In[•]:=
```
$k = 0;
R[1,2] Rbar[3,4] // m[1,3→1] // m[2,4→2]
```

» EZip called with {vs,$\mathcal{F}$,$\mathcal{E}$} =

$$\Big\{\{p_{1,\$[1]}, p_{1,\$[3]}, p_{2,\$[1]}, p_{2,\$[3]}, p_{3,\$[1]}, p_{3,\$[3]}, \pi_{1,\$[1]}, \pi_{1,\$[3]}, \pi_{2,\$[1]}, \pi_{2,\$[3]}, \pi_{3,\$[1]}, \pi_{3,\$[3]},$$
$$x_{1,\$[1]}, x_{1,\$[3]}, x_{2,\$[1]}, x_{2,\$[3]}, x_{3,\$[1]}, x_{3,\$[3]}, \xi_{1,\$[1]}, \xi_{1,\$[3]}, \xi_{2,\$[1]}, \xi_{2,\$[3]}, \xi_{3,\$[1]}, \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\pi_{1,\$[1]} + p_{1,\$[3]}\pi_{1,\$[3]} + p_{2,\$[1]}\pi_{2,\$[1]} + p_{2,\$[3]}\pi_{2,\$[3]} + p_{3,\$[1]}\pi_{3,\$[1]} + p_{3,\$[3]}\pi_{3,\$[3]} +$$
$$x_{1,\$[1]}\xi_{1,\$[1]} + x_{1,\$[3]}\xi_{1,\$[3]} + x_{2,\$[1]}\xi_{2,\$[1]} + x_{2,\$[3]}\xi_{2,\$[3]} + x_{3,\$[1]}\xi_{3,\$[1]} + x_{3,\$[3]}\xi_{3,\$[3]},$$
$$\mathbb{E}\Big[1, p_{1,1}(\pi_{1,\$[1]} + \pi_{1,\$[3]}) + p_{2,1}(\pi_{2,\$[1]} + \pi_{2,\$[3]}) + p_{3,1}(\pi_{3,\$[1]} + \pi_{3,\$[3]}) + (-1+T_1)(-p_{1,2} + p_{1,\$[1]})x_{1,2} +$$
$$\left(-1+\frac{1}{T_1}\right)(-p_{1,4} + p_{1,\$[3]})x_{1,4} - \pi_{1,\$[3]}\xi_{1,\$[1]} + x_{1,1}(\xi_{1,\$[1]} + \xi_{1,\$[3]}) - \pi_{2,\$[3]}\xi_{2,\$[1]} +$$
$$x_{2,1}(\xi_{2,\$[1]} + \xi_{2,\$[3]}) - \pi_{3,\$[3]}\xi_{3,\$[1]} + x_{3,1}(\xi_{3,\$[1]} + \xi_{3,\$[3]}), \in\text{Series}[0]\Big]\Big\}$$

» EZip1 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[1]}, p_{1,\$[3]}, p_{2,\$[1]}, p_{2,\$[3]}, p_{3,\$[1]}, p_{3,\$[3]}, \pi_{1,\$[1]}, \pi_{1,\$[3]}, \pi_{2,\$[1]}, \pi_{2,\$[3]}, \pi_{3,\$[1]}, \pi_{3,\$[3]},$$
$$x_{1,\$[1]}, x_{1,\$[3]}, x_{2,\$[1]}, x_{2,\$[3]}, x_{3,\$[1]}, x_{3,\$[3]}, \xi_{1,\$[1]}, \xi_{1,\$[3]}, \xi_{2,\$[1]}, \xi_{2,\$[3]}, \xi_{3,\$[1]}, \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\pi_{1,\$[1]} + p_{1,\$[3]}\pi_{1,\$[3]} + p_{2,\$[1]}\pi_{2,\$[1]} + p_{2,\$[3]}\pi_{2,\$[3]} + p_{3,\$[1]}\pi_{3,\$[1]} + p_{3,\$[3]}\pi_{3,\$[3]} +$$
$$x_{1,\$[1]}\xi_{1,\$[1]} + x_{1,\$[3]}\xi_{1,\$[3]} + x_{2,\$[1]}\xi_{2,\$[1]} + x_{2,\$[3]}\xi_{2,\$[3]} + x_{3,\$[1]}\xi_{3,\$[1]} + x_{3,\$[3]}\xi_{3,\$[3]}, 1,$$
$$p_{1,1}(\pi_{1,\$[1]} + \pi_{1,\$[3]}) + p_{2,1}(\pi_{2,\$[1]} + \pi_{2,\$[3]}) + p_{3,1}(\pi_{3,\$[1]} + \pi_{3,\$[3]}) + (-1+T_1)(-p_{1,2} + p_{1,\$[1]})x_{1,2} +$$
$$\left(-1+\frac{1}{T_1}\right)(-p_{1,4} + p_{1,\$[3]})x_{1,4} - \pi_{1,\$[3]}\xi_{1,\$[1]} + x_{1,1}(\xi_{1,\$[1]} + \xi_{1,\$[3]}) - \pi_{2,\$[3]}\xi_{2,\$[1]} +$$
$$x_{2,1}(\xi_{2,\$[1]} + \xi_{2,\$[3]}) - \pi_{3,\$[3]}\xi_{3,\$[1]} + x_{3,1}(\xi_{3,\$[1]} + \xi_{3,\$[3]}), \in\text{Series}[0]\Big\}$$

