$$rate_{usd/uyu} \approx a(t) \times \frac{CPI_{uy}(t)}{CPI_{us}(t)}$$

$$a(t) = \frac{1}{t} \cdot \sum_{s=0}^{s=t} rate_{usd/uyu}(s) \times \frac{CPI_{us}(s)}{CPI_{uy}(s)}$$

$$relativeError(t) = \frac{rate_{usd/uyu}(t) - estimation_{PPP}(t)}{estimation_{PPP}(t)}$$

$$meanRelativeError(t) = expandingMean(relativeError(t))$$

$$stdRelativeError(t) = expandingStd(relativeError(t))$$

$$relativeErrorHigh(t) = meanRelativeError(t) + 2 \times stdRelativeError(t)$$

$$relativeErrorLow(t) = meanRelativeError(t) - 2 \times stdRelativeError(t)$$

$$estimationHigh(t) = estimation_{PPP}(t) \times (1 + relativeErrorHigh(t))$$

$$estimationLow(t) = estimation_{PPP}(t) \times (1 + relativeErrorLow(t))$$