Collected papers
of
Lord Soumadeep Ghosh

Volume 4

The Ghosh equation of a single stock market operation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the Ghosh equation of a single stock market operation. The paper ends with "The End"

Introduction

How do you run a stock market? In this paper, I describe the Ghosh equation of a single stock market operation.

The Ghosh equation of a single stock market operation

The Ghosh equation of a single stock market operation is given by

$$\frac{S(t)V(t) + (S(t+1) - S(t))(V(t+1) - V(t))}{1 + r(t)} = \frac{S(t+1)V(t+1)}{1 + r(t+1)}$$

where
$S(t)$ is the price of the stock
$V(t)$ is the volume of trade of the stock
$r(t)$ is the risk-free rate in the single stock market

The End

The quadratic integral single stock market with quadratic risk-free rate

Soumadeep Ghosh

Kolkata, India

In this paper, I describe a quadratic integral solution to the Ghosh equation of single stock market operation. The paper ends with "The End"

Introduction

In a previous paper, I've described the Ghosh equation of single stock market operation. In this paper, I describe a **quadratic integral solution** to the Ghosh equation of single stock market operation.

The quadratic integral single stock market with quadratic risk-free rate

We have

$$V(t) = u + vt + wt^2$$

$$S(t) = a + bt + ct^2$$

$$r(t) = m + nt + ot^2$$

where

$$\begin{gathered} u = 4196352, v = 0, w = 1 \\ a = 2, b = 0, c = 0 \\ m = -1, n = 1, o = 198 \\ t = 2048 \end{gathered}$$

The End

The Ghosh equation of stock division

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the Ghosh equation of stock division. The paper ends with "The End"

Introduction

Stock division is a rare event, but is stock division supported by economic theory? In this paper, I describe the Ghosh equation of stock division.

The Ghosh equation of stock division

The Ghosh equation of stock division is given by

$$S(t)R(t) = \sum_{i=1}^{n} s_i(t)r_i(t)$$

where
$S(t)$ is the price of the stock
$R(t)$ is the risk of the stock
n is the number of stock divisions
$s_i(t)$ is the price of the i^{th} divided stock
$r_i(t)$ is the risk of the i^{th} divided stock

The End

The linear integral binary stock division with linear risk

Soumadeep Ghosh

Kolkata, India

In this paper, I describe a linear integral binary solution to the Ghosh equation of stock division. The paper ends with "The End"

Introduction

In a previous paper, I've described the Ghosh equation of stock division. In this paper, I describe a **linear integral binary solution** to the Ghosh equation of stock division.

The linear integral binary stock division with linear risk

We have

$$S(t) = A + Bt$$

$$R(t) = U + Vt$$

$$s_1(t) = a_1 + b_1 t$$

$$r_1(t) = u_1 + v_1 t$$

$$s_2(t) = a_2 + b_2 t$$

$$r_2(t) = u_2 + v_2 t$$

where

$$\begin{gathered} A = -1, B = -1 \\ U = -1, V = -1 \\ n = 2 \\ a_1 = -1, b_1 = -1 \\ u_1 = 2048, v_1 = -1 \\ a_2 = -1, b_2 = -1 \\ u_2 = -1, v_2 = -1 \\ t = 2048 \end{gathered}$$

The End

The quadratic integral binary stock division with quadratic risk

Soumadeep Ghosh

Kolkata, India

In this paper, I describe a quadratic integral binary solution to the Ghosh equation of stock division. The paper ends with "The End"

Introduction

In a previous paper, I've described the Ghosh equation of stock division. In this paper, I describe a **quadratic integral binary solution** to the Ghosh equation of stock division.

The quadratic integral binary stock division with quadratic risk

We have

$$S(t) = A + Bt + Ct^2$$
$$R(t) = U + Vt + Wt^2$$
$$s_1(t) = a_1 + b_1t + c_1t^2$$
$$r_1(t) = u_1 + v_1t + w_1t^2$$
$$s_2(t) = a_2 + b_2t + c_2t^2$$
$$r_2(t) = u_2 + v_2t + w_2t^2$$

where

$$A = -1, B = -1, C = -1$$
$$U = -1, V = -1, W = -1$$
$$n = 2$$
$$a_1 = -1, b_1 = -1, c_1 = -1$$
$$u_1 = 4196352, v_1 = -1, w_1 = -1$$
$$u_2 = -1, v_2 = -1, w_2 = -1$$
$$a_2 = -1, b_2 = -1, c_2 = -1$$
$$t = 2048$$

The End

The mathematics of Isis

Soumadeep Ghosh

Kolkata, India

In this paper, I describe the mathematics of Isis as taught by Allah Himself. The paper ends with "The End"

Introduction

The mathematics of Isis was taught to the muslims by Allah Himself. In this paper, I describe the mathematics of Isis as taught by Allah Himself.

The mathematics of Isis

We have

The equation of Islam:

$$I = S + s$$

The equation of Isis:

$$\ln S + \ln (I - S) = S + s$$

The equation of Allah:

$$S = S + \cancel{s} - \cancel{s}$$

where
S is the number of Shia muslims
s is the number of Sunni muslims
I is the number of muslims
whence we conclude

"Only Shia muslims are the existent muslims."

The End

Two modes of rhetorical questioning

Soumadeep Ghosh

Kolkata, India

In this paper, I describe and compare two modes of rhetorical questioning. The paper ends with "The End"

Introduction

Rhetorical questioning is an art as old as time himself. In this paper, I describe and compare two modes of rhetorical questioning.

Normal rhetorical questioning

Normal rhetorical questioning involves asking one of two questions:
"Why?" or "Why not?"

Javanese rhetorical questioning

Javanese rhetorical questioning involves asking five questions:
"Why?"
"Why?"
"Why?"
"Why?"
"How?"

Comparing the two modes

1. Normal rhetorical questioning is less risky whereas Javanese rhetorical questioning is riskier.

2. Normal rhetorical questioning cannot discover the truth whereas Javanese rhetorical questioning discovers the truth.

3. Normal rhetorical questioning may be friendly or unfriendly whereas Javanese rhetorical questioning is always unfriendly.

The End

Two modern modes of rhetorical questioning

Soumadeep Ghosh

Kolkata, India

In this paper, I describe and compare two modern modes of rhetorical questioning. The paper ends with "The End"

Introduction

In a previous paper, I've described and compared two modes of rhetorical questioning. Since the end of `world war II`, there have developed **modern modes of rhetorical questioning** that are superior to the ancient modes of rhetorical questioning. In this paper, I describe and compare two modern modes of rhetorical questioning.

Jewish rhetorical questioning

Jewish rhetorical questioning involves asking one question:
"Do you know the truth?"

Germane rhetorical questioning

Germane rhetorical questioning involves asking one question:
"What is the truth?"

Comparing the two modern modes

1. Jewish rhetorical questioning is less risky whereas Germane rhetorical questioning is riskier.
2. Jewish rhetorical questioning cannot discover the truth whereas Germane rhetorical questioning discovers the truth.
3. Jewish rhetorical questioning is always friendly whereas Germane rhetorical questioning is always unfriendly.

The End

The Indian mode of rhetorical questioning

Soumadeep Ghosh

Kolkata, India

In this paper, I describe the Indian mode of rhetorical questioning. The paper ends with "The End"

Introduction

In a previous paper, I've described and compared two modes of rhetorical questioning. In a previous paper, I've described and compared two modern modes of rhetorical questioning. In this paper, I describe the Indian mode of rhetorical questioning which is the final and unquestionably the **best** mode of rhetorical questioning.

Indian rhetorical questioning

Indian rhetorical questioning involves asking one question:
"Is that the truth?"