» EZip2 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[1]}, p_{1,\$[3]}, p_{2,\$[1]}, p_{2,\$[3]}, p_{3,\$[1]}, p_{3,\$[3]}, \pi_{1,\$[1]}, \pi_{1,\$[3]}, \pi_{2,\$[1]}, \pi_{2,\$[3]}, \pi_{3,\$[1]}, \pi_{3,\$[3]},$$
$$x_{1,\$[1]}, x_{1,\$[3]}, x_{2,\$[1]}, x_{2,\$[3]}, x_{3,\$[1]}, x_{3,\$[3]}, \xi_{1,\$[1]}, \xi_{1,\$[3]}, \xi_{2,\$[1]}, \xi_{2,\$[3]}, \xi_{3,\$[1]}, \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\pi_{1,\$[1]} + p_{1,\$[3]}\pi_{1,\$[3]} + p_{2,\$[1]}\pi_{2,\$[1]} + p_{2,\$[3]}\pi_{2,\$[3]} + p_{3,\$[1]}\pi_{3,\$[1]} +$$
$$p_{3,\$[3]}\pi_{3,\$[3]} - \pi_{1,\$[3]}\xi_{1,\$[1]} + x_{1,\$[1]}\xi_{1,\$[1]} + x_{1,\$[3]}\xi_{1,\$[3]} - \pi_{2,\$[3]}\xi_{2,\$[1]} +$$
$$x_{2,\$[1]}\xi_{2,\$[1]} + x_{2,\$[3]}\xi_{2,\$[3]} - \pi_{3,\$[3]}\xi_{3,\$[1]} + x_{3,\$[1]}\xi_{3,\$[1]} + x_{3,\$[3]}\xi_{3,\$[3]}, 1,$$
$$p_{1,1}\pi_{1,\$[1]} + p_{1,1}\pi_{1,\$[3]} + p_{2,1}\pi_{2,\$[1]} + p_{2,1}\pi_{2,\$[3]} + p_{3,1}\pi_{3,\$[1]} + p_{3,1}\pi_{3,\$[3]} + (1-T_1)p_{1,2}x_{1,2} +$$
$$(-1+T_1)p_{1,\$[1]}x_{1,2} + \frac{(-1+T_1)p_{1,4}x_{1,4}}{T_1} + \frac{(1-T_1)p_{1,\$[3]}x_{1,4}}{T_1} + x_{1,1}\xi_{1,\$[1]} +$$
$$x_{1,1}\xi_{1,\$[3]} + x_{2,1}\xi_{2,\$[1]} + x_{2,1}\xi_{2,\$[3]} + x_{3,1}\xi_{3,\$[1]} + x_{3,1}\xi_{3,\$[3]}, \in\text{Series}[0]\Big\}$$

» EZip3 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[1]}, p_{1,\$[3]}, p_{2,\$[1]}, p_{2,\$[3]}, p_{3,\$[1]}, p_{3,\$[3]}, \pi_{1,\$[1]}, \pi_{1,\$[3]}, \pi_{2,\$[1]}, \pi_{2,\$[3]}, \pi_{3,\$[1]}, \pi_{3,\$[3]},$$
$$x_{1,\$[1]}, x_{1,\$[3]}, x_{2,\$[1]}, x_{2,\$[3]}, x_{3,\$[1]}, x_{3,\$[3]}, \xi_{1,\$[1]}, \xi_{1,\$[3]}, \xi_{2,\$[1]}, \xi_{2,\$[3]}, \xi_{3,\$[1]}, \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\pi_{1,\$[1]} + p_{1,\$[3]}\pi_{1,\$[3]} + p_{2,\$[1]}\pi_{2,\$[1]} + p_{2,\$[3]}\pi_{2,\$[3]} + p_{3,\$[1]}\pi_{3,\$[1]} +$$
$$p_{3,\$[3]}\pi_{3,\$[3]} - \pi_{1,\$[3]}\xi_{1,\$[1]} + x_{1,\$[1]}\xi_{1,\$[1]} + x_{1,\$[3]}\xi_{1,\$[3]} - \pi_{2,\$[3]}\xi_{2,\$[1]} +$$
$$x_{2,\$[1]}\xi_{2,\$[1]} + x_{2,\$[3]}\xi_{2,\$[3]} - \pi_{3,\$[3]}\xi_{3,\$[1]} + x_{3,\$[1]}\xi_{3,\$[1]} + x_{3,\$[3]}\xi_{3,\$[3]}, 1,$$
$$(-1+T_1)p_{1,1}x_{1,2} + (1-T_1)p_{1,2}x_{1,2} + \frac{(1-T_1)p_{1,1}x_{1,4}}{T_1} + \frac{(-1+T_1)p_{1,4}x_{1,4}}{T_1}, \in\text{Series}[0]\Big\}$$

