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Candace Marie Kent* (cmkent@vcu.edu), Virginia Commonwealth University, Mathematics and Applied Mathematics, Oliver Hall, 1001 W. Main St., P.O. Box 84201, Richmond, VA 23221-2014, and **Hassan Sedaghat**. *Global Attractivity Results of a Quadratic-Linear Rational Difference Equation with Delay*.

We investigate the global behavior of positive solutions of the *quadratic-linear rational difference equation with arbitrary delay*,

$$x_{n+1} = \frac{Ax_n^2 + Bx_nx_{n-k} + Cx_{n-k}^2 + Dx_n + Ex_{n-k} + F}{\alpha x_n + \beta x_{n-k} + \gamma}.$$

Initial conditions are positive and all parameters are nonnegative with $A + B + C + D + E + F > 0$ and $\gamma > 0$. In three different cases, we determine sufficient conditions on the parameter values which guarantee the following:

- (i) the global attractivity of a unique positive fixed point (when $F \neq 0$);
- (ii) The asymptotic stability of the origin relative to an invariant set and the dramatic change in behavior of positive solutions outside that invariant set (when $F = 0$);
- (iii) the global asymptotic stability of an *extended* quadratic-linear rational equation

$$x_{n+1} = \frac{Ax_n^2 + Bx_nx_{n-k} + Cx_{n-k}^2 + D_1x_n + \cdots + D_qx_{n(q-1)}}{\alpha x_n + \beta x_{n-k} + \gamma}.$$

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