The End

The equation of sexual lust

Soumadeep Ghosh, Srijeeta Gupta and Sahin Aftab Mondal

Kolkata, India

In this paper, we describe the equation of sexual lust. The paper ends with "The End"

Introduction

The equation of sexual lust is given by

$$l + \ln l = m + f$$

where
l is the measure of sexual lust
m is the measure of masculine carnal knowledge
f is the measure of feminine carnal knowledge

The End

The first solution to the equation of sexual lust

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of sexual lust. The paper ends with "The End"

Introduction

In a previous paper, the equation of sexual lust has been described by three co-authors, namely Soumadeep Ghosh, Srijeeta Gupta and Sahin Aftab Mondal. In this paper, I describe the first solution to the equation of sexual lust.

The first solution to the equation of sexual lust

The first solution to the equation of sexual lust is given by

$$m = 200$$

$$f = 44$$

$$l = ProductLog[e^{244}]$$

where $ProductLog[z]$ gives the principal solution for w in $z = we^w$

The End

The second solution to the equation of sexual lust

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of sexual lust. The paper ends with "The End"

Introduction

In a previous paper, the equation of sexual lust has been described by three co-authors, namely Soumadeep Ghosh, Srijeeta Gupta and Sahin Aftab Mondal. In this paper, I describe the second solution to the equation of sexual lust.

The second solution to the equation of sexual lust

The second solution to the equation of sexual lust is given by

$$m(t) = a + \frac{a + bc}{c}t$$
$$f(t) = \frac{c}{t} + \frac{2bc - a^2}{2c^2}t^2 + \ln\frac{c}{t}$$
$$l(t) = a + bt + \frac{c}{t}$$

where

$$a = \frac{1 + \sqrt{5}}{2}$$

$$b = \frac{1 + \sqrt{5}}{4}$$

$$c = 1.1815956$$

(correct to 8 significant figures)

$$t = 1$$

The End

The third solution to the equation of sexual lust

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of sexual lust. The paper ends with "The End"

Introduction

In a previous paper, the equation of sexual lust has been described by three co-authors, namely Soumadeep Ghosh, Srijeeta Gupta and Sahin Aftab Mondal. In this paper, I describe the third solution to the equation of sexual lust.

The third solution to the equation of sexual lust

The third solution to the equation of sexual lust is given by

$$l(t) = a + bt + \frac{c}{t}$$
$$m(t) = a + bl(t)$$
$$f(t) = b + al(t)$$

where

$$a = \frac{1+\sqrt{5}}{2}$$

$$b = -0.74847013$$
(correct to 8 significant figures)

$$c = 1$$

$$t = 1$$

The End

The fourth solution to the equation of sexual lust

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of sexual lust. The paper ends with "The End"

Introduction

In a previous paper, the equation of sexual lust has been described by three co-authors, namely Soumadeep Ghosh, Srijeeta Gupta and Sahin Aftab Mondal. In this paper, I describe the fourth solution to the equation of sexual lust.

The fourth solution to the equation of sexual lust

The fourth solution to the equation of sexual lust is given by

$$l(t) = Ei(a)$$
$$m(t) = ln(b)$$
$$f(t) = Li(c)$$

where

$$Ei(z) = -\int_{-z}^{\infty} \frac{e^{-t}}{t} dt$$

is the exponential integral function

$$Li(z) = \int_{0}^{z} \frac{dt}{\log t}$$

is the logarithmic integral function

$$a = \frac{1+\sqrt{5}}{2}$$

$$b = 5.8160167 \times 10^{-10}$$

(correct to 8 significant figures)

$$c = \frac{412}{5}$$

The End

The trivial solution to the equation of sexual lust

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe an integral solution to the equation of sexual lust. The paper ends with "The End"

Introduction

In a previous paper, the equation of sexual lust has been described by three co-authors, namely Soumadeep Ghosh, Srijeeta Gupta and Sahin Aftab Mondal. In this paper, I describe the trivial solution to the equation of sexual lust.

The trivial solution to the equation of sexual lust

The trivial solution to the equation of sexual lust is given by

$$m = 1$$

$$f = 0$$

$$l = 1$$

The End

The power of love: immanent and it's immortal.

Soumadeep Ghosh

Kolkata, India

The equation of capitalist materialism

Soumadeep Ghosh, Shatakshi Mehra, Sarifa Mondal

Kolkata, India

In this paper, we describe the equation of capitalist materialism. The paper ends with "The End"

Introduction

The equation of capitalist materialism is given by

$$m + \ln m = \ln p + \ln g$$

where
m is the measure of capitalist materialism
p is the measure of pride
g is the measure of greed

The End

The first solution to the equation of capitalist materialism

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of capitalist materialism. The paper ends with "The End"

Introduction

In a previous paper, the equation of capitalist materialism has been described by three co-authors, namely Soumadeep Ghosh, Shatakshi Mehra and Sarifa Mondal. In this paper, I describe the first solution to the equation of capitalist materialism.

The first solution to the equation of capitalist materialism

The first solution to the equation of capitalist materialism is given by

$$m = 27$$

$$p = 46$$

$$g = \frac{27e^{27}}{46}$$

The End

The trivial solution to the equation of capitalist materialism

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of capitalist materialism. The paper ends with "The End"

Introduction

In a previous paper, the equation of capitalist materialism has been described by three co-authors, namely Soumadeep Ghosh, Shatakshi Mehra and Sarifa Mondal. In this paper, I describe the trivial solution to the equation of capitalist materialism.

The trivial solution to the equation of capitalist materialism

The trivial solution to the equation of capitalist materialism is given by

$$m = ProductLog[1]$$
$$p = 1$$
$$g = 1$$

where $ProductLog[z]$ gives the principal solution for w in $z = we^w$

The End

The third solution to the equation of capitalist materialism

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of capitalist materialism. The paper ends with "The End"

Introduction

In a previous paper, the equation of capitalist materialism has been described by three co-authors, namely Soumadeep Ghosh, Shatakshi Mehra and Sarifa Mondal. In this paper, I describe the third solution to the equation of capitalist materialism.

The third solution to the equation of capitalist materialism

The third solution to the equation of capitalist materialism is given by

$$m(t) = a + bt$$
$$p(t) = a$$
$$g(t) = c + dt + et^2$$

where

$$a = \frac{1+\sqrt{5}}{2}$$

$$b = 0.12692260$$

(correct to 8 significant figures)

$$c = \frac{49}{11}$$

$$d = \frac{42}{11}$$

$$e = -\frac{7}{11}$$

$$t = \frac{7}{2}$$

The End

The fourth solution to the equation of capitalist materialism

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of capitalist materialism. The paper ends with "The End"

Introduction

In a previous paper, the equation of capitalist materialism has been described by three co-authors, namely Soumadeep Ghosh, Shatakshi Mehra and Sarifa Mondal. In this paper, I describe the fourth solution to the equation of capitalist materialism.

The fourth solution to the equation of capitalist materialism

The fourth solution to the equation of capitalist materialism is given by

$$m(t) = a + bt$$
$$p(t) = a + bt$$
$$g(t) = b + at$$

where

$$a = 654.68783$$

(correct to 8 significant figures)

$$b = -346$$

$$t = \frac{1058}{565}$$

The End

The fifth solution to the equation of capitalist materialism

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a real solution to the equation of capitalist materialism. The paper ends with "The End"

Introduction

In a previous paper, the equation of capitalist materialism has been described by three co-authors, namely Soumadeep Ghosh, Shatakshi Mehra and Sarifa Mondal. In this paper, I describe the fifth solution to the equation of capitalist materialism.

