RELATIONSHIP BETWEEN DOMESTIC TOURISM EXPENDITURE AND GROSS DOMESTIC PRODUCTS: A CASE STUDY OF MALAYSIA

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Outline

1. Introduction
2. Other Studies
3. Data & Methodology
4. Analysis
5. Findings
6. Conclusions

1. Introduction:

Background, Issues, and Study Objective

Background

- Tourism is important sectors for Malaysia.
- In 2011 to 2012, Malaysia ranked top ten UNWTO.
- In 2017, Malaysia's economic performance improved at 5.9 per cent from 4.2 per cent in the previous year.
- Similar to GDP, domestic tourism expenditure (DTE) continue to register a positive growth. In 2017, DTE register a double digit growth of 11.1 per cent in 2017 (2016: 10.2%).

Table 1: GDP and DTE, 2010-2017

Year	GDP	DTE
2010	821.4	34.7
2011	864.9	42.3
2012	912.3	47.8
2013	955.1	54.0
2014	1,012.4	62.2
2015	1,064.0	67.8
2016	1,108.9	74.8
2017	1,174.3	83.1

Background (cont.)

Key Statistics	2011	2012	2013	2014	2015	2016	2017
Total Expenditure (RM million)	42,346	47,778	54,016	62,151	67,842	74,773	83,103
Number of Visitors	131,002	141,433	152,875	169,282	176,937	189,253	205,408
Average Expenditure per Trip (RM)	260	274	279	286	288	294	301



Issues

Domestic tourism expenditure becoming more and more important for Malaysia's economy. What happen to Malaysia's domestic tourism expenditure if Malaysia's economy experiencing slow growth and/or recession? Will decrease in domestic tourism expenditure affects Malaysia's economy?

Study Objective

To examine relationship between Domestic Tourism Expenditure and Malaysia's Gross Domestic Products.

2. Other Studies

Other Studies

Author	Turgut Bayramoglu Yilmaz Onur Ari (2015)	Yusuf Akan Ibrahim Arslan Cem Is K (2007)	Ahmad Jafari Samimi Somaye Sadeghi Soraya Sadeghi (2011)
Objective	Analyze how and in what way the expenditures of foreign visitors affect economic growth for Greece	Investigate the causal relations between Tourism Sector and Economic Growth for the economy of Turkey	Examine the causality and long-run relationships between economic growth and tourism development in developing countries
Variable/ Data series	1. Economic growth 2. Expenditure of foreign visitors (1980-2013)	1. Tourism income 2. Economic growth (GDP) (1985 – 2007)	1. GDP (constant) 2. Tourism arrivals (TOUR) (1995 – 2009)

Other Studies (cont.)

Author	Turgut Bayramoglu Yilmaz Onur Ari (2015)	Yusuf Akan Ibrahim Arslan Cem Is K (2007)	Ahmad Jafari Samimi Somaye Sadeghi Soraya Sadeghi (2011)
Test	1. VAR Model 2. Eagle-Granger Cointegration 3. Granger Causality	1. Philips-Perron test 2. Cointegration approach 3. Granger Causality test 4. Vector Autoregression (VAR) model	1. Pesaran & Shin (IPS) unit root test 2. Granger causality test (Wald test) 3. P-VAR
Result	Strong, long and unidirectional causality relationship from the expenditures of foreign tourists in Greece to GDP	Tourism Sector in Turkey positively effected by economic growth in the long run	There is bilateral causality and positive long-run relationship between economic growth and tourism development

3. Data & Methodology

Data & Methodology

Data

GDP (2010 = 100) and DTE; annual 2010 to 2017.

Concept and Definition

GDP

Total value of all goods and services produced in a certain period after deducting the cost of goods and services used up in the process of production.

Data & Methodology (cont.)

DTE

Tourism expenditure of a resident visitor within the economy of reference.

Exclusions:

- Purchase of financial and non-financial assets; and
- Purchase of goods for resale purposes.

