

# تحليل العلاقة بين تقلبات سوق الأسهم والنشاط الاقتصادي في الولايات المتحدة الأمريكية

## الملخص

( (DJ) (S&P500) ( )  
(2009-1960) (GDP)  
( )

## Abstract

This study examines the dynamic relationship between stock market and economic activity in the United States to verify the possibility of using financial indicators to monitor the turning points in the expected path of future economic activity. Has been used methodology (Johansen - Juselius) for the Co-integration and causal (Granger) to test the relationship between the (S & P 500 , DJ) index and gross domestic product (GDP) in the United States for the period (1960-2009). The results of the analysis revealed the existence of a causal relationship duplex (two-way) between the variables mentioned. which means the possibility of the use stock market indicators to predict of fluctuations in economic activity.



## المقدمة

(Predicting)

(Economic activity)

(Securities Prices)

( )  
( )

(Important Indicator)

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-

-

(OLS)

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( - )  
( - )

.( )

\*

Spurious Regression

(R<sup>2</sup>)



(DJ 30) (S&P 500) (2009-1960)

### المبحث الأول / طبيعة الارتباط بين سوق الأسهم والنشاط الاقتصادي

( ) ( )

-(1)

Leading Indicators ( ) :

( ) ( ) ( )

:-

-1

-2

-3

-4

Coincident Indicators :

:-

-1

-2

-3



Lagging Indicators ( ) :

( )

-1  
-2  
-3  
-4

- -

-:

:

:-

(1)

(2)

$$\text{Stock Price} = \sum_{t=1}^{\infty} \frac{\text{Expected Profitability}_t}{(k + 1)^t}$$

: SE  
: EP  
: K

(K )

Efficient Market Hypothesis (EMH)

(3)

2002 : - 1  
.141

2 - Comincioli, B. "The Stock Market As A Leading Indicator: An Application Of Granger Causality." Illinois Wesleyan: The University Avenue Undergraduate Journal of Economics, 1996.



## في الولايات المتحدة الأمريكية

(Schwert-1990)

(%8)

(41)

(38)

. (1)(%93)

(Corporate Earnings)

- :  
( )

.(profit Margins)

. (2)

(Pearce &amp; Roley)

. (3)

-: \_\_\_\_\_

-:

-:

( )

( )

(Growth economic)

(Ayres)

(Ayres)

(25)

( )

( )

. (4)( )

- Ball, Ray, "The Theory of Stock Market Efficiency: Accomplishments and Limitations." *Journal of Corporate Finance*, USA, 1995.

.273

- 1

.141

- 2

3 -Pearce, Douglas K., and V. Vance Roley, "Stock Prices and Economic News," *Journal of Business*, USA, 1985, pp. 49-67.

.145

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( )

(1)

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(2)

**Mishkin**

(1975) (1973)

(3)

-:\_\_\_\_\_

-:

-:

**(Profit)**

( )

(4)

-:

( )

(5)

( )

-:

(10000)

(3)

(35)

- 1

-:

.533 2001

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2 - Pearce, Douglas K., "Stock Prices and the Economy," Federal Reserve Bank of Kansas City Economic Review, November 1983, p12.

1999

:

:

- 3

.156

2000

-4

.10

5 - Abdullah H. Al-Batel Macroeconomic Determinants of Stock Prices in Saudi Arabia.

(94)

.203 1999



## المبحث الثاني / تقدير العلاقة بين مؤشرات أسعار الأسهم ومستوى النشاط الاقتصادي في الولايات المتحدة الأمريكية

/2009-1960)

( ) ( )  
 - ( ) ( - )  
 (GDP) (\*) (DJ S&P500)  
 (IFS) (EViews 5.1 )

-:

### The Unit Root Test of Stationarity

(1981) Augmented Dickey-Fuller (ADF) -  
 Dickey & Fuller  
 (1)  
 - (ADF)  
 : (2)

(500) (1923) (S&P500) \*  
 (%80) (DJ)  
 Edward Jones Charles Daw  
 (12) (30) (1928) (1916) (20) (1898)

1- D. Dickey, and Fuller, W "Likelihood Ratio Statistical for Autoregressive Time Series with a Unit Root, Econometric , USA, 1981, p.p. 1057-1072.