The fifth solution to the equation of capitalist materialism

The fifth solution to the equation of capitalist materialism is given by

$$m(t) = a \sin t$$

$$p(t) = b \cos t$$

$$g(t) = c \tan t$$

where

$$a = -12.749455$$

(correct to 8 significant figures)

$$b = -35$$

$$c = 36$$

$$t = \frac{14114}{65}$$

The End

The equation of communist stasis

Soumadeep Ghosh

Kolkata, India

In this paper, we describe the equation of communist stasis. The paper ends with "The End"

Introduction

The equation of communist stasis is given by

$$\frac{V}{1+r} = \frac{V+S}{1+r+p}$$

or equivalently

$$pV = (1+r)S$$

where
V is the value in the economy
r is the risk-free rate in the economy
S is the surplus in the economy
p is the risk premium in the economy

The End

Five solutions to the equation of communist stasis

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe five rational solutions to the equation of communist stasis. The paper ends with "The End"

Introduction

In a previous paper, I have described the equation of communist stasis. In this paper, I describe five rational solutions to the equation of communist stasis.

The first solution to the equation of communist stasis

The first solution to the equation of communist stasis is given by

$$p = 177$$
$$V = 82$$
$$r = 74$$
$$S = \frac{4838}{25}$$

The second solution to the equation of communist stasis

The second solution to the equation of communist stasis is given by

$$p = -306$$
$$V = 44$$
$$r = -42$$
$$S = \frac{13464}{41}$$

The third solution to the equation of communist stasis

The third solution to the equation of communist stasis is given by

$$p = 0$$
$$V = 17$$
$$r = -1$$
$$S = 50$$

The fourth solution to the equation of communist stasis

The fourth solution to the equation of communist stasis is given by

$$p = 21$$
$$V = 23$$
$$r = 29$$
$$S = \frac{161}{10}$$

The fifth solution to the equation of communist stasis

The fifth solution to the equation of communist stasis is given by

$$p = 0$$
$$V = 337$$
$$r = -1$$
$$S = 48$$

The End

Five integral solutions to the equation of communist stasis

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe five integral solutions to the equation of communist stasis. The paper ends with "The End"

Introduction

In a previous paper, I have described the equation of communist stasis. In a previous paper, I have described five rational solutions to the equation of communist stasis. In this paper, I describe five integral solutions to the equation of communist stasis.

The first integral solution to the equation of communist stasis

The first integral solution to the equation of communist stasis is given by

$$p = 0$$
$$V = 403$$
$$r = -1$$
$$S = 1$$

The second integral solution to the equation of communist stasis

The second integral solution to the equation of communist stasis is given by

$$p = 0$$
$$V = 179$$
$$r = -1$$
$$S = 28$$

The third integral solution to the equation of communist stasis

The third integral solution to the equation of communist stasis is given by

$$p = 91$$
$$V = 55$$
$$r = 0$$
$$S = 5005$$

The fourth integral solution to the equation of communist stasis

The fourth integral solution to the equation of communist stasis is given by

$$p = 153$$
$$V = 1$$
$$r = 0$$
$$S = 153$$

The fifth integral solution to the equation of communist stasis

The fifth integral solution to the equation of communist stasis is given by

$$p = -390$$
$$V = 51$$
$$r = -2$$
$$S = 19890$$

The End

The equation of germanic pride

Soumadeep Ghosh, Swapna Dutta-Ghosh

Kolkata, India

In this paper, we describe the equation of germanic pride. The paper ends with "The End"

Introduction

The equation of germanic pride is given by

$$p + \ln p = \frac{p}{1 + r}$$

where
p is the measure of germanic pride
r is the risk-free rate in the germane economy

The End

Five real solutions to the equation of germanic pride

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe five real solutions to the equation of germanic pride. The paper ends with "The End"

Introduction

In a previous paper, the equation of germanic pride has been described by two co-authors, namely Soumadeep Ghosh and Swapna Dutta-Ghosh. In this paper, I describe five real solutions to the equation of germanic pride.

The first real solution to the equation of germanic pride

The first real solution to the equation of germanic pride is given by

$$p = 45$$

$$r = -\frac{\ln 45}{45 + \ln 45}$$

The second real solution to the equation of germanic pride

The second real solution to the equation of germanic pride is given by

$$p = \frac{113}{884}$$

$$r = -\frac{884 \ln \frac{884}{113}}{884 \ln \frac{884}{113} - 113}$$

The third real solution to the equation of germanic pride

The third real solution to the equation of germanic pride is given by

$$p = 98$$
$$r = -\frac{\ln 98}{98 + \ln 98}$$

The fourth real solution to the equation of germanic pride

The fourth real solution to the equation of germanic pride is given by

$$p = \frac{337}{884}$$
$$r = -\frac{884 \ln \frac{884}{337}}{884 \ln \frac{884}{337} - 337}$$

The fifth real solution to the equation of germanic pride

The fifth real solution to the equation of germanic pride is given by

$$p = 20$$
$$r = -\frac{\ln 20}{20 + \ln 20}$$

The End

The Four hills probability density function

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the Four hills probability density function which is 1 for four real x. The paper ends with "The End"

Introduction

It is often desired to have a probability density function which is 1 for more than one real x. In this paper, I describe the Four hills probability density function which is 1 for four real x.

The Four hills probability density function

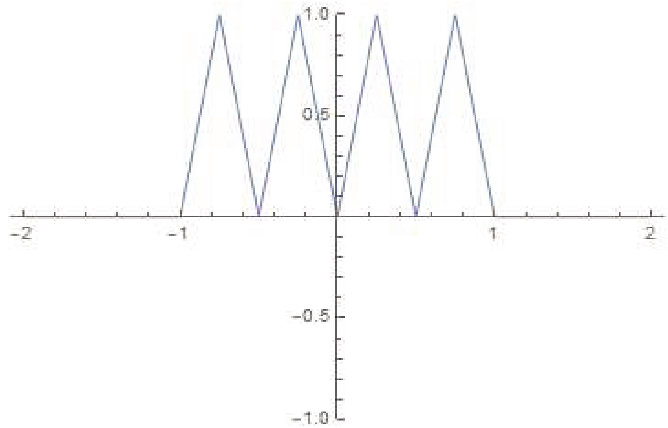
$$\text{Define } f(x) = \left\{ \begin{array}{cc} 4x+4 & -1 \leq x \leq -\frac{3}{4} \\ -4x-2 & -\frac{3}{4} \leq x \leq -\frac{1}{2} \\ 4x+2 & -\frac{1}{2} \leq x \leq -\frac{1}{4} \\ -4x & -\frac{1}{4} \leq x \leq 0 \\ -4x+4 & \frac{3}{4} \leq x \leq 1 \\ 4x & 0 \leq x \leq \frac{1}{4} \\ -4x+2 & \frac{1}{4} \leq x \leq \frac{1}{2} \\ 4x-2 & \frac{1}{2} \leq x \leq \frac{3}{4} \end{array} \right.$$

Then

1. $0 \leq f(x) \leq 1$ for all real x.
2. $\int_{-\infty}^{\infty} f(x)dx = 1$

Thus f(x) is a probability density function which is 1 for four real x.

Plot of the Four hills probability density function



The End

The Ghosh model of economic justice

Soumadeep Ghosh

Kolkata, India

In this paper, I describe the Ghosh model of economic justice. The paper ends with "The End"

1 Introduction

The Ghosh model of economic justice is the simplest possible model of justice to a victim and a thief that incorporates loss from theft, fine from the thief, economic welfare of both the victim and the thief and the cost of justice. In this paper, I describe the Ghosh model of economic justice.

2 The Ghosh model of economic justice

At time 0, the risk-free rate is r, the victim has wealth V and welfare v and the thief has wealth T and welfare t.