4. Analysis

Type of Analysis:

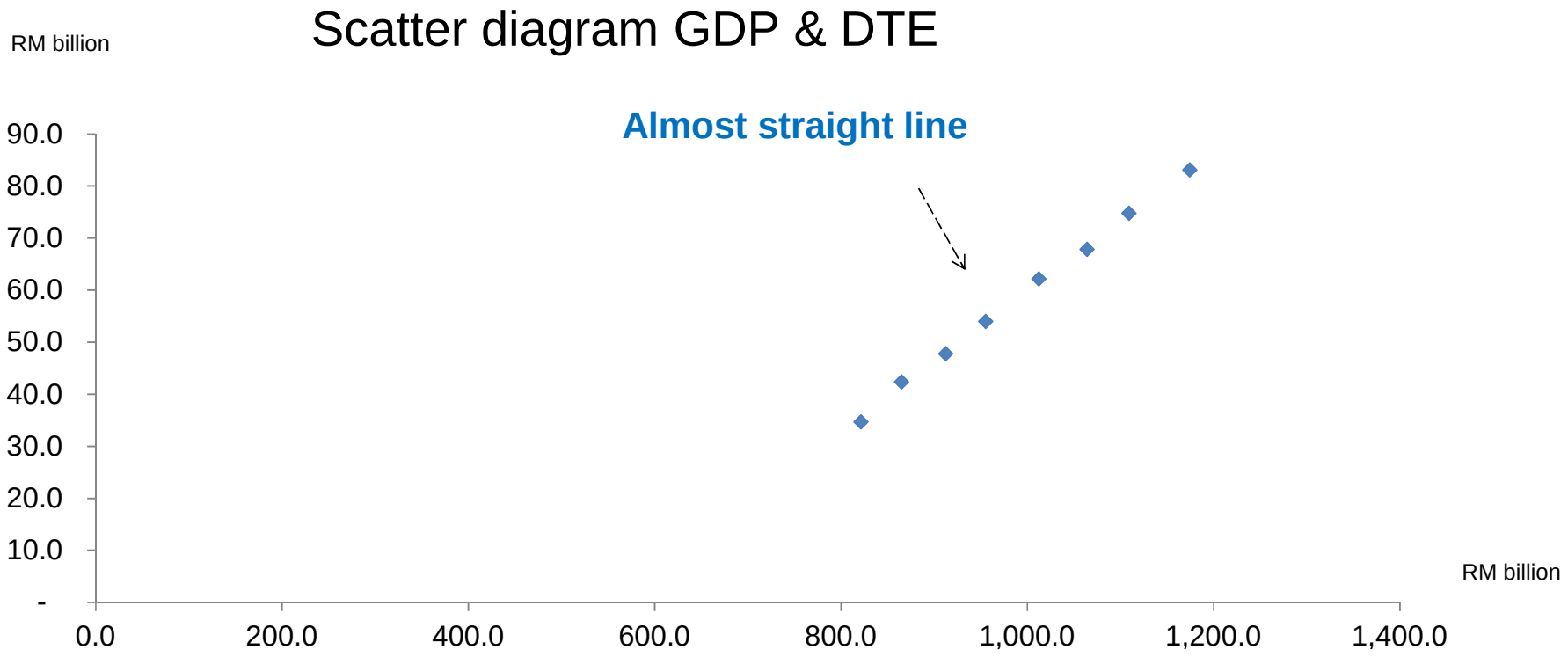
i. Scatter Diagram,

ii. Correlation,

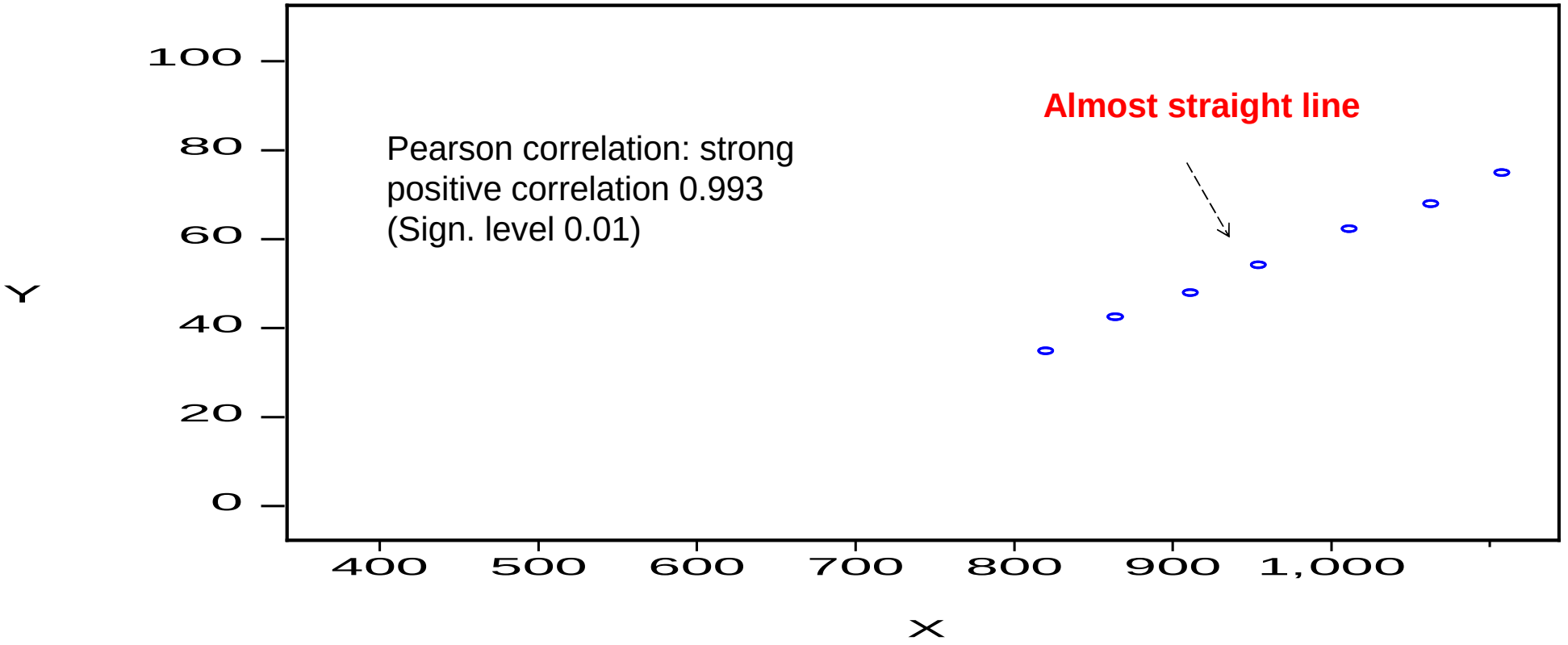
iii. Regression and

iv. VAR model

i. Scatter Diagram

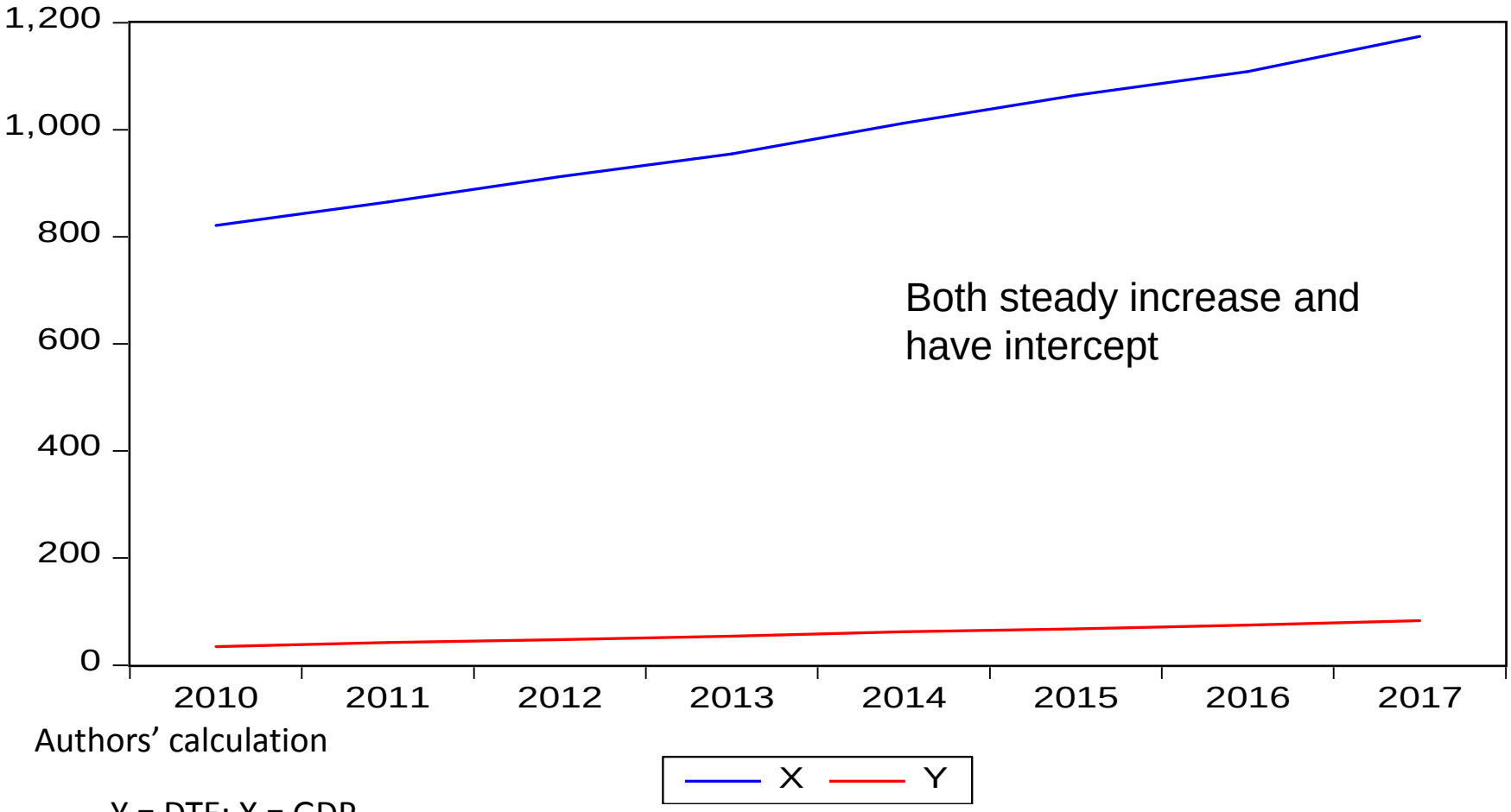