2 - W . Enders, "Applied Econometrics Time Series", New York :John Wiley & sons, Inc, USA, 1995, p.221.



$$\Delta Y_t = \beta Y_{t-1} + \sum_{j=1}^k \beta_{j+1} \Delta Y_{t-j} + e_t \dots\dots\dots(1)$$

(B) (t) (ADF)

I~(1) :

I~(2) :

(H0 : β = 0) (Null hypothesis) (ADF)

.(Stationary) (H1 : β = 1)

(t)

(1) (ADF test)

(\*)

( (%10) (%5) (%1) )

DJ S&P (H0 : β = 0)

(%10) (%5) (%1) (GDP)

(GDP) DJ S&P

(ADF) (1)

-7.300187	-7.365040	-1.944217	-0.399651	LN S&P
-7.355700	-7.385023	-1.731818	-0.191553	LN DJ
-4.109574	-2.696394	1.671264	-1.763399	LN GDP
-4.161144	-3.574446	-4.156734	-3.571310	%1
-3.506374	-2.923780	-3.504330	-2.922449	%5
-3.183002	-2.599925	-3.181826	-2.599224	%10

(EViews 5.1)

:

(AIC) Akaike (EViews) (ADF) \*





:

Co-integration

(1981)

.(1)(1987)

Engel&Granger  
Characteristic

Equilibrium in the long run

Equilibrium in the short run

Vector Autoregressive

Maximum Likelihood Function

model (VAR)

- (2)(Johansen: 1988)

(3)(Johansen and Juselius: 1990)

. Engel-Granger two step method

(Trace test -  $\lambda$ trace)

Maximum Likelihood Function

.(4)(Maximum Eigenvalues Test -  $\lambda$ max)

: Trace test

$$\lambda_{trace} = -T \sum_{i=r+1}^n \log(\hat{\lambda}_i) \quad (2)$$

 $r \geq$ 

$$.(2 \quad 1 \quad 0 = r \quad ) \quad r =$$

:

$$\lambda_{max} = -T \log(1 - \hat{\lambda}_i) \quad (3)$$

 $r =$ 

$$.r + 1 =$$

1 - R. F. Engle. and Granger, C. W. "Co-integration and Error-Correction Representation, Estimation and Testing", *Econometrics*, 55, (2), USA, 1987, P.P. 251-76.

2 - S. Johansen, "Statistical Analysis of Co-integration Vectors", *Journal of Economics, Dynamics and Control*, 12, USA, 1988, P-P. 231-54.

3 - S. Johansen, and Juselius, K "Maximum Likelihood Estimation and Interference on Co-integration with Application to the Demand for Money", *Oxford Bulletin of Economics and Statistics*, 52, USA, 1990, P-P. 169-210.

4 - Patrick K. Watson & Sonja S. Teelucksingh, *A Practical Introduction to Econometric Methods: Classical and Modern*, University of the West Indies Press, USA, 2002, P.270.



	(2)		
(λtrace)	.	(GDP)	
(DJ S&P500)			
	( 23.53296)	( 20.17958)	
(H0 : β = 0)	.(%5)	( 15.49471)	
	(r = 0)		
(r ≤ 1)	.(r = 1)		(%5)
(5.881021)	(DJ S&P500 )		
(%5)	(3.841466)	(7.291397)	
	.(r > 1)		
	(2)		

λtrace				
eigenvalues	%95	λtrace		
0.257615	15.49471	20.17958	r = 1	r = 0
0.115313	3.841466	5.881021	r = 2	r ≤ 1
0.287066	15.49471	23.53296	r = 1	r = 0
0.140929	3.841466	7.291397	r = 2	r ≤ 1
λmax				
eigenvalues	%95	λmax		
0.257615	14.26460	14.29856	r = 1	r = 0
0.115313	3.841466	5.881021	r = 2	r ≤ 1
0.287066	14.26460	16.24156	r = 1	r = 0
0.140929	3.841466	7.291397	r = 2	r ≤ 1

(EViews 5.1)

:

	(λmax)		
(DJ S&P500 )		(2)	
( 14.26460)		( 16.24156)	( 14.29856)
		(%5)	
. (r=1)		(r=0)	
	(%5)	(r≤1)	
(DJ S&P500 )			
(3.841466)		(7.291397)	(5.881021)
		(%5)	
		(r>1)	
(DJ S&P500 )		( )	



-:

(DJ S&P)

Granger

(2) (1) Granger causality

(X<sub>t</sub>) (Y<sub>t</sub>) (S&P) (X) (Y)

: :

$$Y_t = \delta_0 + \sum_{i=1}^p \delta_i Y_{t-i} + \sum_{j=1}^q \lambda_j X_{t-j} + u_t \dots \dots \dots (4)$$

$$X_t = a_0 + \sum_{i=1}^n a_i X_{t-i} + \sum_{j=1}^m \beta_j Y_{t-j} + v_t \dots \dots \dots (5)$$

:  
: (λ, δ<sub>i</sub>, β, a<sub>i</sub>)  
: U<sub>t</sub>, V<sub>t</sub>

: (3)

{(Y<sub>t</sub> ← X<sub>t</sub>)} (Y) (X) ■

$\sum_{j=1}^q \lambda_j \neq 0$  (4) (X)

(5) (Y)

$\sum_{j=1}^m \beta_j = 0$

{(X<sub>t</sub> ← Y<sub>t</sub>)} (X) (Y) ■

$\sum_{j=1}^q \lambda_j = 0$  (4) (X)

(5) (Y)

$\sum_{j=1}^m \beta_j \neq 0$

{(X<sub>t</sub> ↔ Y<sub>t</sub>)} (Y) (X) ■

(5) (4) (Y) (X)

(Y) (X) ■

(5) (4)

1 - C. W. J. Granger "Investigating Causal Relations by Econometric Models and Cross-spectral Methods" *Econometrica*, Vol. 37, No. 3, 1969, p. 431.  
 2 - Dominick Salvatore *Theory and Problems of Statistics and Econometrics*, McGRAW-HILL New York, 2002, p284.  
 3 - Damodar N. Gujarati , *Basic Econometrics* , McGraw–Hill Companies, New York, 2004, p697.



:

$$F = \frac{(RSS_R - RSS_{UR})/m}{RSS_{UR}/(n-k)} \dots\dots\dots (6)$$

:  
:  $RSS_R$   
:  $RSS_{UR}$   
:  $m$   
:  $n-k$

(α) (F) (F)

(4)

(5)

(S&P) (3)

(3.00253) (F) (1) (2) (3) (6.84840) (5.24406)

(%1) (%5)

(F) (4.07532) (3.70576) (2.74058)

(%5)

(7.78693) (9.43083) (7.15168) (DJ) (F) (1) (2) (3)

(%1)

(4.08432) (3.56288) (F) (3.66732)

(%5)

( 3 )

	F		
0.04163	3.00253	3-3	LN GDP ⇔ LN S&P
0.05583	2.74058	3-3	LN S&P ⇔ LN GDP
0.00059	7.15168	3-3	LN GDP ⇔ LN DJ
0.02242	3.56288	3-3	LN DJ ⇔ LN GDP
0.00916	5.24406	2-2	LN GDP ⇔ LN S&P
0.03275	3.70576	2-2	LN S&P ⇔ LN GDP
0.00040	9.43083	2-2	LN GDP ⇔ LN DJ
0.04737	4.08432	2-2	LN DJ ⇔ LN GDP
0.01197	6.84840	1-1	LN GDP ⇔ LN S&P
0.04937	4.07532	1-1	LN S&P ⇔ LN GDP
0.00763	7.78693	1-1	LN GDP ⇔ LN DJ
0.06172	3.66732	1-1	LN DJ ⇔ LN GDP

(EViews 5.1)

:



(DJ S&amp;P)

(Profit)

## المبحث الثالث / الاستنتاجات والتوصيات

-:

-1

(profit Margins) (Corporate Earnings)

-2

-3

-4

(DJ)

(S&amp;P)

(GDP)

-5

Augmented Dickey-Fuller



## في الولايات المتحدة الأمريكية

(GDP) - (DJ S&P) -6  
( )

-7

-8

(GDP) (DJ S&P) -9  
(%1 )

-1

-2

-3

-4



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