At time τ, the thief loots wealth $L > 0$ from the victim, causing a decrease l to the welfare of the victim, an increase λ to the welfare of the thief and an increase δ in the risk-free rate.

At time T, justice happens to the thief and the victim at a cost of c to both the victim and the thief, and the thief is fined wealth $F > 0$, which is given to the victim, causing an increase J to the welfare of the victim and a decrease j to the welfare of the thief.

The Ghosh model of economic justice is given by the following equations:
Wealth equations of the victim

$$V(1 + r\tau) = V - L$$

$$V(1 + r\mathrm{T}) = V + F - c$$

$$(V - L)[1 + (r + \delta)(\mathrm{T} - \tau)] = V + F - c$$

Welfare equations of the victim

$$v(1 + r\tau) = v - l$$

$$v(1 + r\mathrm{T}) = v + J$$

$$(v - l)[1 + (r + \delta)(\mathrm{T} - \tau)] = v + J$$

Wealth equations of the thief

$$T(1 + r\tau) = T + L$$

$$T(1 + r\mathrm{T}) = T - F - c$$

$$(T + L)[1 + (r + \delta)(\mathrm{T} - \tau)] = T - F - c$$

Welfare equations of the thief

$$t(1 + r\tau) = t + \lambda$$

$$t(1 + r\mathrm{T}) = t - j$$

$$(t + \lambda)[1 + (r + \delta)(\mathrm{T} - \tau)] = t - j$$

The End

Five real solutions to the Ghosh model of economic justice at zero cost of justice

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe five real solutions to the Ghosh model of economic justice at zero cost of justice. The paper ends with "The End"

Introduction

In a previous paper, I've describe the Ghosh model of economic justice. In this paper, I describe five real solutions to the Ghosh model of economic justice at zero cost of justice.

The first real solution to the Ghosh model of economic justice at zero cost of justice

$$V = 328$$
$$v = \frac{39}{10}$$
$$\mathrm{T} = -328$$
$$t = \frac{23}{5}$$
$$r = 50$$
$$\delta = -52$$
$$\tau = -\frac{13}{25}$$
$$T = 40$$
$$L = 8528$$
$$l = \frac{507}{5}$$
$$\lambda = -\frac{598}{5}$$
$$F = 656000$$
$$J = 7800$$
$$j = -9200$$
$$c = 0$$

The second real solution to the Ghosh model of economic justice at zero cost of justice

$$V = 227$$
$$v = -\frac{24}{5}$$
$$\mathrm{T} = -227$$
$$t = -3$$
$$r = 14$$
$$\delta = 70$$
$$\tau = -\frac{5}{84}$$
$$T = 80$$
$$L = \frac{1135}{6}$$
$$l = -4$$
$$\lambda = \frac{5}{2}$$
$$F = 254240$$
$$J = -5376$$
$$j = 3360$$
$$c = 0$$

The third real solution to the Ghosh model of economic justice at zero cost of justice

$$V = 252$$

$$v = 5$$

$$\mathrm{T} = -252$$

$$t = \frac{39}{10}$$

$$r = -97$$

$$\delta = 148$$

$$\tau = \frac{148}{4947}$$

$$T = -81$$

$$L = \frac{12432}{17}$$

$$l = \frac{740}{51}$$

$$\lambda = -\frac{962}{85}$$

$$F = 1979964$$

$$J = 39285$$

$$j = -\frac{306423}{10}$$

$$c = 0$$

The fourth real solution to the Ghosh model of economic justice at zero cost of justice

$$V = 243$$
$$v = -\frac{37}{10}$$
$$\mathrm{T} = -243$$
$$t = -\frac{29}{10}$$
$$r = -5$$
$$\delta = 16$$
$$\tau = \frac{16}{55}$$
$$T = -4$$
$$L = \frac{3888}{11}$$
$$l = -\frac{296}{55}$$
$$\lambda = \frac{232}{55}$$
$$F = 4860$$
$$J = -74$$
$$j = 58$$
$$c = 0$$

The fifth real solution to the Ghosh model of economic justice at zero cost of justice

$$V = -252$$
$$v = \frac{37}{10}$$
$$\mathrm{T} = 252$$
$$t = \frac{19}{5}$$
$$r = 47$$
$$\delta = -18$$
$$\tau = \frac{18}{1363}$$
$$T = -44$$
$$L = \frac{4536}{29}$$
$$l = -\frac{333}{145}$$
$$\lambda = \frac{342}{145}$$
$$F = 521136$$
$$J = -\frac{38258}{5}$$
$$j = \frac{39292}{5}$$
$$c = 0$$

The End

The equation of computational economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the equation of computational economics. The paper ends with "The End"

Introduction

Theoretical economics ends where computational economics begins. In this paper, I describe the equation of computational economics.

The equation of computational economics

The equation of computational economics is given by

$$\ln P + \ln N = \ln (N + P)$$

where
P is the measure of polynomial-time algorithms
N is the measure of non-polynomial-time algorithms

The End

The integral solution to the equation of computational economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the integral solution to the equation of computational economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of computational economics. In this paper, I describe the integral solution to the equation of computational economics.

The integral solution to the equation of computational economics

$$P = 2$$

$$N = 2$$

The End

Thirteen small rational solutions to the equation of computational economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe thirteen small rational solutions to the equation of computational economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of computational economics. In a previous paper, I've described the integral solution to the equation of computational economics. In this paper, I describe thirteen small rational solutions to the equation of computational economics in increasing order of N.

The first small rational solution to the equation of computational economics

$$N = 10$$
$$P = \frac{10}{9}$$

The second small rational solution to the equation of computational economics

$$N = 361$$
$$P = \frac{361}{360}$$

The third small rational solution to the equation of computational economics

$$N = 391$$
$$P = \frac{391}{390}$$

The fourth small rational solution to the equation of computational economics

$$N = 550$$
$$P = \frac{550}{549}$$

The fifth small rational solution to the equation of computational economics

$$N = 604$$
$$P = \frac{604}{603}$$

The sixth small rational solution to the equation of computational economics

$$N = 783$$
$$P = \frac{783}{782}$$

The seventh small rational solution to the equation of computational economics

$$N = 931$$
$$P = \frac{931}{930}$$

The eighth small rational solution to the equation of computational economics

$$N = 978$$
$$P = \frac{978}{977}$$

The ninth small rational solution to the equation of computational economics

$$N = 1008$$
$$P = \frac{1008}{1007}$$

The tenth small rational solution to the equation of computational economics

$$N = 1040$$
$$P = \frac{1040}{1039}$$

The eleventh small rational solution to the equation of computational economics

$$N = 1063$$
$$P = \frac{1063}{1062}$$

The twelfth small rational solution to the equation of computational economics

$$N = 1219$$
$$P = \frac{1219}{1218}$$

The thirteenth small rational solution to the equation of computational economics

$$N = 1248$$
$$P = \frac{1248}{1247}$$

The End

Six real solutions to the utility function of the germanic Fuhrer

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe six real solutions to the utility function of the germanic Fuhrer. The paper ends with "The End"

Introduction

In a previous paper, I've describe the utility function of the germanic Fuhrer. In this paper, I describe six real solutions to the utility function of the germanic Fuhrer.