ii. Correlation DTE and GDP



Note. Y=DTExp X=GDP

Malaysia DTE and GDP, 2010 - 2017



Authors' calculation

Y = DTE; X = GDP

iii. Regression Analysis

- DTE = -75.6 + 0.14GDP

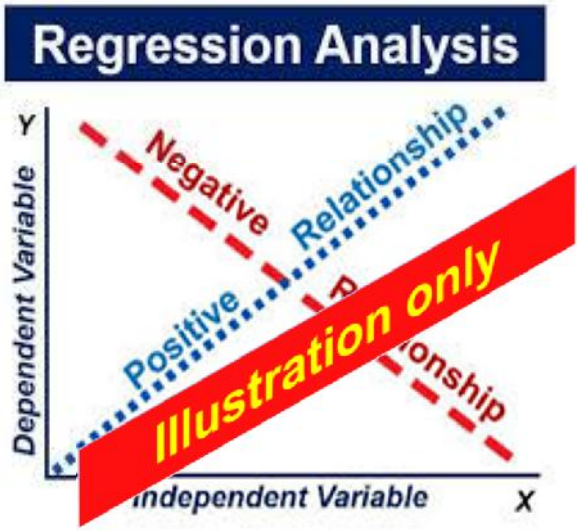
  (p Value = 2.6420E-08;

  R^2 = 0.9986)

- GDP = 558.8 + 7.38DTE

  (p Value = 2.1214E-10;

  R^2 = 0.9986)



iv. VAR Model
Test of Stationary, VAR Model Selection, and Optimal Lag

VAR Model

Auto-regressive equation:

