

**INTRODUCTION
TO
THE MULTI-FUNCTIONAL CARTESIAN SPACE**

By

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THE MULTI-FUNCTIONAL CARTESIAN SPACE

- The multi-functional (MF) Cartesian Space has nine general axis are $[(x1i, x2i, x3i, x4i), (y000, y01i, y02i, y03i, y04i)]$. In the same Cartesian plane is also formed by two ratios of analysis, there are Ratio 1 (R1) and Ratio 2 (R2).
- Each Ratio “R” has four spaces (or quadrants). The R1 function is equal to $(xij, y000)$ and R2 function is equal to $(xij, y0iJ)$, where “i” has values from 1 to 4 and “j” has values from 1 to ∞ . The four spaces of R1 spaces are $SI = (x11, y000)$; $SII = (x21, y000)$; $SIII = (x31, y000)$; $SIV = (x41, y000)$ and the four spaces of R2 spaces are $SV = (x12, y011)$; $SVI = (x22, y021)$; $SVII = (x32, y031)$; $SVIII = (x42, y041)$.
- The MF Ratios have strong relationship between the two levels R1 and R2, for example first relationship between R1 and R2 is $[SI = (x11, y000) : SV = (x12, y011)]$. The second relationship between R1 and R2 is $[SII = (x21, y000) : SVI = (x22, y021)]$. The third relationship between R1 and R2 is $[SIII = (x31, y000) : SVII = (x32, y031)]$. The last relationship between R1 and R2 is $[SIV = (x41, y000) : SVIII = (x42, y041)]$.
- In the case of R1 has four axis or independent variables are “x11, x21, x31, x41” and one y-axis or one dependent variable that is equal to “y000”. The “y000” can be share by the four independent variables $[x11, x21, x31 \text{ and } x41]$. Therefore, the R1 function is equal to $Ai (xi1, y000)$. The Difference between R1 and R2 is that R2 has four x-axis or four independent variables $(x12, x22, x32, x42)$ and four y-axis or four dependent variables $(y011, y021, y031, y041)$.

THE MULTI-FUNCTIONAL CARTESIAN SPACE

- **RATIO I : RATIO II**
- $SI = (x11,y000) : SV = (x12,y011)$
- $SII = (x21,y000) : SVI = (x22,y021)$
- $SIII = (x31,y000) : SVII = (x32,y031)$
- $SIV = (x41,y000) : SVIII = (x42,y041)$

The functions are used by the Multi-Functional Cartesian Space, there are

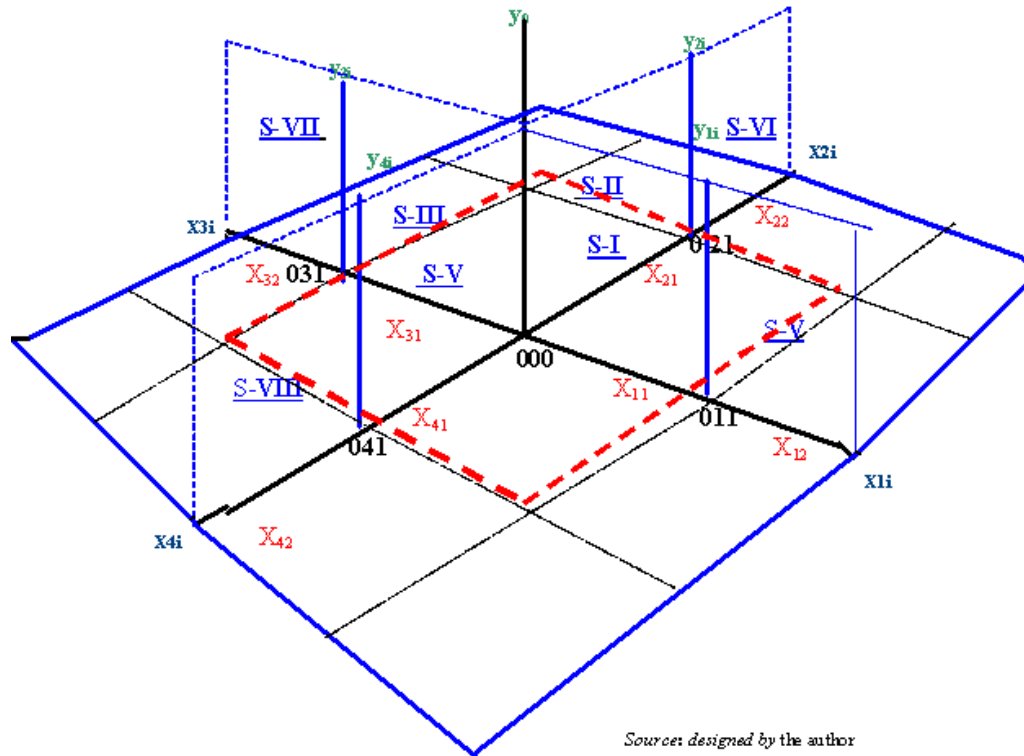
- **Ratio 1**
- $y000 = f(x11, x21, x31, x41)$
- **Ratio 2**
- $y011 = f(x12)$
- $y021 = f(x22)$
- $y031 = f(x32)$
- $y041 = f(x42)$