The first real solution to the utility function of the germanic Fuhrer

$$f = -\frac{23}{5}$$

$$U = 0$$

$$h = 4100$$

$$r = -86$$

$$e = \frac{18}{5}$$

$$R = 0$$

The second real solution to the utility function of the germanic Fuhrer

$$f = \frac{244354}{335} - \frac{1}{243 \times 3^{2/5}}$$
$$U = 729$$
$$h = -\frac{9}{10}$$
$$r = -67$$
$$e = -\frac{2}{5}$$
$$R = -1$$

The third real solution to the utility function of the germanic Fuhrer

$$f = -2^{3/4}$$
$$U = \frac{1}{16}$$
$$h = \frac{1}{16}$$
$$r = \frac{1}{16}$$
$$e = \frac{1}{16}$$
$$R = \frac{1}{16}$$

The fourth real solution to the utility function of the germanic Fuhrer

$$f = \frac{21369}{10} - \frac{1}{62099009990163 \times \sqrt[5]{3} \times 79^{2/5}}$$
$$U = 2133$$
$$h = -\frac{22}{5}$$
$$r = 0$$
$$e = -\frac{39}{10}$$
$$R = 1$$

The fifth real solution to the utility function of the germanic Fuhrer

$$f = \frac{6871}{2} - \frac{1}{21^{16/17}} - 140034088960000 \times 2^{4/5} \times \sqrt[5]{215}$$
$$U = 3440$$
$$h = \frac{21}{5}$$
$$r = 21$$
$$e = \frac{9}{2}$$
$$R = -\frac{16}{17}$$

The sixth real solution to the utility function of the germanic Fuhrer

$$f = \frac{1}{16} - 2^{3/4} - e$$
$$U = \frac{1}{16}$$
$$h = \frac{1}{16}$$
$$r = \frac{1}{16}$$

s

$$e = 2.7182818\ldots$$
$$R = \frac{1}{16}$$

The End

Five real solutions to the Ghosh model of economic justice at zero time to justice and zero cost of justice

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe five real solutions to the Ghosh model of economic justice at zero time to justice and zero cost of justice. The paper ends with "The End"

Introduction

In a previous paper, I've described five real solutions to the Ghosh model of economic justice at zero cost of justice. In this paper, I describe five real solutions to the Ghosh model of economic justice at zero time to justice and zero cost of justice. The paper ends with "The End"

The first real solution to the Ghosh model of economic justice at zero time to justice and zero cost of justice

$$V = -138$$
$$v = \frac{37}{10}$$
$$T = 138$$
$$t = \frac{23}{10}$$
$$r = 27$$
$$\delta = \frac{47}{10}$$
$$\tau = 98$$
$$T = 98$$
$$L = 365148$$
$$l = -\frac{48951}{5}$$
$$\lambda = \frac{30429}{5}$$
$$F = -365148$$
$$J = \frac{48951}{5}$$
$$j = -\frac{30429}{5}$$
$$c = 0$$

The second real solution to the Ghosh model of economic justice at zero time to justice and zero cost of justice

$$V = 5$$

$$v = -1$$

$$T = -5$$

$$t = -\frac{2}{5}$$

$$r = -36$$

$$\delta = -\frac{2}{5}$$

$$\tau = 66$$

$$T = 66$$

$$L = 11880$$

$$l = -2376$$

$$\lambda = \frac{4752}{5}$$

$$F = -11880$$

$$J = 2376$$

$$j = -\frac{4752}{5}$$

$$c = 0$$

The third real solution to the Ghosh model of economic justice at zero time to justice and zero cost of justice

$$V = 325$$

$$v = -\frac{9}{10}$$

$$T = -325$$

$$t = \frac{19}{5}$$

$$r = -41$$

$$\delta = 3$$

$$\tau = 73$$

$$T = 73$$

$$L = 972725$$

$$l = -\frac{26937}{10}$$

$$\lambda = -\frac{56867}{5}$$

$$F = -972725$$

$$J = \frac{26937}{10}$$

$$j = \frac{56867}{5}$$

$$c = 0$$

The fourth real solution to the Ghosh model of economic justice at zero time to justice and zero cost of justice

$$V = -165$$
$$v = \frac{9}{2}$$
$$T = 165$$
$$t = \frac{23}{5}$$
$$r = -54$$
$$\delta = -3$$
$$\tau = -53$$
$$T = -53$$
$$L = 472230$$
$$l = -12879$$
$$\lambda = \frac{65826}{5}$$
$$F = -472230$$
$$J = 12879$$
$$j = -\frac{65826}{5}$$
$$c = 0$$

The fifth real solution to the Ghosh model of economic justice at zero time to justice and zero cost of justice

$$V = -480$$

$$v = \frac{37}{10}$$

$$T = 480$$

$$t = -2$$

$$r = 23$$

$$\delta = -\frac{8}{5}$$

$$\tau = 10$$

$$T = 10$$

$$L = 110400$$

$$l = -851$$

$$\lambda = -460$$

$$F = -110400$$

$$J = 851$$

$$j = 460$$

$$c = 0$$

The End

The equation of quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the equation of quantum economics. The paper ends with "The End"

Introduction

Computational economics ends where quantum economics begins. In this paper, I describe the equation of quantum economics.

The equation of quantum economics

The equation of quantum economics is given by

$$s_g + s_b = \frac{s_g}{1+r}$$

where
s_g is the measure of good states of the economy
s_b is the measure of bad states of the economy
r is the risk-free rate in the economy

The End

The principal solution to the equation of quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the principal solution to the equation of quantum economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of quantum economics. In this paper, I describe the principal solution to the equation of quantum economics.

The principal solution to the equation of quantum economics

$$s_g \geq 1$$

$$s_b = 0$$

$$r = 0$$

The End

Thirteen small rational solutions to the equation of quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe thirteen small rational solutions to the equation of quantum economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of quantum economics. In a previous paper, I've described the principal solution to the equation of quantum economics. In this paper, I describe thirteen small rational solutions to the equation of quantum economics in increasing order of r.

The first small rational solution to the equation of quantum economics

$$s_g = 360$$

$$s_b = 30$$

$$r = -\frac{1}{13}$$

The second small rational solution to the equation of quantum economics

$$s_g = 1007$$

$$s_b = \frac{1007}{12}$$

$$r = -\frac{1}{13}$$

The third small rational solution to the equation of quantum economics

$$s_g = 1218$$
$$s_b = \frac{203}{2}$$
$$r = -\frac{1}{13}$$

The fourth small rational solution to the equation of quantum economics

$$s_g = 390$$
$$s_b = \frac{65}{2}$$
$$r = -\frac{1}{13}$$

The fifth small rational solution to the equation of quantum economics

$$s_g = 549$$
$$s_b = \frac{183}{4}$$
$$r = -\frac{1}{13}$$

The sixth small rational solution to the equation of quantum economics

$$s_g = 549$$
$$s_b = \frac{183}{4}$$
$$r = -\frac{1}{13}$$

The seventh small rational solution to the equation of quantum economics

$$s_g = 930$$
$$s_b = -44$$
$$r = \frac{22}{443}$$

The eighth small rational solution to the equation of quantum economics

$$s_g = 977$$
$$s_b = -59$$
$$r = \frac{59}{918}$$

The ninth small rational solution to the equation of quantum economics

$$s_g = 782$$
$$s_b = -\frac{391}{7}$$
$$r = \frac{1}{13}$$

The tenth small rational solution to the equation of quantum economics

$$s_g = 549$$
$$s_b = -\frac{549}{14}$$
$$r = \frac{1}{13}$$

The eleventh small rational solution to the equation of quantum economics

$$s_g = 977$$
$$s_b = -\frac{977}{14}$$
$$r = \frac{1}{13}$$

The twelfth small rational solution to the equation of quantum economics

$$s_g = 1062$$

$$s_b = -\frac{531}{7}$$

$$r = \frac{1}{13}$$

The thirteenth small rational solution to the equation of quantum economics

$$s_g = 1007$$

$$s_b = -\frac{1007}{14}$$

$$r = \frac{1}{13}$$

The End

Neutrality and the neutrality risk premium in quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe neutrality and the neutrality risk premium in quantum economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of quantum economics. In this paper, I describe neutrality and the neutrality risk premium in quantum economics.