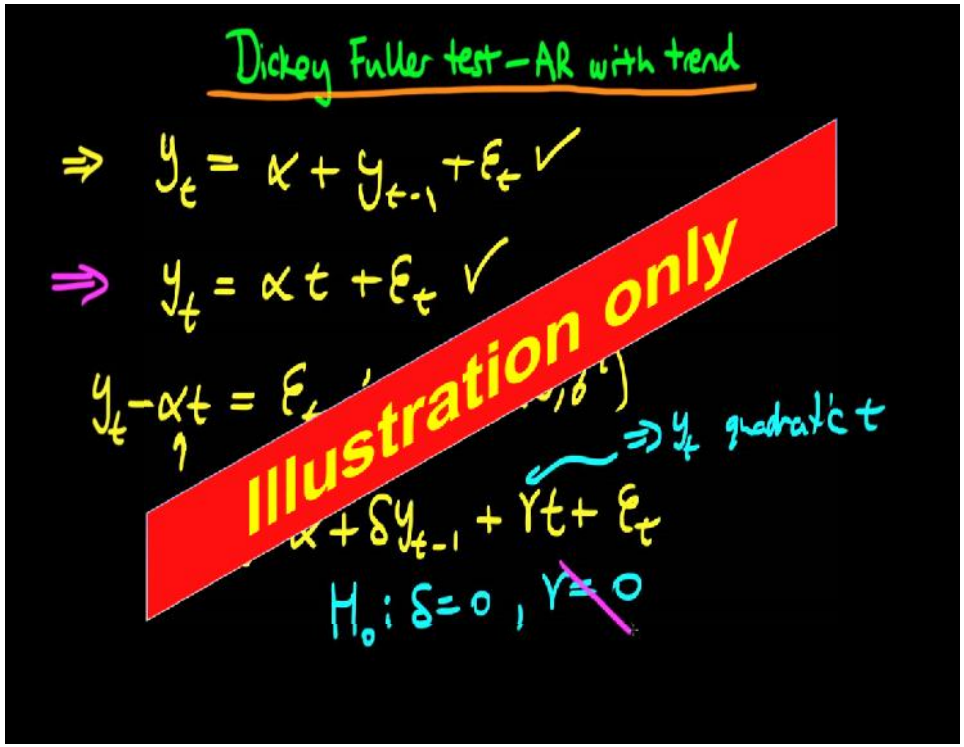
$$DTE_t = \sum_{i=1}^{k} \gamma_i \, DTE_{t-i} + \sum_{i=0}^{k} \theta_i \, GDP_{t-i} + \delta_t$$

$$GDP_t = \sum_{i=0}^{k} \alpha_i \, DTE_{t-i} + \sum_{i=1}^{k} \beta_i \, GDP_{t-i} + \varepsilon_t$$

$$\begin{bmatrix} 1 & r_1 & r_2 & r_3 & r_4 & \cdots & \\ r_1 & 1 & r_1 & r_2 & r_3 & \cdots & r_{N-2} \\ r_2 & r_1 & 1 & r_1 & r_2 & & r_{N-3} \\ \cdot & \cdot & \cdot & \cdot & & & \cdot \\ \cdot & \cdot & \cdot & \cdot & & & \cdot \\ \cdot & \cdot & \cdot & & & & \cdot \\ r_{N-1} & r_{N-2} & r_{N-3} & & r_{N-5} & \cdots & 1 \end{bmatrix} \begin{bmatrix} a_1 \\ a_2 \\ a_3 \\ \cdot \\ \cdot \\ \cdot \\ a_N \end{bmatrix} = \begin{bmatrix} r_1 \\ r_2 \\ r_3 \\ \\ \\ \\ r_N \end{bmatrix}$$

