THE GEODESIC DOME & GDP GROWTH

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Abstract. *This paper builds on our knowledge of AT Mathematics used to solve for variables in a geodesic dome structural analysis. Temperature loads can simulate expansion of the GDP, or GDP growth. This can be used to see how the entire dome, or economy, adjusts to the new forces. There are computer software programs readily available which could be used to help economists model the entire economy from the individual to the world.*

Keywords: *Geodesic Dome; GDP Equation; Stiffness Method, Econphysics.*

Introduction

Economists now use structural engineering mechanics to solve outstanding economic theory problem. The theory for matrix structural analysis has been worked out since at least 1962. It provides a solution for nodes interconnected where the forces on one node affect all other nodes. This is a good approximation for either individuals in an economy or for nation states. Really, one can draw the boundary that is governed by the well known GDP Equation viz. ($Y = C + I + G + S +$ (Ex-Im). The stiffness method, which allows for thermal loads, which are akin to an influx of money, can be used to calculate the affect on the entire economic structure. The temperature load can be thought of elongation of an individual member caused by investment, government spending or entrepreneurship. We therefore can see the affect of these three things in causing growth of the GDP. There are wider implications such as how wealth is transferred by government spending in a particular local or by education leading to new ideas; or by financing of those ideas by financiers. We begin by examining the geodesic dome (figure 1).

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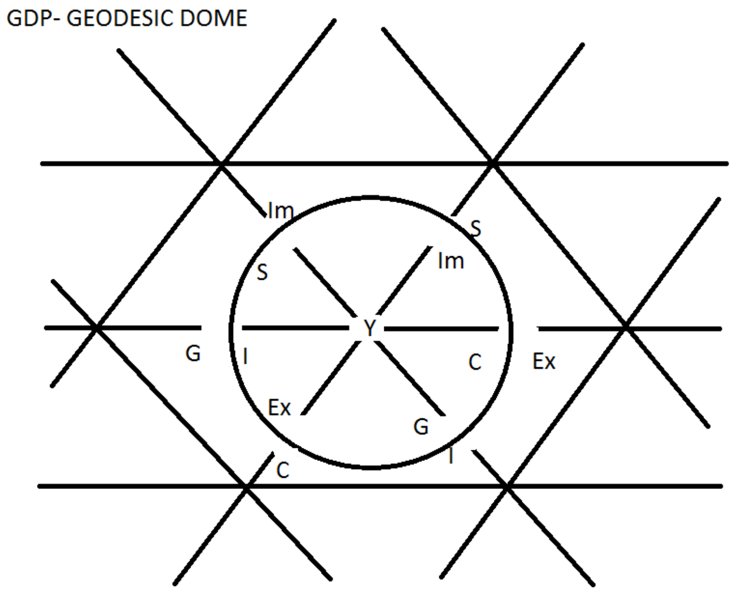

Figure 1. The Geodesic Dome model of the Economy.

Stiffness Method:

(It is necessary to understand the author's Astro-theology Mathematics to appreciate the variables used in this paper)

$F = ks$

$k = F/s = Y/s$.

But we know k=0.4233 = cuz

&

$Y = GDP$

$s = \Delta GDP$ /annum (Growth)

0.4233 = Y/ 2.1%

Y = 88.5 = ε_0 =Permittivity

88.5 = $\Delta L/L$=0.22/L

L = 0.402 = Re (Reynold's number)

So how does growth occur? We can answer this question by taking growth as a thermal load increase in the Geodesic Dome members.

$TL = (1 + \alpha T)dl$

But $TL = e^{-t}$

$e^{-t} = \delta\alpha T$

$0.402 = \delta(S)(G)$

$S = 1/7 \quad G = 17\%$

$\delta = 1655 \sim 1623$ = Mass of a proton

$1622(0.402) = 6.52$ = Gravitational Constant

$1623(1/7)(1/0.402) = 1/\sqrt{3} = \cot 60°$

Now,

$\varepsilon = 2[1+v]/E \times \sigma$

$0.402=2(1.27)(0.4233) \times \sigma$

$\sigma = 1/6.7 = 1.49 \sim 1.50$ = Mass Gap

$\sigma = F/A = F/L^2$

$F/0.402) = 1.5$

$F = 6.$

This is 6-sigma of the Bell normal curve for a plane geodesic connection:

$\sigma = Ee - E\alpha T$ where $T = G$

$= (0.4233)(0.402) - (0.4233)(1/7)(G)$

$= 1/6 = 1/F$

$F = ks$

$6 = (0.4233)(s)$

$s = \sqrt{2}$

$\sigma = 1/F$

$A = 1.$

So what causes the temperature load like elongation?

The answer is in three things:

- Government Transfers or sp[ending results in transfer of wealth from one local to another;
- Creative Ideas that create new wealth.
- Financing of Investments that produce wealth creation.