» EZip called with {vs,$\mathcal{F}$,$\mathcal{E}$} =

$$\Big\{\{p_{1,\$[2]}, p_{1,\$[4]}, p_{2,\$[2]}, p_{2,\$[4]}, p_{3,\$[2]}, p_{3,\$[4]}, \pi_{1,\$[2]}, \pi_{1,\$[4]}, \pi_{2,\$[2]}, \pi_{2,\$[4]}, \pi_{3,\$[2]}, \pi_{3,\$[4]},$$
$$x_{1,\$[2]}, x_{1,\$[4]}, x_{2,\$[2]}, x_{2,\$[4]}, x_{3,\$[2]}, x_{3,\$[4]}, \xi_{1,\$[2]}, \xi_{1,\$[4]}, \xi_{2,\$[2]}, \xi_{2,\$[4]}, \xi_{3,\$[2]}, \xi_{3,\$[4]}\},$$
$$p_{1,\$[2]}\,\pi_{1,\$[2]} + p_{1,\$[4]}\,\pi_{1,\$[4]} + p_{2,\$[2]}\,\pi_{2,\$[2]} + p_{2,\$[4]}\,\pi_{2,\$[2]} + p_{3,\$[2]}\,\pi_{3,\$[2]} + p_{3,\$[4]}\,\pi_{3,\$[4]} +$$
$$x_{1,\$[2]}\,\xi_{1,\$[2]} + x_{1,\$[4]}\,\xi_{1,\$[4]} + x_{2,\$[2]}\,\xi_{2,\$[2]} + x_{2,\$[4]}\,\xi_{2,\$[4]} + x_{3,\$[2]}\,\xi_{3,\$[2]} + x_{3,\$[4]}\,\xi_{3,\$[4]},$$
$$\mathbb{E}\Big[1,\ p_{1,2}\,(\pi_{1,\$[2]} + \pi_{1,\$[4]}) + p_{2,2}\,(\pi_{2,\$[2]} + \pi_{2,\$[4]}) + p_{3,2}\,(\pi_{3,\$[2]} + \pi_{3,\$[4]}) + (-1+T_1)\,p_{1,1}\,x_{1,\$[2]} + (1-T_1)$$
$$p_{1,\$[2]}\,x_{1,\$[2]} + \frac{(1-T_1)\,p_{1,1}\,x_{1,\$[4]}}{T_1} + \frac{(-1+T_1)\,p_{1,\$[4]}\,x_{1,\$[4]}}{T_1} - \pi_{1,\$[4]}\,\xi_{1,\$[2]} + x_{1,2}\,(\xi_{1,\$[2]} + \xi_{1,\$[4]}) -$$
$$\pi_{2,\$[4]}\,\xi_{2,\$[2]} + x_{2,2}\,(\xi_{2,\$[2]} + \xi_{2,\$[4]}) - \pi_{3,\$[4]}\,\xi_{3,\$[2]} + x_{3,2}\,(\xi_{3,\$[2]} + \xi_{3,\$[4]}),\ \in\text{Series}[0]\Big]\Big\}$$

» EZip1 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[2]}, p_{1,\$[4]}, p_{2,\$[2]}, p_{2,\$[4]}, p_{3,\$[2]}, p_{3,\$[4]}, \pi_{1,\$[2]}, \pi_{1,\$[4]}, \pi_{2,\$[2]}, \pi_{2,\$[4]}, \pi_{3,\$[2]}, \pi_{3,\$[4]},$$
$$x_{1,\$[2]}, x_{1,\$[4]}, x_{2,\$[2]}, x_{2,\$[4]}, x_{3,\$[2]}, x_{3,\$[4]}, \xi_{1,\$[2]}, \xi_{1,\$[4]}, \xi_{2,\$[2]}, \xi_{2,\$[4]}, \xi_{3,\$[2]}, \xi_{3,\$[4]}\},$$
$$p_{1,\$[2]}\,\pi_{1,\$[2]} + p_{1,\$[4]}\,\pi_{1,\$[4]} + p_{2,\$[2]}\,\pi_{2,\$[2]} + p_{2,\$[4]}\,\pi_{2,\$[4]} + p_{3,\$[2]}\,\pi_{3,\$[2]} + p_{3,\$[4]}\,\pi_{3,\$[4]} +$$
$$x_{1,\$[2]}\,\xi_{1,\$[2]} + x_{1,\$[4]}\,\xi_{1,\$[4]} + x_{2,\$[2]}\,\xi_{2,\$[2]} + x_{2,\$[4]}\,\xi_{2,\$[4]} + x_{3,\$[2]}\,\xi_{3,\$[2]} + x_{3,\$[4]}\,\xi_{3,\$[4]},$$
$$1,\ p_{1,2}\,(\pi_{1,\$[2]} + \pi_{1,\$[4]}) + p_{2,2}\,(\pi_{2,\$[2]} + \pi_{2,\$[4]}) + p_{3,2}\,(\pi_{3,\$[2]} + \pi_{3,\$[4]}) +$$
$$(-1+T_1)\,p_{1,1}\,x_{1,\$[2]} + (1-T_1)\,p_{1,\$[2]}\,x_{1,\$[2]} + \frac{(1-T_1)\,p_{1,1}\,x_{1,\$[4]}}{T_1} +$$
$$\frac{(-1+T_1)\,p_{1,\$[4]}\,x_{1,\$[4]}}{T_1} - \pi_{1,\$[4]}\,\xi_{1,\$[2]} + x_{1,2}\,(\xi_{1,\$[2]} + \xi_{1,\$[4]}) - \pi_{2,\$[4]}\,\xi_{2,\$[2]} +$$
$$x_{2,2}\,(\xi_{2,\$[2]} + \xi_{2,\$[4]}) - \pi_{3,\$[4]}\,\xi_{3,\$[2]} + x_{3,2}\,(\xi_{3,\$[2]} + \xi_{3,\$[4]}),\ \in\text{Series}[0]\Big\}$$

