

The α-trace

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α-calculus.

Constraints. • $\sum_u c_u A_{ux} = \sigma_x - 1$. • At $c_* = 0, \omega = 1$ and $A_{ux} = \frac{\partial \sigma_x}{\partial c_u} \Big|_{c_*=0}$.

$$\begin{array}{c}
 \begin{array}{c|c|c} \omega_1 & H_1 & \\ \hline T_1 & A_1 & \end{array} * \begin{array}{c|c|c} \omega_2 & H_2 & \\ \hline T_2 & A_2 & \end{array} \stackrel{\alpha}{=} \begin{array}{c|c|c|c} \omega_1 \omega_2 & H_1 & H_2 & \\ \hline T_1 & A_1 & 0 & \\ \hline T_2 & 0 & A_2 & \end{array} \\
 \\
 \begin{array}{c|c|c} \omega & x & H \\ \hline u & \alpha & \theta \\ \hline T & \phi & \Xi \end{array} \xrightarrow[\nu=1+c_u\alpha]{\alpha::tha^{\mu x}} \begin{array}{c|c|c} \nu\omega & x & H \\ \hline u & \sigma_x\alpha/\nu & \sigma_x\theta/\nu \\ \hline T & \phi/\nu & \Xi - c_u\phi\theta/\nu \end{array} \\
 \\
 \begin{array}{c|c|c} \omega & c & S \\ \hline c & \alpha & \theta \\ \hline S & \psi & \Xi \end{array} \xrightarrow[\mu:=\sigma_c - c_c\alpha - 1]{\alpha::tr_c} \begin{array}{c|c|c} -\mu\omega & S & \\ \hline S & \Xi + c_c\psi\theta/\mu & \end{array} \quad \rho_{ux}^{\pm} \stackrel{\alpha}{=} \frac{1}{u} \Big| \frac{x}{T_u^{\pm 1} - 1}
 \end{array}$$

$$\begin{array}{c|c|c} w & a & s \\ \hline a & \alpha & \theta \\ \hline s & \psi & \Xi \end{array} \xrightarrow[\mu=1+c_u\alpha-\sigma_a]{tr_a} \begin{array}{c|c} \mu w & s \\ \hline s & \frac{\mu\psi\theta}{\mu} \end{array}$$

Q Can this be lifted to FL?

$$\begin{array}{ccc}
 FL(aus) \times FL(aus)^S & \xrightarrow{?} & FL(aus) \\
 \downarrow \beta & & \downarrow \beta \\
 M_{sua \times sua} & \xrightarrow{tr_a} & M_{sxs}
 \end{array}$$