In[110]:=

```
(* Define the variables *)
Clear[λ, μ, θ, p, z, g1, g2, π0, π11, π12]
```

```
π0 = 1 - ρ
π11 = (λ / (μ (1 - p) + (θ μ p) / (λ + θ))) π0
π12 = (λ p / ((1 - p) (λ + θ) + θ p)) π0;
```

```
(* Define the equations *)
eq1 = (λ + μ) g1[z] == λ z (π0 + g1[z]) + μ (1 - p) / z (g1[z] - z π11) + θ / z (g2[z] - z π12)
eq2 = g2[z] == g1[z] p μ / (θ + λ (1 - z))
```

```
(* Solve the equations *)
sol = Solve[{eq1, eq2}, {g1[z], g2[z]}]
```

```
simplifiedSolution = FullSimplify[sol]
```

Out[111]=

$$1 - \rho$$

Out[112]=

$$\frac{\lambda (1 - \rho)}{(1 - p) \mu + \frac{p\,\theta\,\mu}{\theta + \lambda}}$$

Out[114]=

$$(\lambda + \mu)\, g1[z] == \frac{(1 - p)\,\mu\left(-\frac{z\,\lambda\,(1-\rho)}{(1-p)\,\mu + \frac{p\,\theta\,\mu}{\theta+\lambda}} + g1[z]\right)}{z} + z\,\lambda\,(1 - \rho + g1[z]) + \frac{\theta\left(-\frac{p\,z\,\lambda\,(1-\rho)}{p\,\theta+(1-p)\,(\theta+\lambda)} + g2[z]\right)}{z}$$

Out[115]=

$$g2[z] == \frac{p\,\mu\,g1[z]}{\theta + (1 - z)\,\lambda}$$

Out[116]=

$$\left\{\left\{g1[z] \to \frac{z\left(-\theta - \lambda + z\,\lambda\right)\left(-\lambda + \lambda\,\rho\right)}{-z\,\theta\,\lambda - z\,\lambda^2 + z^2\,\lambda^2 + \theta\,\mu + \lambda\,\mu - p\,\lambda\,\mu - z\,\lambda\,\mu},\ g2[z] \to \frac{p\,z\,\mu\left(-\lambda + \lambda\,\rho\right)}{z\,\theta\,\lambda + z\,\lambda^2 - z^2\,\lambda^2 - \theta\,\mu - \lambda\,\mu + p\,\lambda\,\mu + z\,\lambda\,\mu}\right\}\right\}$$

Out[117]=

$$\left\{\left\{g1[z] \to -\frac{z\,\lambda\left(\theta + \lambda - z\,\lambda\right)(-1 + \rho)}{z^2\,\lambda^2 + \left(\theta + \lambda - p\,\lambda\right)\mu - z\,\lambda\,(\theta + \lambda + \mu)},\ g2[z] \to \frac{p\,z\,\lambda\,\mu\,(-1 + \rho)}{z\,\lambda\left(\theta + \lambda - z\,\lambda\right) - \theta\,\mu + (-1 + p + z)\,\lambda\,\mu}\right\}\right\}$$