» EZip2 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[2]}, p_{1,\$[4]}, p_{2,\$[2]}, p_{2,\$[4]}, p_{3,\$[2]}, p_{3,\$[4]}, \pi_{1,\$[2]}, \pi_{1,\$[4]}, \pi_{2,\$[2]}, \pi_{2,\$[4]}, \pi_{3,\$[2]}, \pi_{3,\$[4]},$$
$$x_{1,\$[2]}, x_{1,\$[4]}, x_{2,\$[2]}, x_{2,\$[4]}, x_{3,\$[2]}, x_{3,\$[4]}, \xi_{1,\$[2]}, \xi_{1,\$[4]}, \xi_{2,\$[2]}, \xi_{2,\$[4]}, \xi_{3,\$[2]}, \xi_{3,\$[4]}\},$$
$$p_{1,\$[2]}\,\pi_{1,\$[2]} + (-1+T_1)\,p_{1,\$[2]}\,\pi_{1,\$[4]} + p_{1,\$[4]}\,\pi_{1,\$[4]} + p_{2,\$[2]}\,\pi_{2,\$[2]} + p_{2,\$[4]}\,\pi_{2,\$[4]} + p_{3,\$[2]}\,\pi_{3,\$[2]} +$$
$$p_{3,\$[4]}\,\pi_{3,\$[4]} + (1-T_1)\,p_{1,\$[2]}\,x_{1,\$[2]} + \frac{\left(1-2T_1+T_1^2\right)p_{1,\$[2]}\,x_{1,\$[4]}}{T_1} + \frac{(-1+T_1)\,p_{1,\$[4]}\,x_{1,\$[4]}}{T_1} -$$
$$\pi_{1,\$[4]}\,\xi_{1,\$[2]} + x_{1,\$[2]}\,\xi_{1,\$[2]} + \frac{(1-T_1)\,x_{1,\$[4]}\,\xi_{1,\$[2]}}{T_1} + x_{1,\$[4]}\,\xi_{1,\$[4]} - \pi_{2,\$[4]}\,\xi_{2,\$[2]} + x_{2,\$[2]}\,\xi_{2,\$[2]} +$$
$$x_{2,\$[4]}\,\xi_{2,\$[4]} - \pi_{3,\$[4]}\,\xi_{3,\$[2]} + x_{3,\$[2]}\,\xi_{3,\$[2]} + x_{3,\$[4]}\,\xi_{3,\$[4]},\ 1,\ p_{1,2}\,\pi_{1,\$[2]} + p_{1,2}\,\pi_{1,\$[4]} +$$
$$p_{2,2}\,\pi_{2,\$[2]} + p_{2,2}\,\pi_{2,\$[4]} + p_{3,2}\,\pi_{3,\$[2]} + p_{3,2}\,\pi_{3,\$[4]} + (-1+T_1)\,p_{1,1}\,x_{1,\$[2]} + \frac{(1-T_1)\,p_{1,1}\,x_{1,\$[4]}}{T_1} +$$
$$x_{1,2}\,\xi_{1,\$[2]} + x_{1,2}\,\xi_{1,\$[4]} + x_{2,2}\,\xi_{2,\$[2]} + x_{2,2}\,\xi_{2,\$[4]} + x_{3,2}\,\xi_{3,\$[2]} + x_{3,2}\,\xi_{3,\$[4]},\ \in\text{Series}[0]\Big\}$$

» EZip3 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[2]}, p_{1,\$[4]}, p_{2,\$[2]}, p_{2,\$[4]}, p_{3,\$[2]}, p_{3,\$[4]}, \pi_{1,\$[2]}, \pi_{1,\$[4]}, \pi_{2,\$[2]}, \pi_{2,\$[4]}, \pi_{3,\$[2]}, \pi_{3,\$[4]},$$
$$x_{1,\$[2]}, x_{1,\$[4]}, x_{2,\$[2]}, x_{2,\$[4]}, x_{3,\$[2]}, x_{3,\$[4]}, \xi_{1,\$[2]}, \xi_{1,\$[4]}, \xi_{2,\$[2]}, \xi_{2,\$[4]}, \xi_{3,\$[2]}, \xi_{3,\$[4]}\},$$
$$p_{1,\$[2]}\,\pi_{1,\$[2]} + (-1+T_1)\,p_{1,\$[2]}\,\pi_{1,\$[4]} + p_{1,\$[4]}\,\pi_{1,\$[4]} + p_{2,\$[2]}\,\pi_{2,\$[2]} + p_{2,\$[4]}\,\pi_{2,\$[4]} + p_{3,\$[2]}\,\pi_{3,\$[2]} +$$
$$p_{3,\$[4]}\,\pi_{3,\$[4]} + (1-T_1)\,p_{1,\$[2]}\,x_{1,\$[2]} + \frac{\left(1-2T_1+T_1^2\right)p_{1,\$[2]}\,x_{1,\$[4]}}{T_1} + \frac{(-1+T_1)\,p_{1,\$[4]}\,x_{1,\$[4]}}{T_1} -$$
$$\pi_{1,\$[4]}\,\xi_{1,\$[2]} + x_{1,\$[2]}\,\xi_{1,\$[2]} + \frac{(1-T_1)\,x_{1,\$[4]}\,\xi_{1,\$[2]}}{T_1} + x_{1,\$[4]}\,\xi_{1,\$[4]} - \pi_{2,\$[4]}\,\xi_{2,\$[2]} +$$
$$x_{2,\$[2]}\,\xi_{2,\$[2]} + x_{2,\$[4]}\,\xi_{2,\$[4]} - \pi_{3,\$[4]}\,\xi_{3,\$[2]} + x_{3,\$[2]}\,\xi_{3,\$[2]} + x_{3,\$[4]}\,\xi_{3,\$[4]},\ 1,\ 0,\ \in\text{Series}[0]\Big\}$$

Out[•]=

$$\mathbb{E}_{\{\}\to\{1,2\}}[1,\ 0,\ \in\text{Series}[0]]$$

In[•]:=
```
$k = 1;
R[1,2] Rbar[3,4] // m[1,3→1] // m[2,4→2]
```

» $\mathbb{E}\Big[1,\ (-1+T_1)\ (-p_{1,2}+p_{1,\$[1]})\ x_{1,2}+\left(-1+\frac{1}{T_1}\right)\ (-p_{1,4}+p_{1,\$[3]})\ x_{1,4},$

$$\in\text{Series}\Big[0,\ \frac{1}{2}\ (1-3\,T_1)\ p_{1,2}\,p_{1,\$[1]}\,x_{1,2}^2+\frac{1}{2}\ (-1+T_1)\ p_{1,\$[1]}^2\,x_{1,2}^2-\frac{(-1-T_1)\ p_{1,4}\,p_{1,\$[3]}\,x_{1,4}^2}{2\,T_1^3}-$$

$$\frac{(1-T_1)\ p_{1,\$[3]}^2\,x_{1,4}^2}{2\,T_1^3}+p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,\$[1]}-\frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}-\frac{(-1+T_1)\ p_{1,\$[3]}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}\Big]\Big]$$