Characteristics

- Researchers can input eight independent variables and five dependent variables in the same Cartesian Space simultaneously.
- The analysis of different scenarios in the same space and time. We can observe clearly how any change of all or some independent variable can affect all Cartesian Space from a general view.

THE MULTI-FUNCTIONAL CARTESIAN SPACE

The Multi-Functional Cartesian Space



Source: designed by the author

Ratio I Ratio II

CASE STUDY

Fiscal, Monetary, Trade and Investment Policy Analysis

By

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INTRODUCTION

- The MF-Cartesian Space is an alternative analytical tool for observing the economic environment of any country from a general perspective. In the case in point here, the MF-Cartesian Space is applied to simultaneously study the effects of fiscal policy, monetary policy, trade policy, as well as the effects of employment/Inflation. All IS Curve, LM Curve, Trade Policy and Investment policy is incorporated in to the same Cartesian Space.
- The MF-Cartesian Space consists of three perimeters. The first perimeter surrounds the area (from y_{000} to x_{11} , from y_{000} to x_{21} , from y_{00} to x_{31} and from y_{00} to x_{41}). The second perimeter is represented by the area from y_{011} to x_{12} ; from y_{021} to x_{22} ; from y_{031} to x_{32} and from y_{041} to x_{42} . The third perimeter is formed by the area from y_{012} to x_{13} ; from y_{022} to x_{23} ; from y_{032} to x_{33} ; from y_{042} to x_{43} .
- Additionally, the MF-Cartesian Space comprises four sections that accommodate four analyses sections. Each of these sections is formed by a three-window refraction space. The **Window Refraction Space** is a concept based on the joining of different quadrants in the same vector address.

FISCAL POLICY

IS CURVE

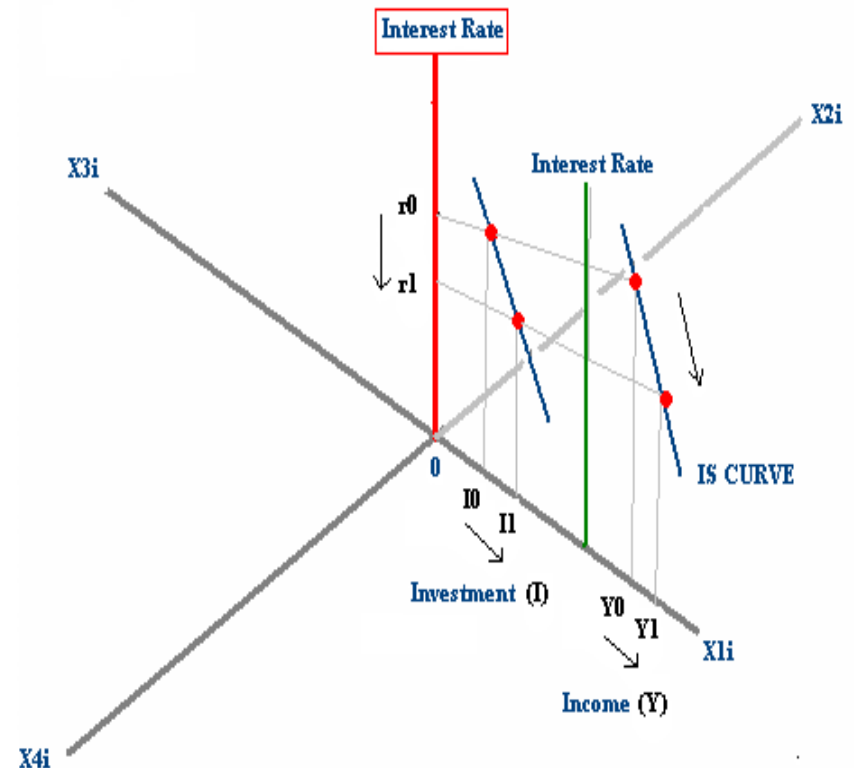
GOODS MARKETS

- The first analysis section is the study of fiscal policy within the IS Curve. The first window refraction space is the relationship between interest rate and investment. All possible scenarios in the first window refraction are following by:

- ▼ Interest Rate => ▲ investment
- ▲ Interest Rate => ▼ investment

- The second window refraction space is the construction of IS Curve, the IS curve is based on the relationship between interest rate and income. All possible scenarios in the second window refraction are following by:

- ▲ interest rate => ▼ income (GDP)
- ▼ interest rate => ▲ income (GDP)



MONETARY POLICY

LM CURVE

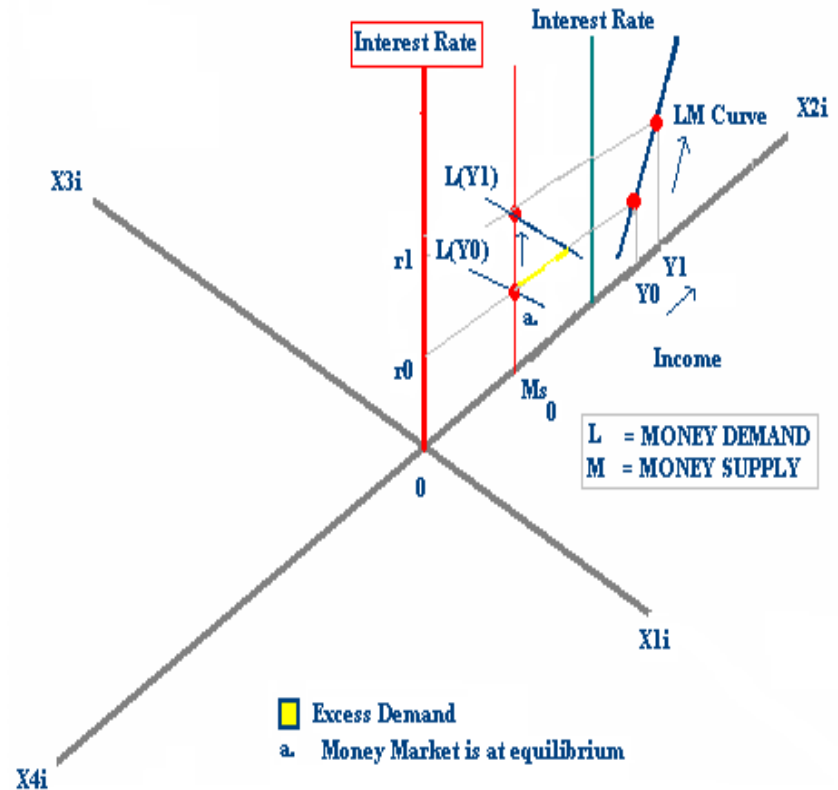
MONEY MARKET or FINANCIAL MARKET

- The second analysis is based on the application of the LM Curve to study the monetary policy. The construction of the LM Curve is based on two windows refraction spaces. The first window refraction space represents the relationship between interest rate and money demand/supply. All possible scenarios in the first window refraction are following by:

1. Money supply is fixed by the National Bank
2. Money Demand depend on the interest rate

- The second window refraction space, on the other hand, it is based on the relationship between interest rate and income that LM Curve is constructed. All possible scenarios in the second window refraction are following by:

- ▲ Income => ▲ Interest Rate
- ▼ Income => ▼ Interest Rate



If interest rate is high then people want to put more in the bank and hold less cash
 if Income is high then the economy increase transactions and need more money

