



TM © 2005

Econographication-Lab/Exp-3-2005

**“Application of the Multi-Dimension Cartesian plane
(MD Cartesian plane):
New Visualization of the Gross Domestic Product”**

By

Mario Arturo Ruiz Estrada

**This working paper site is hosted by Econographication
Virtual Laboratory (EVL) and may not be reproduced
without the EVL approval.**

Copyright © 2005, EVL

In this research, the application of MD Cartesian plane is demonstrated by its use in finding the national income “y” accounts divide GDP into four broad categories of spending. In particular, the GDP is the sum of Consumption, Investments, Government Purchases and Net Exports, represented by “C”, “I”, “G” and “(X-M)” respectively in the expressions below (Mankiw, 2000). In the graph 21, these four broad categories of spending of GDP are independent variables represented by x1, x2, x3 and x4 respectively, while the national income is represented by “y”.

MD Cartesian plane is applied in any year of any Country. For demonstration purposes, the following data is used: Consumption (C) = 3; Investment (I) = 2; Government Purchases (G) = 2; Exports (X) = 5 and Imports (M) = 7.

Steps involved in the application of MD Cartesian plane are as follows.

First step - to define national income: Expression (1)

$$(1.) \quad Y = \text{GDP} = C + I + G + (X - M).$$

Second step – to input all data into Expression (1)

$$Y = \text{GDP} = [C = (x1)] + [I = (x2)] + [G = (x3)] + [(X - M) = (x4)]$$

$$Y = \text{GDP} = 3 + 2 + 2 + (5 - 7)$$

$$Y = \text{GDP} = x1 (3) + x2 (2) + x3 (2) - x4 (2)$$

$$Y = 5$$

Third step - to plot the resultant GDP in its four broad categories of spending of C, I, G and NT (X-M)

MD Cartesian plane shows the national income from new visual perspective. Concurrently it shows the relationships between all the GDP spending variables (C, I, G, NT) and the national income (Y). This feature in MD Cartesian plane represents multiple perspectives or more precisely, the global dimension of the national income (Y). In other words, MD Cartesian plane shows the global dimension of the national income by observing the movement of one or all variables (x_1, x_2, x_3, x_4) along their respective axes simultaneously on the same plane as a whole. It also shows how any changes in one or all “ x_i ” affect “ y ” in space and time (See Graph 21).

The MD Cartesian plane shows the global context of any economic phenomena. Hence it allows for Macro-Microeconomics focus of analysis in economics. In summation, it is an efficient analytical tool to explain complex economic phenomena from a global perspective – and is a better analytical tool compare to the conventional 2-D and 3-D Cartesian planes.

GRAPH 21: Application of the MD-Cartesian Space to analyze the GDP