» $\mathbb{E}[1,\ p_{1,1}\ (\pi_{1,\$[1]}+\pi_{1,\$[3]})+p_{2,1}\ (\pi_{2,\$[1]}+\pi_{2,\$[3]})+$

$p_{3,1}\ (\pi_{3,\$[1]}+\pi_{3,\$[3]})-\pi_{1,\$[3]}\ \xi_{1,\$[1]}+x_{1,1}\ (\xi_{1,\$[1]}+\xi_{1,\$[3]})-\pi_{2,\$[3]}\ \xi_{2,\$[1]}+$

$x_{2,1}\ (\xi_{2,\$[1]}+\xi_{2,\$[3]})-\pi_{3,\$[3]}\ \xi_{3,\$[1]}+x_{3,1}\ (\xi_{3,\$[1]}+\xi_{3,\$[3]}),\ \in\text{Series}[0,\ 0]]$

» $\mathbb{E}\Big[1,\ p_{1,1}\ (\pi_{1,\$[1]}+\pi_{1,\$[3]})+p_{2,1}\ (\pi_{2,\$[1]}+\pi_{2,\$[3]})+p_{3,1}\ (\pi_{3,\$[1]}+\pi_{3,\$[3]})+$

$(-1+T_1)\ (-p_{1,2}+p_{1,\$[1]})\ x_{1,2}+\left(-1+\frac{1}{T_1}\right)\ (-p_{1,4}+p_{1,\$[3]})\ x_{1,4}-\pi_{1,\$[3]}\ \xi_{1,\$[1]}+$

$x_{1,1}\ (\xi_{1,\$[1]}+\xi_{1,\$[3]})-\pi_{2,\$[3]}\ \xi_{2,\$[1]}+x_{2,1}\ (\xi_{2,\$[1]}+\xi_{2,\$[3]})-\pi_{3,\$[3]}\ \xi_{3,\$[1]}+x_{3,1}\ (\xi_{3,\$[1]}+\xi_{3,\$[3]}),$

$$\in\text{Series}\Big[0,\ \frac{1}{2}\ (1-3\,T_1)\ p_{1,2}\,p_{1,\$[1]}\,x_{1,2}^2+\frac{1}{2}\ (-1+T_1)\ p_{1,\$[1]}^2\,x_{1,2}^2-\frac{(-1-T_1)\ p_{1,4}\,p_{1,\$[3]}\,x_{1,4}^2}{2\,T_1^3}-$$

$$\frac{(1-T_1)\ p_{1,\$[3]}^2\,x_{1,4}^2}{2\,T_1^3}+p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,\$[1]}-\frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}-\frac{(-1+T_1)\ p_{1,\$[3]}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}\Big]\Big]$$

» EZip called with {vs,$\mathcal{F}$,$\mathcal{E}$} =

$$\Big\{\{p_{1,\$[1]},\ p_{1,\$[3]},\ p_{2,\$[1]},\ p_{2,\$[3]},\ p_{3,\$[1]},\ p_{3,\$[3]},\ \pi_{1,\$[1]},\ \pi_{1,\$[3]},\ \pi_{2,\$[1]},\ \pi_{2,\$[3]},\ \pi_{3,\$[1]},\ \pi_{3,\$[3]},$$

$$x_{1,\$[1]},\ x_{1,\$[3]},\ x_{2,\$[1]},\ x_{2,\$[3]},\ x_{3,\$[1]},\ x_{3,\$[3]},\ \xi_{1,\$[1]},\ \xi_{1,\$[3]},\ \xi_{2,\$[1]},\ \xi_{2,\$[3]},\ \xi_{3,\$[1]},\ \xi_{3,\$[3]}\},$$

$$p_{1,\$[1]}\,\pi_{1,\$[1]}+p_{1,\$[3]}\,\pi_{1,\$[3]}+p_{2,\$[1]}\,\pi_{2,\$[1]}+p_{2,\$[3]}\,\pi_{2,\$[3]}+p_{3,\$[1]}\,\pi_{3,\$[1]}+p_{3,\$[3]}\,\pi_{3,\$[3]}+$$

$$x_{1,\$[1]}\,\xi_{1,\$[1]}+x_{1,\$[3]}\,\xi_{1,\$[3]}+x_{2,\$[1]}\,\xi_{2,\$[1]}+x_{2,\$[3]}\,\xi_{2,\$[3]}+x_{3,\$[1]}\,\xi_{3,\$[1]}+x_{3,\$[3]}\,\xi_{3,\$[3]},$$

$\mathbb{E}\Big[1,\ p_{1,1}\ (\pi_{1,\$[1]}+\pi_{1,\$[3]})+p_{2,1}\ (\pi_{2,\$[1]}+\pi_{2,\$[3]})+p_{3,1}\ (\pi_{3,\$[1]}+\pi_{3,\$[3]})+$

$(-1+T_1)\ (-p_{1,2}+p_{1,\$[1]})\ x_{1,2}+\left(-1+\frac{1}{T_1}\right)\ (-p_{1,4}+p_{1,\$[3]})\ x_{1,4}-\pi_{1,\$[3]}\ \xi_{1,\$[1]}+$

