Mit Gain-Differenz 9.7.02 1

$$\partial \ln\left(\frac{P_0}{P_1}\right) = g\varepsilon\left(P_0 - P_1\right) + \Delta g \qquad (1)$$

$$P_{0,1} = \frac{P_s}{2}\left(1 \pm x\right)$$

$$\partial \ln \frac{1+x}{1-x} = g\varepsilon P_s x + \Delta g$$

$$z \to \alpha z P_s / P_\varepsilon \qquad \delta = \Delta g L$$

$$\boxed{\partial \ln \frac{1+x}{1-x} = x + \delta} \; ; \; \boxed{\delta = \frac{\Delta g P_\varepsilon}{\alpha P_s}}$$

$$\text{l.S} = \partial \ln 1+x - \partial \ln 1-x$$

$$= \left(\frac{1}{1+x} + \frac{1}{1-x}\right)\partial x = \cancel{\frac{2}{1-x^2} x'}$$

$$\Rightarrow \zeta = \int \frac{dx}{(1+x)(\delta+x)} + \int \frac{dx}{(1-x)(\delta+x)}$$

NR: $$\frac{1}{(1\pm x)(\delta+x)} = \frac{a}{1\pm x} + \frac{b}{\delta+x}$$

$$= \frac{a\delta + ax + b \pm bx}{(1\pm x)(\delta+x)} \Rightarrow \begin{cases} a\delta + b = 1 \\ a \pm b = 0 \end{cases}$$

$$\Rightarrow a(\delta \mp 1) = 1$$

$$a = \mp b = \frac{1}{\delta \mp 1}$$

$$\to \zeta = \int \frac{dx}{(\delta-1)(1+x)} + \frac{dx}{(1-\delta)(\delta+x)} + \frac{dx}{(1+\delta)(1-x)} + \frac{dx}{(1+\delta)(\delta+x)}$$

$$= \frac{1}{\delta-1}\ln(1+x) + \frac{\ln|\delta+x|}{1-\delta} - \frac{\ln(1-x)}{1+\delta} + \frac{\ln|\delta+x|}{1+\delta}$$

$\operatorname{sgn}(\delta+x)$ $\operatorname{sgn}(\delta+x)$

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$$\boxed{\xi = \frac{1}{1-\delta}\ln\left(\frac{|\delta+x|}{1+x}\right) + \frac{1}{1+\delta}\ln\left(\frac{|\delta+x|}{1-x}\right) + C_1}$$

Probe: $\xi' = \frac{1}{1-\delta}\left(\frac{1}{\delta+x} - \frac{1}{1+x}\right) + \frac{1}{1+\delta}\left(\frac{1}{\delta+x} + \frac{1}{1-x}\right)$

$$= \frac{\cancel{(1-\delta)}}{\cancel{(1-\delta)}(\delta+x)(1+x)} + \frac{\cancel{(1+\delta)}}{\cancel{(1+\delta)}(\delta+x)(1-x)}$$

$$= \frac{1}{\delta+x}\left(\frac{1}{1+x} + \frac{1}{1-x}\right) = \frac{2}{(1-x^2)(\delta+x)} \checkmark$$

$$\xi + \eta(x_0) = \ldots\ldots$$

$$= \frac{2\,\mathrm{sgn}(\delta+x)}{1-\delta^2}\ln|\delta+x| - \frac{(1+\delta)\ln(+) + (1-\delta)\ln(-)}{1-\delta^2}$$

$$= \frac{2\,\mathrm{sgn}(\delta+x)\ln|\delta+x|}{1-\delta^2} \quad \frac{\ln(1-x^2) + \delta\ln\left(\frac{1+x}{1-x}\right)}{1-\delta^2}$$

$\cancel{x = \tfrac{?}{} \quad y + \frac{1}{y}}$ $\quad y = \frac{1}{x-x_{max}} + \frac{1}{x-x_{min}}$

$$= \frac{2x - (x_{min} + x_{max})}{x^2 - x(+) + x_- x_+}$$

$$y\left(x^2 - (+)x + x_- x_+\right) = 2x - (+)$$

$$x^2 - 2\left(\frac{1}{y} + \bar{x}\right)x - \left(x_- x_+ - \frac{2\bar{x}}{y}\right) = 0$$