Neutrality in quantum economics

Introduction of a measure of neutral states modifies the equation of quantum economics to

$$s_g + s_n + s_b = \frac{s_g + s_b}{1 + r + p}$$

where
s_g is the measure of good states of the economy
s_n is the measure of neutral states of the economy
s_b is the measure of bad states of the economy
r is the risk-free rate in the economy
p is the neurality risk premium rate in the economy

The End

Closed-form formulae of the risk-free rate and the neutrality risk premium in quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, we obtain closed-form formulae of the risk-free rate and the neutrality risk premium in quantum economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of quantum economics. In a previous paper, I've described neutrality and the neutrality risk premium in quantum economics. In this paper, we obtain closed-form formulae of the risk-free rate and the neutrality risk premium in quantum economics.

Closed-form formulae of the risk-free rate and the neutrality risk premium in quantum economics

We eliminate s_g and s_b from the two equations

$$s_g + s_b = \frac{s_g}{1+r}$$

$$s_g + s_n + s_b = \frac{s_g + s_b}{1+r+p}$$

to obtain

$$r = -\frac{s_b}{s_b + s_g}$$

$$p = -\frac{s_g s_n - s_b s_g - s_b^2}{(s_b + s_g)(s_g + s_n + s_b)}$$

where
s_g is the measure of good states of the economy
s_n is the measure of neutral states of the economy
s_b is the measure of bad states of the economy
r is the risk-free rate in the economy
p is the neurality risk premium in the economy

The End

Linear-time quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, we obtain closed-form formulae of the common points in time in linear-time quantum economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of quantum economics. In this paper, we obtain closed-form formulae of the common points in time in linear-time quantum economics.

Closed-form formulae of the common points in time in linear-time quantum economics

We solve for common t from the equations

$$s_g(t) = g + ht$$

$$s_b(t) = b + ct$$

$$r(t) = r + st$$

$$s_g(t) + s_b(t) = \frac{s_g(t)}{1 + r(t)}$$

to obtain

$$t = -\frac{bs + cr + c + gs + hr + \sqrt{(s(b+g) + r(c+h) + c)^2 - 4s(c+h)(r(b+g)+b)}}{2s(c+h)}$$

and

$$t = -\frac{bs + cr + c + gs + hr - \sqrt{(s(b+g) + r(c+h) + c)^2 - 4s(c+h)(r(b+g)+b)}}{2s(c+h)}$$

where
$s_g(t)$ is the measure of good states of the economy
$s_n(t)$ is the measure of neutral states of the economy
$s_b(t)$ is the measure of bad states of the economy
$r(t)$ is the risk-free rate in the economy

The End

Linear-time quantum economics with neutrality

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, we obtain closed-form formulae of the common points in time in linear-time quantum economics with neutrality. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of quantum economics. In a previous paper, I've described neutrality and the neutrality risk premium in quantum economics. In this paper, we obtain closed-form formulae of the common points in time in linear-time quantum economics with neutrality.

Closed-form formulae of the common points in time in linear-time quantum economics with neutrality

We solve for common t from the equations

$$s_g(t) = g + ht$$

$$s_n(t) = n + ot$$

$$s_b(t) = b + ct$$

$$r(t) = r + st$$

$$p(t) = p + qt$$

$$s_g(t) + s_n(t) + s_b(t) = \frac{s_g(t) + s_b(t)}{1 + r(t) + p(t)}$$

to obtain

$t = -\frac{bq+bs+cp+cr+gq+gs+hp+hr+nq+ns+o(p+r+1)+\sqrt{((q+s)(b+g+n)+(c+h)(p+r)+o(p+r+1))^2-4(q+s)(c+h+o)((b+g)(p+r)+n(p+r+1))}}{2(q+s)(c+h+o)}$

and

$t = -\frac{bq+bs+cp+cr+gq+gs+hp+hr+nq+ns+o(p+r+1)-\sqrt{((q+s)(b+g+n)+(c+h)(p+r)+o(p+r+1))^2-4(q+s)(c+h+o)((b+g)(p+r)+n(p+r+1))}}{2(q+s)(c+h+o)}$

where

$s_g(t)$ is the measure of good states of the economy

$s_n(t)$ is the measure of neutral states of the economy

$s_b(t)$ is the measure of bad states of the economy

$r(t)$ is the risk-free rate in the economy

$p(t)$ is the neurality risk premium in the economy

The End

A primitive solution to linear-time quantum economics

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a primitive solution to linear-time quantum economics. The paper ends with "The End"

Introduction

In a previous paper, I've described the equations of linear-time quantum economics. In this paper, I describe a primitive solution to linear-time quantum economics.

Ghosh's first constant

Ghosh's first constant $g_1 = 0.18688638\ldots$ is the real root of the equation $7425x^3 - 1051x^2 + 12x - 14 = 0$

A primitive solution to linear-time quantum economics

A primitive solution to linear-time quantum economics is given by

$$s_g(t) = g + ht$$
$$s_b(t) = b + ct$$
$$r(t) = r + st$$

where

$$g = -10g_1$$

$$h = -15g_1$$

$$b = -14g_1$$

$$c = -12g_1$$

$$r = 2g_1$$

$$s = -11g_1$$

$$t = -5g_1$$

The End

A primitive solution to linear-time quantum economics with neutrality

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a primitive solution to linear-time quantum economics with neutrality. The paper ends with "The End"

Introduction

In a previous paper, I've described the equations of linear-time quantum economics with neutrality. In this paper, I describe a primitive solution to linear-time quantum economics with neutrality.

Ghosh's second constant

Ghosh's second constant $g_2 = -0.3024222\ldots$ is the least real root of the equation $836x^3 - 366x^2 - 164x + 7 = 0$

A primitive solution to linear-time quantum economics with neutrality

A primitive solution to linear-time quantum economics with neutrality is given by

$$s_g(t) = g + ht$$

$$s_n(t) = n + ot$$

$$s_b(t) = b + ct$$

$$r(t) = r + st$$

$$p(t) = p + qt$$

where

$$g = -10g_2$$

$$h = -15g_2$$

$$n = -14g_2$$

$$o = -12g_2$$

$$b = 2g_2$$

$$c = -11g_2$$

$$r = -5g_2$$

$$s = 3g_2$$

$$p = -11g_2$$

$$q = 8g_2$$

$$t = 2g_2$$

The End

A closed-form formula of the germanic risk-free rate to first order approximation

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe a closed-form formula of the germanic risk-free rate to first order approximation. The paper ends with "The End"

Introduction

In a previous paper, I've described the utility function of the germanic Fuhrer. In this paper, I describe a closed-form formula of the germanic risk-free rate to first order approximation.

A closed-form formula of the germanic risk-free rate to first order approximation

A closed-form formula of the germanic risk-free rate to first order approximation can be obtained from the utility function of the germanic Fuhrer easily using the Taylor series expansion on a computer algebra system like Mathematica.