$x_{1,1}\ (\xi_{1,\$[1]}+\xi_{1,\$[3]})-\pi_{2,\$[3]}\ \xi_{2,\$[1]}+x_{2,1}\ (\xi_{2,\$[1]}+\xi_{2,\$[3]})-\pi_{3,\$[3]}\ \xi_{3,\$[1]}+x_{3,1}\ (\xi_{3,\$[1]}+\xi_{3,\$[3]}),$

$$\in\text{Series}\Big[0,\ \frac{1}{2}\ (1-3\,T_1)\ p_{1,2}\,p_{1,\$[1]}\,x_{1,2}^2+\frac{1}{2}\ (-1+T_1)\ p_{1,\$[1]}^2\,x_{1,2}^2-\frac{(-1-T_1)\ p_{1,4}\,p_{1,\$[3]}\,x_{1,4}^2}{2\,T_1^3}-$$

$$\frac{(1-T_1)\ p_{1,\$[3]}^2\,x_{1,4}^2}{2\,T_1^3}+p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,\$[1]}-\frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}-\frac{(-1+T_1)\ p_{1,\$[3]}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}\Big]\Big]\Big\}$$

» EZip1 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\left\{\{p_{1,\$[1]},\ p_{1,\$[3]},\ p_{2,\$[1]},\ p_{2,\$[3]},\ p_{3,\$[1]},\ p_{3,\$[3]},\ \pi_{1,\$[1]},\ \pi_{1,\$[3]},\ \pi_{2,\$[1]},\ \pi_{2,\$[3]},\ \pi_{3,\$[1]},\ \pi_{3,\$[3]},\right.$$
$$x_{1,\$[1]},\ x_{1,\$[3]},\ x_{2,\$[1]},\ x_{2,\$[3]},\ x_{3,\$[1]},\ x_{3,\$[3]},\ \xi_{1,\$[1]},\ \xi_{1,\$[3]},\ \xi_{2,\$[1]},\ \xi_{2,\$[3]},\ \xi_{3,\$[1]},\ \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\,\pi_{1,\$[1]} + p_{1,\$[3]}\,\pi_{1,\$[3]} + p_{2,\$[1]}\,\pi_{2,\$[1]} + p_{2,\$[3]}\,\pi_{2,\$[3]} + p_{3,\$[1]}\,\pi_{3,\$[1]} + p_{3,\$[3]}\,\pi_{3,\$[3]} +$$
$$x_{1,\$[1]}\,\xi_{1,\$[1]} + x_{1,\$[3]}\,\xi_{1,\$[3]} + x_{2,\$[1]}\,\xi_{2,\$[1]} + x_{2,\$[3]}\,\xi_{2,\$[3]} + x_{3,\$[1]}\,\xi_{3,\$[1]} + x_{3,\$[3]}\,\xi_{3,\$[3]},\ 1,$$
$$p_{1,1}\,(\pi_{1,\$[1]} + \pi_{1,\$[3]}) + p_{2,1}\,(\pi_{2,\$[1]} + \pi_{2,\$[3]}) + p_{3,1}\,(\pi_{3,\$[1]} + \pi_{3,\$[3]}) + (-1 + T_1)\,(-p_{1,2} + p_{1,\$[1]})\,x_{1,2} +$$
$$\left(-1 + \frac{1}{T_1}\right)(-p_{1,4} + p_{1,\$[3]})\,x_{1,4} - \pi_{1,\$[3]}\,\xi_{1,\$[1]} + x_{1,1}\,(\xi_{1,\$[1]} + \xi_{1,\$[3]}) -$$
$$\pi_{2,\$[3]}\,\xi_{2,\$[1]} + x_{2,1}\,(\xi_{2,\$[1]} + \xi_{2,\$[3]}) - \pi_{3,\$[3]}\,\xi_{3,\$[1]} + x_{3,1}\,(\xi_{3,\$[1]} + \xi_{3,\$[3]}),$$
$$\epsilon\text{Series}\left[0,\ \frac{1}{2}\,(1 - 3\,T_1)\,p_{1,2}\,p_{1,\$[1]}\,x_{1,2}^2 + \frac{1}{2}\,(-1 + T_1)\,p_{1,\$[1]}^2\,x_{1,2}^2 - \frac{(-1 - T_1)\,p_{1,4}\,p_{1,\$[3]}\,x_{1,4}^2}{2\,T_1^3} -\right.$$
$$\left.\left.\frac{(1 - T_1)\,p_{1,\$[3]}^2\,x_{1,4}^2}{2\,T_1^3} + p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,\$[1]} - \frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2} - \frac{(-1 + T_1)\,p_{1,\$[3]}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}\right]\right\}$$