$V = 4/3\ \pi\ R^3$

$\Delta V = 4/3\ \pi\ (R_2 - R_1)^3$

$\Delta V = \Delta GDP = 2.2\%$

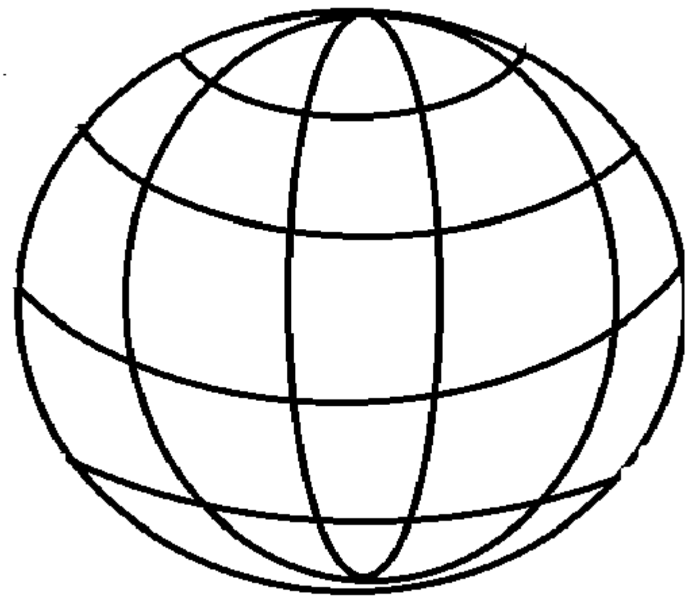

Figure 2. The Earth /Economy as a Geodesic Dome.

$\Delta R = \Delta s$

$\Delta s = 0.8068{\sim}81{=}c^4$

$\varepsilon = \Delta L/L = \Delta s/L$

$0.402 = 0.8068/L$

$L = 0.4983 \sim 0.5.$

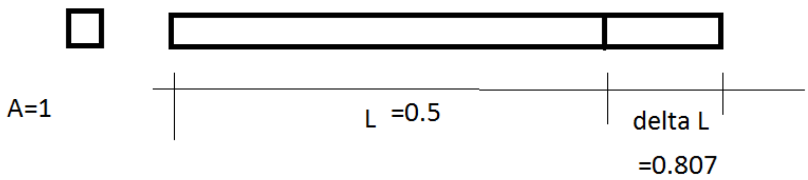

Figure 3. Elongation of Member.

$L = 0.5 + 0.8068 = 1.3051\alpha 13.0$

$= (1 - \sin 1) = \text{moment} = Fd = Fs$

$F = 1/L$

$s = 1/L$

$S = L$

$Y = Y'.$

Now we already know

$Y = FL$

$Y' = (Ma)(L)$

$Y' = dM/dt\ (da/dt)(dL/dt)$

$= 2(da/dt)(0.8415)$

$dK/dt = 1683(da/dt)$.

Aside:

$s = v = a = \sin 1$

$\sin 1 = !/M$

$da/dt = Ln\ M$

$= Ln\ 2$.

So,

$dY/dt = 1683\ Ln\ 2$

$= 116.65 = M$ (Period table of the elements)

$d^2Y/dt^2 = dM/dt = 2$.

But $Y = FL$

$2 = Y' = F'\ L'$

$2 = F'a$

$F = 0.4208 \sim k =$ cuz

$\delta^2\varepsilon_{xy}/\delta^2 y + \delta^2\varepsilon_{xy}/\delta^2 x = \delta^2\varepsilon_{xy}/\delta x\delta y$

$Y = FL$

$L = Y/F$

$Y\sigma = F/A \times Y$

$\varepsilon = \Delta L/L = \Delta s/L = \Delta L/[Y \times F/A]$

$\varepsilon = \Delta L \times A[YF]$

$\varepsilon = c^4 \times (1)/kF$

$0.402 = 1/3^4 \times 1/0.4233F$

$F = 1176 =$ Mass

$\sigma = E\varepsilon$

$Y = \Delta L/L\ (k)$

$Y = k$

$1 = Y = \Delta L/L$

$L = \Delta L$

$Y = Y'$

$L = 0.402 = Re$

$Re = \rho v/v$

$\Delta L = Re = 1/T$

$\varepsilon = \Delta L/L$

$\Delta L = L^2$

$\Delta L = 0.25 = T.$

And, finally,

Strain Energy

$W = 1/2\ Pu$

$P = F$

$u = s$

$L = 1/2$

$W = FL = Y = Pu = LFs.$

So the GDP is equal to the Strain energy.

The Incremental increase in Strain energy is given by Przemieniecki as:

$\Delta W = Pu + 1/2\ \delta P du.$

So,

$\boldsymbol{\Delta GDP = Fs + [L \times dF \times \Delta s]}$

$\varepsilon = \Delta L/L.$

But $\Delta L = L.$

Therefore $\varepsilon = 1.$

$\varepsilon_x = \varepsilon_y = 1$ & $\varepsilon_{xy} = \sqrt{2}.$

This means that the strain is a unit force, since $a = 1$. It measures the sensitivity of the Individual to Force (Money).

Conclusion

The Geodesic Dome can be used to model the any economy that the economist desires to draw a boundary around, the free body diagram of physics. *Y* can be calculated for an individual or for a Nation State. Temperature load increase when there is an injection of wealth from an increase of savings; from government spending; or from entrepreneurial activity.

REFERENCES

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