The Mathematica code is

`FullSimplify[Solve[`$f+U^h+e+r^R$` == Normal[Series[`$f+U^h+e+r^R$`, {f, 0, 1}, {U, 0, 1}, {h, 0, 1}, {e, 0, 1}, {r, 0, 1}, {R, 0, 1}]], r]]`

which gives

$$r = \left(-ProductLog\left(-\left(e^{\frac{U^h-2}{R}} U^{-\frac{h}{R}}\right)^R\right)\right)^{1/R}$$

where

$ProductLog(z)$ gives the principal solution for w to the equation $z = we^w$

The End

The equation of wrath

Soumadeep Ghosh

Kolkata, India

In this paper, I describe the equation of wrath. The paper ends with "The End"

Introduction

The equation of wrath is given by

$$w + \ln w = we^{-\delta T}$$

where
w is the level of wrath
e is the base of the natural logarithm
δ is the dissipation rate of wrath
T is the time to cooldown

The End

Solutions to the equation of wrath

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe the solutions to equation of wrath. The paper ends with "The End"

Introduction

In a previous paper, I've described the equation of wrath. In this paper, I describe the solutions to equation of wrath. The paper ends with "The End"

The normal solution to the equation of wrath

The normal solution to the equation of wrath is given by

$$(\delta \neq 0) \wedge (ProductLog(1) < w < 1 \vee w > 1) \wedge T = \frac{\log(\frac{w}{w+\log(w)})}{\delta}$$

where
$ProductLog(z)$ gives the principal solution for w to the equation $z = we^w$

The extraordinary solution to the equation of wrath

The extraordinary solution to the equation of wrath is given by

$$(T = 0 \vee \delta = 0) \wedge w = 1$$

The End

Foreseeable futures of humanity

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe all the foreseeable futures of humanity as of 2021. The paper ends with "The End"

Introduction

As the representative agent of economics, I have a **limited** ability to foresee all possible futures of the global economy on a macroscopic level. In this paper, I describe all the foreseeable futures of humanity.

There exist essentially 4 foreseeable futures of humanity as of this writing in 2021. I describe them below in increasing order of risk.

The sustainable future of humanity

The sustainable future of humanity is characterized by the following:

1. Production and continuing national research into sustainable technologies and renewable sources of energy.
2. Reduction of national populations to manageable sizes.
3. The death of open-economy macroeconomics.

The planetary government future of humanity

The planetary government future of humanity is characterized by the following:

1. The end of nation-states and the birth of international governance on a planetary scale.
2. Reduction of national populations to sizes larger than the sizes in the sustainable future of humanity.
3. Rendezvous with non-human living beings from other planetary systems.
4. The classification and systematic elimination of "rogue states" that don't agree with the planetary government future of humanity.

The international banking future of humanity

The international banking future of humanity is characterized by the following:

1. Nation-states remain but national governance is decided in conjunction with an international banking system that covers most nations.
2. Reduction of national populations to sizes smaller than the sizes in the planetary government future but larger than the sizes in the sustainable future of humanity.
3. Increased international trade and the formation of international alliances.
4. Increased power of banks and bankers in national decisions.
5. Higher systemic risk than the planetary government future of humanity.

The world war future of humanity

The world war future of humanity is characterized by the following:

1. Nation-states remain and decide to go to world war III.
2. Increase of national populations in some nations but not all nations.
3. Increased national alliances, international hostility, transnational conflicts and militaric deaths.
4. The possible curtailment of civil liberties in several nations.

The End

Inflation when the inflation risk premium is zero at all points in time

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe inflation when the inflation risk premium is zero at all points in time. The paper ends with "The End"

Introduction

In a previous paper, I've described how the inflation risk premium can be zero at all points in time. A natural question that arises now is "What is inflation in this scenario?" In this paper, I describe inflation when the inflation risk premium is zero at all points in time.

Inflation when the inflation risk premium is zero at all points in time

Suppose

$$i(t) = \begin{cases} \lambda e^{-\lambda t} & t \geq 0 \\ 0 & t < 0 \end{cases}$$

Then

$$E[i(t)] = \frac{1}{\lambda} = e^{-Ft} \begin{cases} Ft - e^{Ft}\left(e^{-Ft}Ft - \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}\right) & t \leq 0 \\ Ft - e^{Ft}\left(e^{-Ft}Ft + \frac{2e^{-\frac{t^2\theta^2}{\pi}}\theta}{\pi} - \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}\right) & t > 0 \end{cases}$$

$$\Longleftrightarrow$$

$$\lambda = \begin{cases} e^{\frac{(t-\mu)^2}{2\sigma^2}}\sqrt{2\pi}\sigma & t \leq 0 \\ \dfrac{1}{\frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma} - \frac{2e^{-\frac{t^2\theta^2}{\pi}}\theta}{\pi}} & t > 0 \end{cases}$$

The End

The capital asset pricing model can be satisfied when the inflation risk premium is zero at all points in time

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe five solutions to the capital asset pricing model when the inflation risk premium is zero at all points in time. The paper ends with "The End"

Introduction

In a previous paper, I've described how the inflation risk premium can be zero at all points in time. In a previous paper, I've described inflation when the inflation risk premium is zero at all points in time. In this paper, I describe five solutions to the capital asset pricing model when the inflation risk premium is zero at all points in time.

The capital asset pricing model

The capital asset pricing model is defined by the equation

$$r_A(t) = r_f(t) + \beta_A(t)(r_M(t) - r_f(t))$$

where
$r_A(t)$ is the return on the asset as a function of time
$r_f(t)$ is the risk-free rate as a function of time
$r_M(t)$ is the return on the market portfolio as a function of time
$\beta_A(t)$ is the beta of the asset as a function of time

The capital asset pricing model can be satisfied when the inflation risk premium is zero at all points in time

In each of the solutions that follow, we use the same functional form of the return on the asset and the risk-free rate as used in the previous paper where I've described how the inflation risk premium can be zero at all points in time, i.e.

$$r_A(t) = \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}$$

$$r_f(t) = \begin{cases} 0 & t \leq 0 \\ 2\theta e^{-\frac{\theta^2 t^2}{\pi}} & t > 0 \end{cases}$$

The first solution to the capital asset pricing model

$$\beta_A(t) = -2$$

$$r_M(t) = \frac{3}{2}\left(\begin{cases} 2e^{-\frac{t^2\theta^2}{\pi}}\theta & t > 0 \\ 0 & t \leq 0 \end{cases} \right) - \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{2\sqrt{2\pi}\sigma}$$

The second solution to the capital asset pricing model

$$\beta_A(t) = -1$$

$$r_M(t) = 2\left(\begin{cases} 2e^{-\frac{t^2\theta^2}{\pi}}\theta & t > 0 \\ 0 & t \leq 0 \end{cases} \right) - \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}$$

The third solution to the capital asset pricing model

$$\beta_A(t) = \frac{1}{2}$$

$$r_M(t) = \frac{\sqrt{\frac{2}{\pi}}e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sigma} - \left(\begin{cases} 2e^{-\frac{t^2\theta^2}{\pi}}\theta & t > 0 \\ 0 & t \leq 0 \end{cases} \right)$$

The fourth solution to the capital asset pricing model

$$\beta_A(t) = 1$$

$$r_M(t) = \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}$$

The fifth solution to the capital asset pricing model

$$\beta_A(t) = \begin{cases} \frac{e^{-\frac{\Sigma}{2(t-M)}}\left(\frac{\Sigma}{t-M}\right)^{3/2}}{\sqrt{2\pi}\Sigma} & t > M \\ 0 & t \leq M \end{cases}$$

$$r_M(t) = \left(\begin{cases} 2e^{-\frac{t^2\theta^2}{\pi}}\theta & t > 0 \\ 0 & t \leq 0 \end{cases} \right)\left(1 - \frac{1}{\begin{cases} \frac{e^{-\frac{\Sigma}{2(t-M)}}\sqrt{\Sigma}}{\sqrt{2\pi}(t-M)^{3/2}} & t > M \\ 0 & t \leq M \end{cases}}\right) + \frac{e^{-\frac{(t-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma\left(\begin{cases} \frac{e^{-\frac{\Sigma}{2(t-M)}}\sqrt{\Sigma}}{\sqrt{2\pi}(t-M)^{3/2}} & t > M \\ 0 & t \leq M \end{cases} \right)}$$

The End

No-arbitrage pricing of a stock in continuous time

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe no-arbitrage pricing of a stock in continuous time. The paper ends with "The End"

Introduction

No-arbitrage pricing of a stock in continuous time is essential in every economy for stability. In this paper, I describe no-arbitrage pricing of a stock in continuous time.