» EZip2 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\left\{\{p_{1,\$[1]},\ p_{1,\$[3]},\ p_{2,\$[1]},\ p_{2,\$[3]},\ p_{3,\$[1]},\ p_{3,\$[3]},\ \pi_{1,\$[1]},\ \pi_{1,\$[3]},\ \pi_{2,\$[1]},\ \pi_{2,\$[3]},\ \pi_{3,\$[1]},\ \pi_{3,\$[3]},\right.$$
$$x_{1,\$[1]},\ x_{1,\$[3]},\ x_{2,\$[1]},\ x_{2,\$[3]},\ x_{3,\$[1]},\ x_{3,\$[3]},\ \xi_{1,\$[1]},\ \xi_{1,\$[3]},\ \xi_{2,\$[1]},\ \xi_{2,\$[3]},\ \xi_{3,\$[1]},\ \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\,\pi_{1,\$[1]} + p_{1,\$[3]}\,\pi_{1,\$[3]} + p_{2,\$[1]}\,\pi_{2,\$[1]} + p_{2,\$[3]}\,\pi_{2,\$[3]} + p_{3,\$[1]}\,\pi_{3,\$[1]} + p_{3,\$[3]}\,\pi_{3,\$[3]} -$$
$$\pi_{1,\$[3]}\,\xi_{1,\$[1]} + x_{1,\$[1]}\,\xi_{1,\$[1]} + x_{1,\$[3]}\,\xi_{1,\$[3]} - \pi_{2,\$[3]}\,\xi_{2,\$[1]} + x_{2,\$[1]}\,\xi_{2,\$[1]} + x_{2,\$[3]}\,\xi_{2,\$[3]} -$$
$$\pi_{3,\$[3]}\,\xi_{3,\$[1]} + x_{3,\$[1]}\,\xi_{3,\$[1]} + x_{3,\$[3]}\,\xi_{3,\$[3]},\ 1,\ p_{1,1}\,\pi_{1,\$[1]} + p_{1,1}\,\pi_{1,\$[3]} + p_{2,1}\,\pi_{2,\$[1]} +$$
$$p_{2,1}\,\pi_{2,\$[3]} + p_{3,1}\,\pi_{3,\$[1]} + p_{3,1}\,\pi_{3,\$[3]} + (1 - T_1)\,p_{1,2}\,x_{1,2} + (-1 + T_1)\,p_{1,\$[1]}\,x_{1,2} + \frac{(-1 + T_1)\,p_{1,4}\,x_{1,4}}{T_1} +$$
$$\frac{(1 - T_1)\,p_{1,\$[3]}\,x_{1,4}}{T_1} + x_{1,1}\,\xi_{1,\$[1]} + x_{1,1}\,\xi_{1,\$[3]} + x_{2,1}\,\xi_{2,\$[1]} + x_{2,1}\,\xi_{2,\$[3]} + x_{3,1}\,\xi_{3,\$[1]} + x_{3,1}\,\xi_{3,\$[3]},$$
$$\epsilon\text{Series}\left[0,\ \frac{1}{2}\,(1 - 3\,T_1)\,p_{1,2}\,p_{1,\$[1]}\,x_{1,2}^2 + \frac{1}{2}\,(-1 + T_1)\,p_{1,\$[1]}^2\,x_{1,2}^2 - \frac{(-1 - T_1)\,p_{1,4}\,p_{1,\$[3]}\,x_{1,4}^2}{2\,T_1^3} -\right.$$
$$\left.\left.\frac{(1 - T_1)\,p_{1,\$[3]}^2\,x_{1,4}^2}{2\,T_1^3} + p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,\$[1]} - \frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2} - \frac{(-1 + T_1)\,p_{1,\$[3]}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}\right]\right\}$$

» EZip3 called with {vs,$\mathcal{F}$,ω,Q,P} =

$$\Big\{\{p_{1,\$[1]},\ p_{1,\$[3]},\ p_{2,\$[1]},\ p_{2,\$[3]},\ p_{3,\$[1]},\ p_{3,\$[3]},\ \pi_{1,\$[1]},\ \pi_{1,\$[3]},\ \pi_{2,\$[1]},\ \pi_{2,\$[3]},\ \pi_{3,\$[1]},\ \pi_{3,\$[3]},$$
$$x_{1,\$[1]},\ x_{1,\$[3]},\ x_{2,\$[1]},\ x_{2,\$[3]},\ x_{3,\$[1]},\ x_{3,\$[3]},\ \xi_{1,\$[1]},\ \xi_{1,\$[3]},\ \xi_{2,\$[1]},\ \xi_{2,\$[3]},\ \xi_{3,\$[1]},\ \xi_{3,\$[3]}\},$$
$$p_{1,\$[1]}\,\pi_{1,\$[1]} + p_{1,\$[3]}\,\pi_{1,\$[3]} + p_{2,\$[1]}\,\pi_{2,\$[1]} + p_{2,\$[3]}\,\pi_{2,\$[3]} + p_{3,\$[1]}\,\pi_{3,\$[1]} +$$
$$p_{3,\$[3]}\,\pi_{3,\$[3]} - \pi_{1,\$[3]}\,\xi_{1,\$[1]} + x_{1,\$[1]}\,\xi_{1,\$[1]} + x_{1,\$[3]}\,\xi_{1,\$[3]} - \pi_{2,\$[3]}\,\xi_{2,\$[1]} +$$
$$x_{2,\$[1]}\,\xi_{2,\$[1]} + x_{2,\$[3]}\,\xi_{2,\$[3]} - \pi_{3,\$[3]}\,\xi_{3,\$[1]} + x_{3,\$[1]}\,\xi_{3,\$[1]} + x_{3,\$[3]}\,\xi_{3,\$[3]},$$
$$1,\ (-1+T_1)\,p_{1,1}\,x_{1,2} + (1-T_1)\,p_{1,2}\,x_{1,2} + \frac{(1-T_1)\,p_{1,1}\,x_{1,4}}{T_1} + \frac{(-1+T_1)\,p_{1,4}\,x_{1,4}}{T_1},$$
$$\epsilon\text{Series}\Big[0,\ p_{1,1}\,p_{1,2}\,x_{1,1}\,x_{1,2} + p_{1,2}\,p_{1,\$[1]}\,x_{1,1}\,x_{1,2} + \frac{1}{2}(-1+T_1)\,p_{1,1}^2\,x_{1,2}^2 + \frac{1}{2}(1-3T_1)\,p_{1,1}\,p_{1,2}\,x_{1,2}^2 +$$
$$(-1+T_1)\,p_{1,1}\,p_{1,\$[1]}\,x_{1,2}^2 + \frac{1}{2}(1-3T_1)\,p_{1,2}\,p_{1,\$[1]}\,x_{1,2}^2 + \frac{1}{2}(-1+T_1)\,p_{1,\$[1]}^2\,x_{1,2}^2 + \frac{(1-T_1)\,p_{1,1}^2\,x_{1,1}\,x_{1,4}}{T_1^2} -$$
$$\frac{p_{1,1}\,p_{1,4}\,x_{1,1}\,x_{1,4}}{T_1^2} + \frac{(2-2T_1)\,p_{1,1}\,p_{1,\$[3]}\,x_{1,1}\,x_{1,4}}{T_1^2} - \frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,1}\,x_{1,4}}{T_1^2} + \frac{(1-T_1)\,p_{1,\$[3]}^2\,x_{1,1}\,x_{1,4}}{T_1^2} +$$
$$\frac{(-1+T_1)\,p_{1,1}\,p_{1,2}\,x_{1,2}\,x_{1,4}}{T_1} + \frac{(-1+T_1)\,p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,4}}{T_1} + \frac{(-1+T_1)\,p_{1,1}^2\,x_{1,4}^2}{2\,T_1^3} +$$
$$\frac{(1+T_1)\,p_{1,1}\,p_{1,4}\,x_{1,4}^2}{2\,T_1^3} + \frac{(-1+T_1)\,p_{1,1}\,p_{1,\$[3]}\,x_{1,4}^2}{T_1^3} + \frac{(1+T_1)\,p_{1,4}\,p_{1,\$[3]}\,x_{1,4}^2}{2\,T_1^3} + \frac{(-1+T_1)\,p_{1,\$[3]}^2\,x_{1,4}^2}{2\,T_1^3} +$$
$$p_{1,1}\,p_{1,2}\,x_{1,2}\,x_{1,\$[1]} + p_{1,2}\,p_{1,\$[1]}\,x_{1,2}\,x_{1,\$[1]} + \frac{(1-T_1)\,p_{1,1}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2} - \frac{p_{1,1}\,p_{1,4}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2} +$$
$$\frac{(2-2T_1)\,p_{1,1}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2} - \frac{p_{1,4}\,p_{1,\$[3]}\,x_{1,4}\,x_{1,\$[3]}}{T_1^2} + \frac{(1-T_1)\,p_{1,\$[3]}^2\,x_{1,4}\,x_{1,\$[3]}}{T_1^2}\Big]\Big\}$$