Illustration only

Test of Stationary*

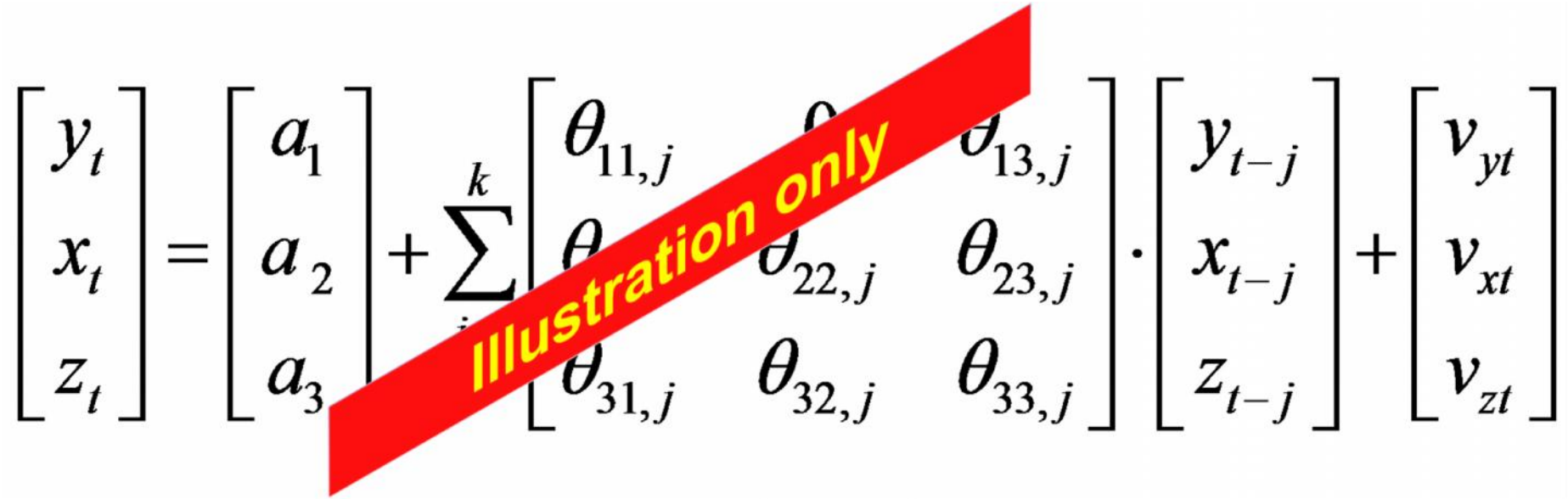


- **GDP** stationary at 1st. dif.; trend and intercept (sign. level 0.05).
- **DTE** stationary at 2nd dif.; intercept (sign. level 0.05).

**Note*. Augmented Dickey-Fuller Unit Root Test

Unrestricted VAR

- Because of GDP and DTE were stationary at different order, **Unrestricted VAR** was applied.