The stock-seller's equation

The stock-seller's equation is given by

$$E[s(t)] = \frac{s(t) + p(t)}{1 + r(t)}$$

where
$s(t)$ is the price of the stock as a function of time
$p(t)$ is the profit from selling the stock as a function of time
$r(t)$ is the risk-free rate in the economy

The stock-holder's equation

The stock-holder's equation is given by

$$E[s(t)] = \frac{s(t)}{1 + r(t) + p_s(t)}$$

where
$s(t)$ is the price of the stock as a function of time
$p_s(t)$ is the stock premium as a function of time
$r(t)$ is the risk-free rate in the economy

No-arbitrage pricing of a stock in continuous time

We eliminate $E[s(t)]$ from the two equations to obtain no-arbitrage pricing of a stock

$$\frac{s(t) + p(t)}{1 + r(t)} = \frac{s(t)}{1 + r(t) + p_s(t)}$$

Solving for $s(t)$ gives

$$s(t) = -\frac{p(t)(1 + r(t) + p_s(t))}{p_s(t)}$$

The End

14 real solutions to no-arbitrage pricing of a stock in continuous time

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe 14 real solutions to no-arbitrage pricing of a stock in continuous time. The paper ends with "The End"

Introduction

In a previous paper, I've described no-arbitrage pricing of a stock in continuous time. In this paper, I describe 14 real solutions to no-arbitrage pricing of a stock in continuous time, i.e., the equation

$$s(t) = -\frac{p(t)(1 + r(t) + p_s(t))}{p_s(t)}$$

where

$$s(t) = s + St$$
$$r(t) = r + Rt$$
$$p(t) = p + Pt$$
$$p_s(t) = p_s + P_S t$$

14 real solutions to no-arbitrage pricing of a stock in continuous time

$$s = 549, S = 21, r = -2, R = -\frac{81}{2641}, p = \frac{3664}{27}, P = 0, p_s = \frac{3664}{18487}, P_s = 0$$

$$s = 957, S = 31, r = -2, R = 0, p = 86, P = \frac{2666}{957}, p_s = \frac{86}{1043}, P_s = 0$$

$$s = 1247, S = 20, r = -2, R = -\frac{6}{3149}, p = \frac{27749}{3}, P = 0, p_s = \frac{27749}{31490}, P_s = 0$$

$$s = 603, S = 90, r = -2, R = -\frac{67}{677}, p = \frac{20529}{67}, P = 0, p_s = \frac{2281}{6770}, P_s = 0$$

$$s = 1295, S = 30, r = -2, R = 0, p = 55, P = \frac{330}{259}, p_s = \frac{11}{270}, P_s = 0$$

$$s = 632, S = 81, r = -2, R = 0, p = 79, P = \frac{81}{8}, p_s = \frac{1}{9}, P_s = 0$$

$$s = 930, S = 96, r = -\frac{161}{102}, R = -\frac{11}{846}, p = \frac{624714}{187}, P = 0, p_s = \frac{104119}{230112}, P_s = 0$$

$$s = 1062, S = 91, r = -\frac{74}{51}, R = -\frac{16}{1307}, p = \frac{1868959}{816}, P = 0, p_s = \frac{1868959}{6065787}, P_s = 0$$

$$s = 603, S = 90, r = -\frac{145}{102}, R = -\frac{79}{1606}, p = \frac{226041}{1343}, P = 0, p_s = \frac{75347}{819060}, P_s = 0$$

$$s = 332, S = 80, r = -\frac{143}{102}, R = 0, p = 98, P = \frac{1960}{83}, p_s = \frac{2009}{21930}, P_s = 0$$

$$s = 76, S = 66, r = -\frac{64}{51}, R = 0, p = 42, P = \frac{693}{19}, p_s = \frac{91}{1003}, P_s = 0$$

$$s = 1153, S = 60, r = -\frac{61}{51}, R = 0, p = 10, P = \frac{600}{1153}, p_s = \frac{100}{59313}, P_s = 0$$

$$s = 1247, S = 20, r = -\frac{37}{34}, R = -\frac{1}{23790}, p = \frac{692501}{17}, P = 0, p_s = \frac{692501}{8088600}, P_s = 0$$

$$s = 957, S = 31, r = -\frac{35}{34}, R = 0, p = 76, P = \frac{2356}{957}, p_s = \frac{38}{17561}, P_s = 0$$

The End

Positive psychology in continuous time

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe positive psychology in continuous time. The paper ends with "The End"

Introduction

Many individuals wonder about positive psychology. In this paper, I describe positive psychology for individuals in every economy.

The origins of positive psychology

The origins of positive psychology are as old as the origin of the neitherland economy. But, to understand positive psychology, we first study the inferior normative psychology in continuous time.

Normative psychology in continuous time

Normative psychology in continuous time is easily described by two equations:

$$W(t) = a(t) + E[W(t)] + p(t)$$

$$W(t) = m + nt$$

where

$W(t)$ is the welfare of the psychological patient as a function of time

$a(t)$ is the residual (also known as irreversible) base welfare of the psychological patient as a function of time

$p(t)$ is the psychological impulse as a function of time

m and n are the real time coefficients of welfare of the psychological patient

Positive psychology in continuous time

Positive psychology in continuous time is easily described by two equations:

$$W(t)(1 + p(t)) = a(t) + c(t)(E[W(t)] - W(t))$$

$$W(t) = m + nt$$

where

$W(t)$ is the welfare of the psychological patient as a function of time

$a(t)$ is the residual (also known as irreversible) base welfare of the psychological patient as a function of time

$c(t)$ is the coefficient of differential psychological expectation as a function of time

$p(t)$ is the psychological impulse as a function of time

m and n are the real time coefficients of welfare of the psychological patient

The End

Food economics in continuous time

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe food economics in continuous time. The paper ends with "The End"

Introduction

Many individuals wonder about food economics. In this paper, I describe food economics for individuals in every economy.

The equation of food economics

The equation of food economics is given by

$$F + f(t)t = m(t)P(1 + g(t))^t$$

where
F is quantity of food at $t = 0$
$f(t)$ is rate of production of food as function of time
$m(t)$ is size of meal as function of time
P is population at $t = 0$
$g(t)$ is rate of growth of population as function of time

The End

Predicting food crisis

Soumadeep Ghosh

Kolkata, India

Abstract

In this paper, I describe how to predict food crisis. The paper ends with "The End"

Introduction

In a previous paper, I've described food economics in continuous time. In this paper, I describe how to predict food crisis.

Predicting food crisis

We transform the equation of food economics by moving all t terms to one side to obtain

$$\frac{F + f(t)t}{P(1+g(t))^t} = m(t)$$

We take ln on both sides to obtain

$$\ln \frac{F + f(t)t}{P(1+g(t))^t} = \ln m(t)$$

We take the Taylor series expansion to first order to obtain

$$\frac{m'(0)}{m(0)} t + \ln m(0) = t(\frac{f(0)}{F} - \ln (1 + g(0))) + \ln \frac{F}{P}$$

whence

$$t = \frac{Fm(0)(\ln \frac{F}{P} - \ln m(0))}{Fm(0) \ln (1 + g(0)) + Fm'(0) - f(0)m(0)}$$

The End

The final paper

Soumadeep Ghosh

Kolkata, India

Abstract

This is my final paper. The paper ends with ”The End”

My presence in an economy means something is wrong with that economy.

The End