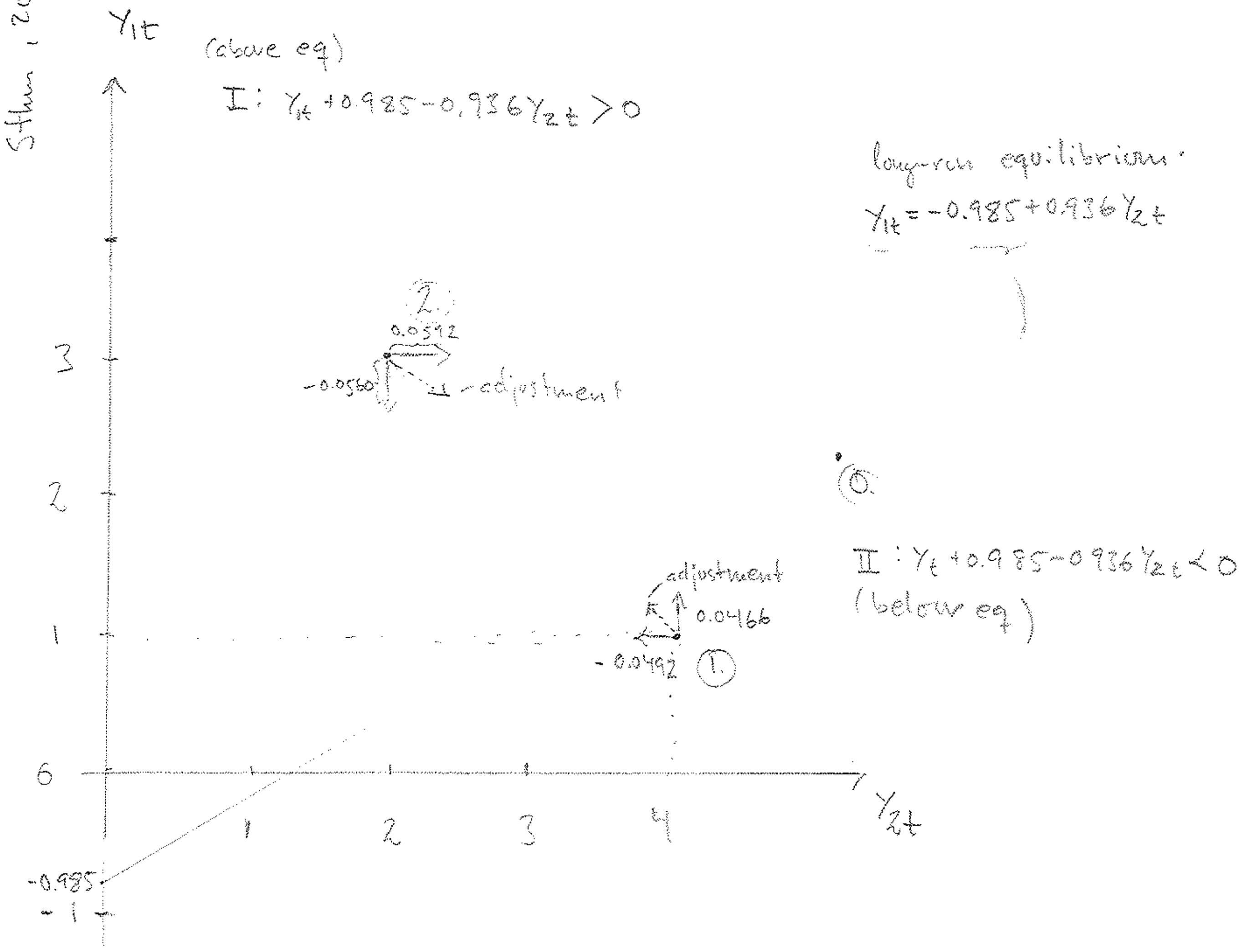
$Y_t = \begin{pmatrix} Y_{1t} \\ Y_{2t} \end{pmatrix}$; Y_{1t} = Short-term U.S. interest rate
Y_{2t} = long-term U.S. interest rate

Cointegrating relationship: $Y_{1t} = \beta_0 + \beta_2 Y_{2t} + e_t$

Cointegrating vector: $\beta = (1, -\beta_2)'$; $\beta' Y_t = \beta_0 + e_t$

VECM model: $\Delta Y_t = \alpha(\beta' Y_{t-1} - \beta_0) + \varepsilon_t$
where $\alpha = (\alpha_1, \alpha_2)'$.

STATA estimates: $\hat{\alpha}_1 = -0.0265$; $\hat{\beta}_2 = 0.936$
$\hat{\alpha}_2 = 0.0280$; $\hat{\beta}_0 = -0.985$



0. The system is at equilibrium

1. A shock occurs and we end up at position (4,1).
Adjustment mechanisms towards long-run eq.

$\Delta Y_{1t} = -0.0265(1 + 0.985 - 0.936 \cdot 4) = 0.0466$

$\Delta Y_{2t} = 0.0280(1 + 0.985 - 0.936 \cdot 4) = -0.0492$

2. Another example. Assume that another shock occurs and we end up at position (2, 3).
Adjustment mechanisms towards long-run eq.

$\Delta Y_{1t} = -0.0265(3 + 0.985 - 0.936 \cdot 2) = -0.0560$

$\Delta Y_{2t} = 0.0280(3 + 0.985 - 0.936 \cdot 2) = 0.0592$

The US short–term rate (rs, solid line),
long–term rate (rl, dashed–dotted line),
the interest rate differential (rs–rl, dotted line)