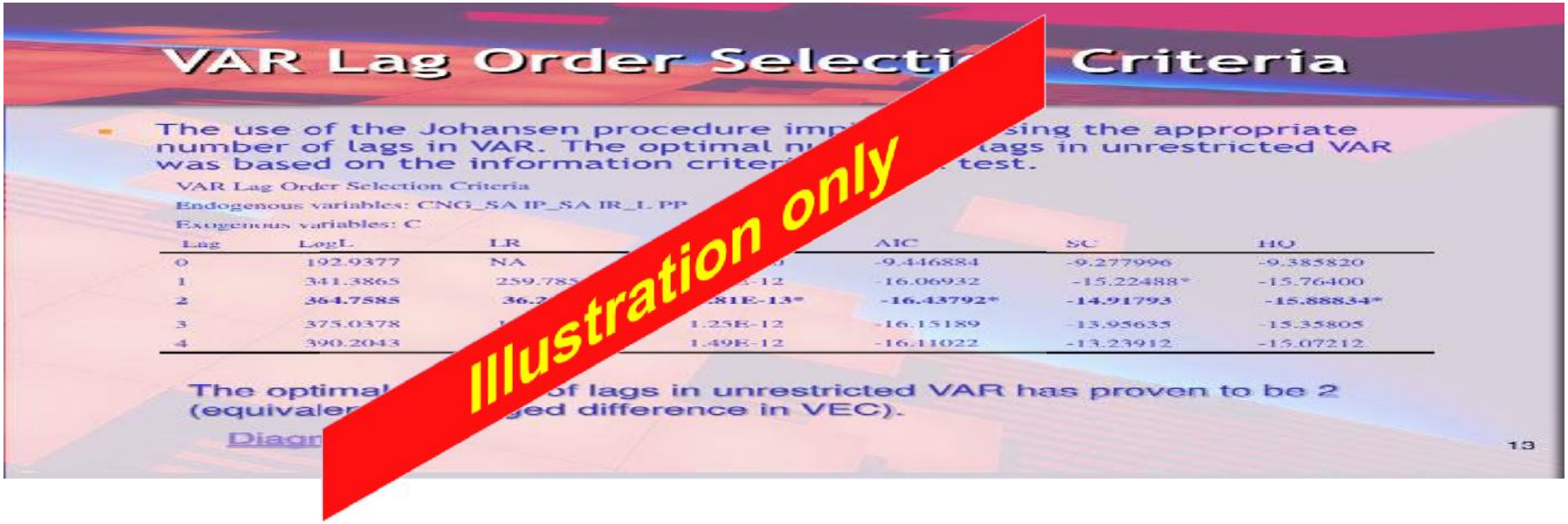


$$\begin{bmatrix} y_t \\ x_t \\ z_t \end{bmatrix} = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \end{bmatrix} + \sum^{k} \begin{bmatrix} \theta_{11,j} & \theta_{12,j} & \theta_{13,j} \\ \theta_{21,j} & \theta_{22,j} & \theta_{23,j} \\ \theta_{31,j} & \theta_{32,j} & \theta_{33,j} \end{bmatrix} \cdot \begin{bmatrix} y_{t-j} \\ x_{t-j} \\ z_{t-j} \end{bmatrix} + \begin{bmatrix} v_{yt} \\ v_{xt} \\ v_{zt} \end{bmatrix}$$

**Note*. Augmented Dickey-Fuller Unit Root Test

Optimal Lag

- *Optimal Lag: 2

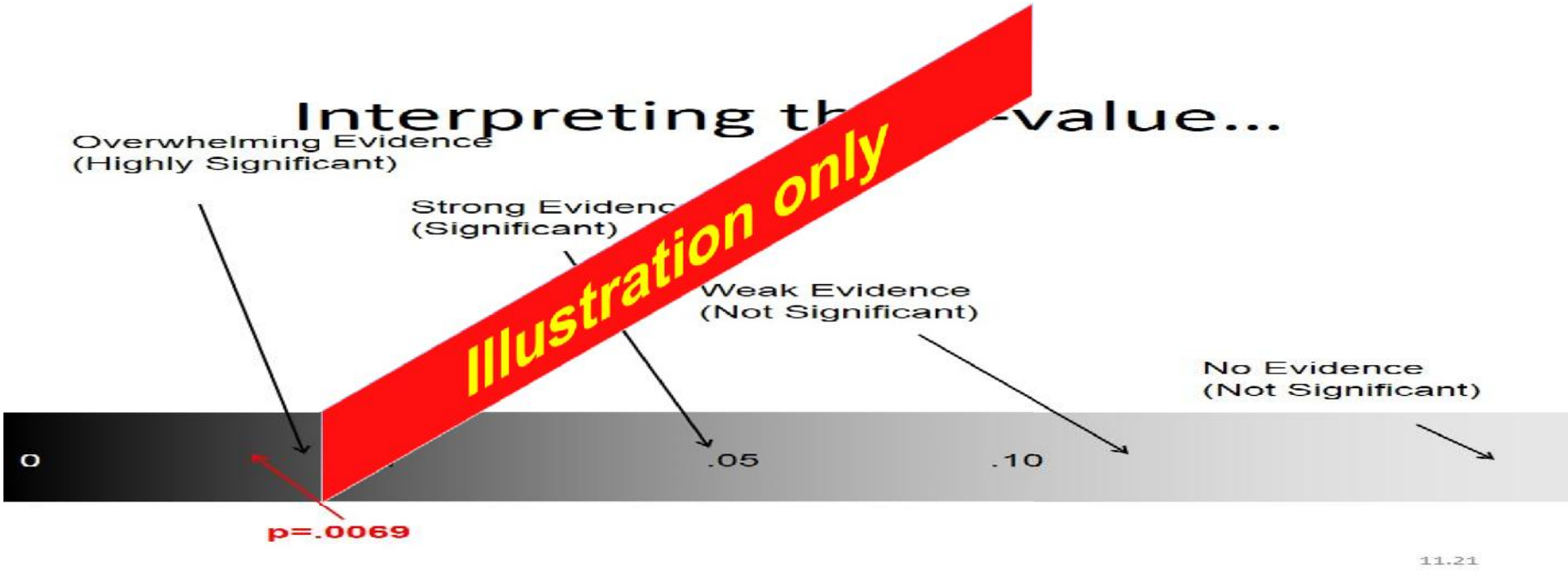


**Note*. Akaike information criterion (AIC)

5. Findings

VAR Significant P Value

- GDP lag one (C6) and DTE lag one (C8) significant to GDP



Note. Sign. level: 0.05

VAR Granger Causality Tests

VAR Granger Causality Tests

VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: X

Excluded	Chi-sq	df	Prob.
Y	59.22425	2	0.0000
All	59.22425	2	0.0000

Dependent variable: Y

Excluded	Chi-sq	df	Prob.
X	7.390763	2	0.0248
All	7.390763	2	0.0248

Authors' calculation

Interpretation VAR Granger Causality

- GDP ***can Granger cause*** DTE
- DTE ***can Granger cause*** GDP

Null Hypothesis:	Obs	F-S	Probability
LNAGRL does not Granger Cause LNMANG	34	15.7814	2.30E-05***
LNMANG does not Granger Cause LNAGRL		2.91077	0.07047*

*, **, and *** indicate significance at the 10, 5, and 1% levels.