TRADE POLICY

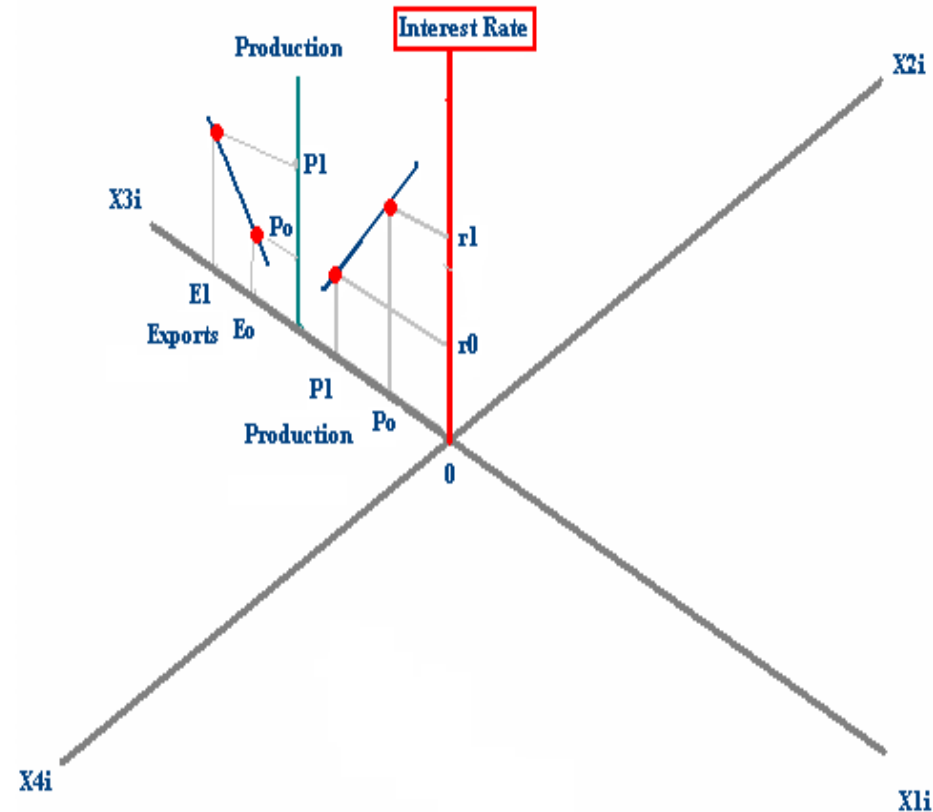
TRADE POLICY

- The third section of the MF-Cartesian Space is for the analysis of trade policy. The first window refraction space pictures shows the relationship between interest rate and production or GDP output is equal to the sum of all production sectors: Agriculture, Manufacturing, Industry and Services. All possible scenarios in the first window refraction are following by:

- ▲ Interest Rate => ▼ Production
- ▼ Interest Rate => ▲ Production

- In the second window refraction space is the relationship between production and exports are shown. All possible scenarios in the second window refraction are following by:

- ▲ Production => ▲ Exports
- ▼ Production => ▼ Exports



INVESTMENT POLICY

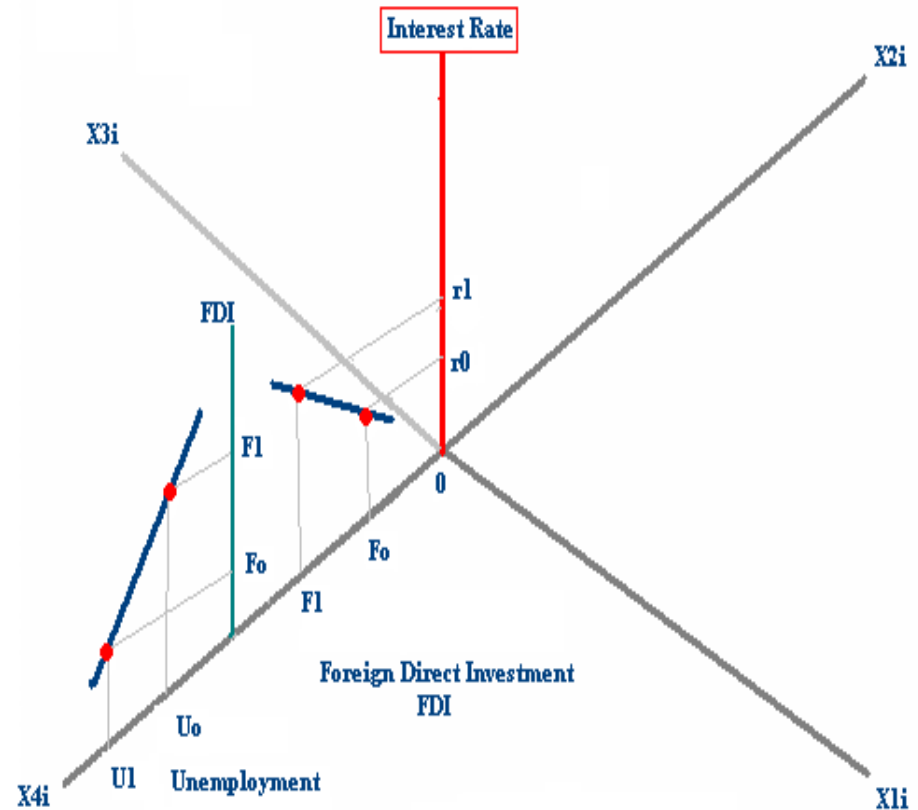
INVESTMENT POLICY

- Lastly, the two window refraction space is where the relationship between Foreign Direct Investment (FDI) and interest rate is shown. In the last section of the Cartesian Space, the first window refraction space is a depiction of the relationship between interest rate and FDI. All possible scenarios in the first window refraction are following by:

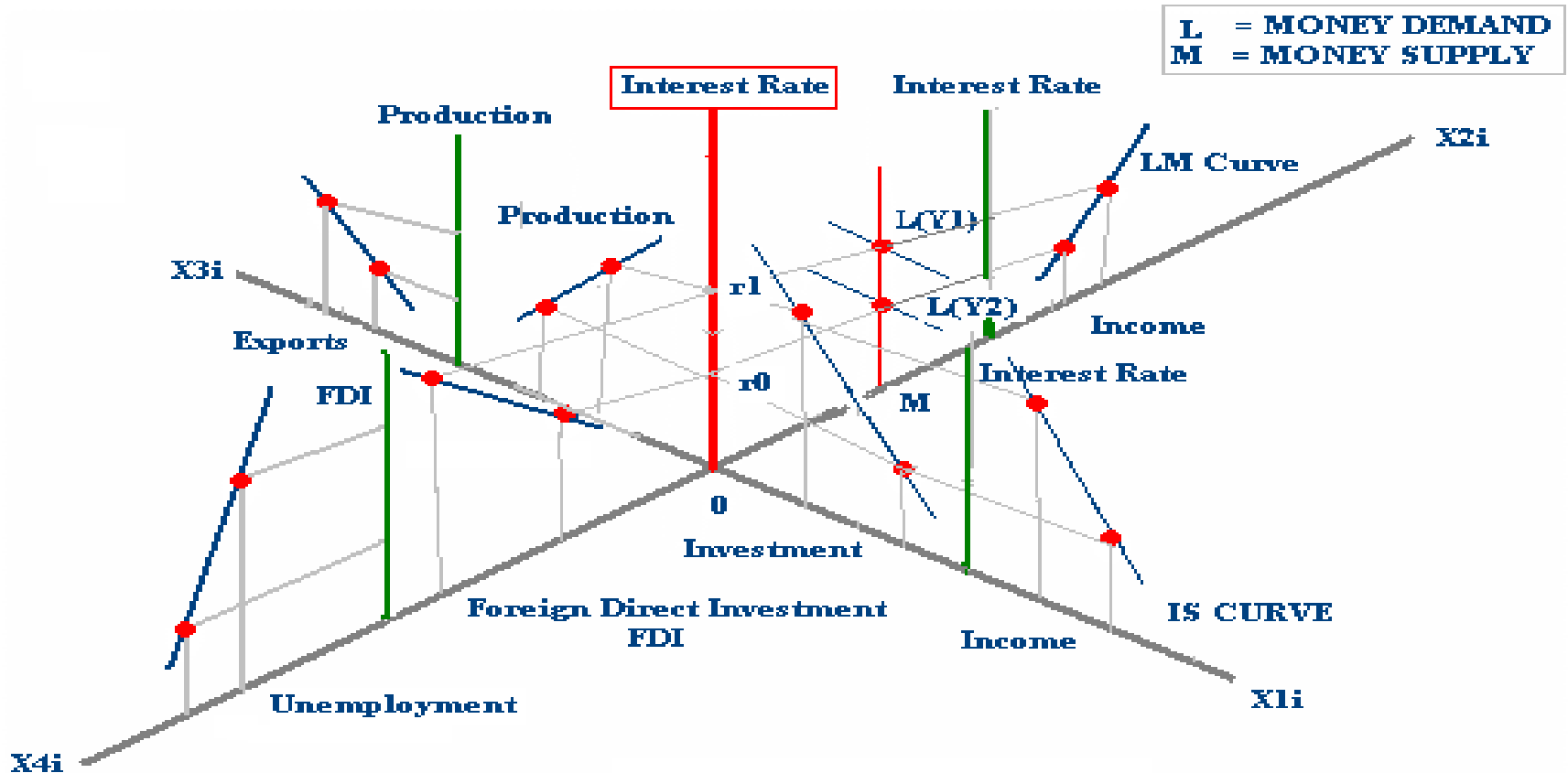
- ▲ Interest Rate => ▲ FDI
- ▼ Interest Rate => ▼ FDI

- In the last space where the correlation between FDI and Unemployment becomes obvious. All possible scenarios in the first window refraction are following by:

- ▲ FDI => ▼ Unemployment
- ▼ FDI => ▲ Unemployment



POLICY COORDINATION



END