Out[•]=

$Aborted

In[•]:= **$k**

Out[•]=

1

In[•]:= **ϵSeries[0]**

Out[•]=

ϵSeries[0, 0]

In[•]:= **$m_{1,3\to 1}$**

Out[•]=

$$\mathbb{E}_{\{1,3\}\to\{1\}}[1,\ p_{1,1}\,(\pi_{1,1}+\pi_{1,3}) + p_{2,1}\,(\pi_{2,1}+\pi_{2,3}) + p_{3,1}\,(\pi_{3,1}+\pi_{3,3}) - \pi_{1,3}\,\xi_{1,1} +$$
$$x_{1,1}\,(\xi_{1,1}+\xi_{1,3}) - \pi_{2,3}\,\xi_{2,1} + x_{2,1}\,(\xi_{2,1}+\xi_{2,3}) - \pi_{3,3}\,\xi_{3,1} + x_{3,1}\,(\xi_{3,1}+\xi_{3,3}),\ \epsilon\text{Series}[0,0]]$$

In[•]:= **$\mathbb{E}_{\{1,3\}\to\{1\}}$[1, $p_{1,1}\,(\pi_{1,1}+\pi_{1,3}) + p_{2,1}\,(\pi_{2,1}+\pi_{2,3}) + p_{3,1}\,(\pi_{3,1}+\pi_{3,3}) - \pi_{1,3}\,\xi_{1,1} +$ $x_{1,1}\,(\xi_{1,1}+\xi_{1,3}) - \pi_{2,3}\,\xi_{2,1} + x_{2,1}\,(\xi_{2,1}+\xi_{2,3}) - \pi_{3,3}\,\xi_{3,1} + x_{3,1}\,(\xi_{3,1}+\xi_{3,3})$, ϵSeries[0]]**

Out[•]=

$$\mathbb{E}_{\{1,3\}\to\{1\}}[1,\ p_{1,1}\,(\pi_{1,1}+\pi_{1,3}) + p_{2,1}\,(\pi_{2,1}+\pi_{2,3}) + p_{3,1}\,(\pi_{3,1}+\pi_{3,3}) - \pi_{1,3}\,\xi_{1,1} +$$
$$x_{1,1}\,(\xi_{1,1}+\xi_{1,3}) - \pi_{2,3}\,\xi_{2,1} + x_{2,1}\,(\xi_{2,1}+\xi_{2,3}) - \pi_{3,3}\,\xi_{3,1} + x_{3,1}\,(\xi_{3,1}+\xi_{3,3}),\ \epsilon\text{Series}[0,0]]$$

In[•]:=
```
?∈Series
```

Out[•]=

Symbol

Global`∈Series

UpValue Definitions

```
S1_∈Series ≡ S2_∈Series ^:= Length[S1] == Length[S2] && Inner[CF[#1] == CF[#2] &, S1, S2, And]

S1_∈Series + S2_∈Series ^:=
∈Series @@ Table[S1[[k]] + S2[[k]], {k, Min[Length[S1], Length[S2]]}]

S1_∈Series S2_∈Series ^:=
∈Series @@ Table[∑_{j=0}^{k} S1[[j + 1]] S2[[k - j + 1]], {k, 0, Min[Length[S1], Length[S2]] - 1}]

c_ S_∈Series ^:= (c #1 &) /@ S

∂_vs___ S_∈Series ^:= Function[s, ∂_vs s] /@ S
```

DownValue Definitions

```
∈Series[0] /; $k > 0 := ∈Series @@ Table[0, $k + 1]
```

Full Name Global`∈Series