Zbl 0583.33005
Lewanowicz, Stanisław
Recurrence relations for hypergeometric functions of unit argument.
Math. Comput. 45, 521-535 (1985).

The author shows that the generalized hypergeometric function

$$P_n := {}_{p+3}F_{p+2}\left(\begin{array}{c} -n, n+\lambda, a_p, 1 \\ \\ b_{p+2} \end{array} ; 1\right), \quad n \geq 0$$

satisfies a nonhomogeneous recurrence relation of order p, when ${}_{p+3}F_{p+2}(1)$ is balanced, and of order $p+1$ otherwise. For

$$U_n := ((c_{q+1})_n/(d_q)_n(n+\lambda)_n)_{q+2}F_{q+1}\left(\begin{array}{c} n+c_{q+2} \\ \\ n+d_q, 2n+\lambda+1 \end{array} ; 1\right), \quad n \geq 0$$

a homogeneous recurrence relation of order $q+1$ is given. The results are proved by using some general theorems due to *J. Wimp* [Math. Comput. 22, 363-373 (1968; Zbl 0186.104); ibid. 29, 577-581 (1975; Zbl 0304.33003)] and *Y. Luke* [The special functions and their approximations (1969; Zbl 0193.017)]. Some examples are given.   *S.L.Kalla*