$$y_n = \frac{\frac{k}{w}}{x_n - a} = \frac{\frac{k}{w}}{\sqrt{\frac{k}{p_n w}}} = \sqrt{\frac{k p_n}{w}}$$

$$x_0 = \sqrt{\frac{k}{p_0 w}} + a, \qquad y_0 = \sqrt{\frac{k p_0}{w}}$$

### Value of the pool

$$V_{p_n}(x_n, y_n) = p_n x_n + y_n, \qquad V_{p_n}(x_0, y_0) = p_n x_0 + y_0$$

$$V_{p_n}(x_n, y_n) = \sqrt{\frac{k p_n}{w}} + p_n a + \sqrt{\frac{k p_n}{w}} = 2\sqrt{\frac{k p_n}{w}} + p_n a$$

$$V_{p_n}(x_0, y_0) = p_n \sqrt{\frac{k}{p_0 w}} + p_n a + \sqrt{\frac{k p_0}{w}}$$

### Divergence loss

$$\delta = \frac{V_{p_n}(x_n, y_n) - V_{p_n}(x_0, y_0)}{V_{p_n}(x_0, y_0)} = \frac{2\sqrt{\frac{k p_n}{w}} + p_n a - p_n \sqrt{\frac{k}{p_0 w}} - p_n a - \sqrt{\frac{k p_0}{w}}}{p_n \sqrt{\frac{k}{p_0 w}} + p_n a + \sqrt{\frac{k p_0}{w}}}$$

$$p_0 = p_n = p_{mkt}$$