An interesting system of equations and a solution

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe an interesting system of equations and a solution.
The paper ends with "The End"

Introduction

In this paper, I describe an interesting system of equations and a solution.

An interesting system of equations

$$1 = a + b$$

$$P = aA + bB$$

$$1 = x + y$$

$$Q = xA + yB$$

$$Q = P(1 + \epsilon)$$

$$\frac{P}{1 + r_f + r_p} = a\frac{A}{1 + r_f + r_p + p_u} + b\frac{B}{1 + r_f + r_p + p_v}$$

$$\frac{Q}{1 + r_f + r_p + \delta} = x\frac{A(1 + \mathbf{A})}{1 + r_f + r_p + p_u + \alpha} + y\frac{B(1 + \mathbf{B})}{1 + r_f + r_p + p_v + \beta}$$

where

$$0 \leq a \leq 1, 0 \leq b \leq 1, 0 \leq x \leq 1, 0 \leq y \leq 1, \{a, b\} \neq \{x, y\}, \{b, a\} \neq \{x, y\},$$

$$0 < r_p < 1, p_u > 0, p_v > 0, A > 0, B > 0, Q > P > 0, \epsilon > 0, \delta > 0, A > 0, B > 0, \alpha > 0, \beta > 0$$

A solution to the above system of equations

$$a = \frac{1}{2}, b = \frac{1}{2}$$

$$P = \frac{3}{4}, A = \frac{1}{2}, B = 1$$

$$x = 0, y = 1$$

$$Q = 1$$

$$r_f = -2$$

$$r_p = \frac{1}{2}$$

$$p_u = 1, p_v = \frac{1}{4}$$

$$\epsilon = \frac{1}{3}, \delta = 1$$

$$\mathbf{A} = 1, \mathbf{B} = 1$$

$$\alpha = 1, \beta = \frac{5}{4}$$

The End