Illustration only

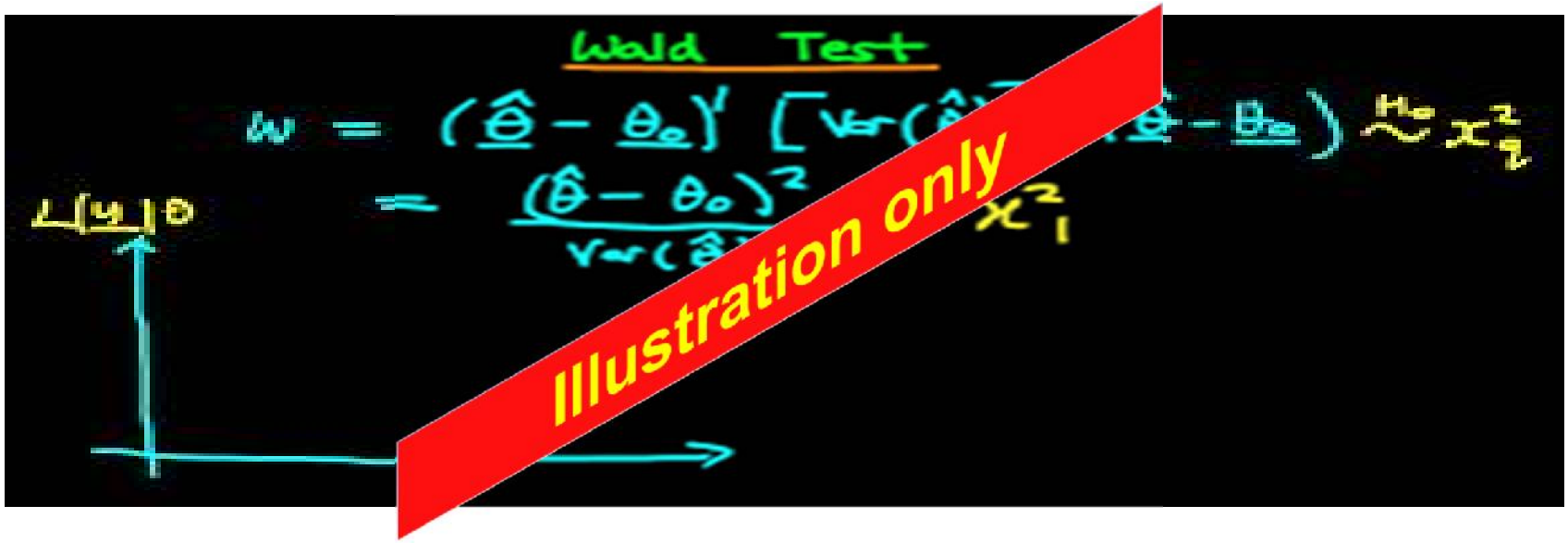
Wald Test

Wald Test

Lags that ***can cause/ influence*** DTE:

C(2) = DTE lag two

C(4) = GDP lag two



Note. C(2) & C(4) sign. level 0.05

Wald Test (cont.)

Lags that ***can cause/ influence*** GDP:

C(6) = DTE lag one

C(7) = DTE lag two

C(8) = GDP lag one

Note. C(6), C(7) and C(8) sign. level 0.01

6. Conclusions

Conclusions

1. **Correlation**: strong positive correlation.
2. **Regression**: strong positive relationship
3. **VAR Granger cause**:
   - 3.1 GDP *can Granger cause* DTE
   - 3.2 DTE *can Granger cause* GDP

Conclusions (cont.)

4. Wald test:

4.1 DTE lag two and GDP lag two can influence DTE.

4.2 Meaning DTE lag one and lag two, GDP lag one can influence GDP.

5. Moving forward:

5.1 to study “shock” in VAR system; and

5.2 Variance decomposition of GDP and DTE in the future.

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